FIRSTCARBONSOLUTIONS™

Draft Environmental Impact Report
North Entry Area Plan
City of Healdsburg, Sonoma County, California

State Clearinghouse Number 2018062041

Prepared for:

City of Healdsburg
401 Grove Street
Healdsburg, CA 65448
707.431.3348

Contact: Maya DeRosa, Planning and Building Director

Prepared by:

FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597
925.357.2562

Contact: Jason Brandman, Project Director
Kelsey Bennett, Project Manager

Date: November 30, 2018

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

List of Appendices

List of Tables

List of Exhibits

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
°C	Celsius
°F	Fahrenheit
AAF	age-specific adjustment factor
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADT	average daily traffic
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
APA	Administrative Procedures Act
APE	Area of Potential Effect
APN	Assessor's Parcel Number
AQI	air quality index
ARB	California Air Resources Board
ASF	age sensitivity factor
AT	averaging time
ATCM	Airborne Toxic Control Measures
BAAQMD	Bay Area Air Quality Management District
BAU	business-as-usual
BMP	Best Management Practices
c/mve	collisions per million vehicles entering
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal OSHA	California Occupational Health and Safety Administration
Cal/EPA	California Environmental Protection Agency
CalEEMOD	California Emissions Estimator Model
Caltrans	California Department of Transportation
CA-MUTCD	California Manual on Uniform Traffic Control Devices
CAP	Clean Air Plan
CBC	California Building Standards Code
CCAA	California Clean Air Act
CCCC	California Climate Change Center
CCR	California Code of Regulations

CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CH_4	methane
CHAP	Central Healdsburg Avenue Plan
CMA	congestion management agency
CMP	Congestion Management Plan
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Code
CTP	Comprehensive Transportation Plan
dB	decibel
DBR	daily breathing rate
DOT	United States Department of Transportation
DPM	diesel particulate matter
du	dwelling unit
eb	eastbound
ED	exposure duration
EF	exposure frequency
EIR	Environmental Impact Report
EO	Executive Order
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	floor area ratio
FCS	FirstCarbon Solutions
FHWA	Federal Highway Administration
GHG	greenhouse gas
gsf	gross square feet
GWh/y	gigawatt-hours per year
GWP	global warming potential
HCM	Highway Capacity Manual
HFC	hydrofluorocarbon
HI	hazards index
HMC	Healdsburg Municipal Code

HRA	Health Risk Assessment
HT	Healdsburg Transit
IPCC	International Panel on Climate Change
ITE	Institute of Transportation Engineers
Ksf	thousand square feet
lbs	pounds
LCFS	low carbon fuel standard
L_{dn}	day/night average sound level
LED	light emitting diode
L_{eq}	equivalent sound level
LEV	low-emission vehicle
LOS	Level of Service
MIR	maximum impacted off-site receptor
MM	mitigation measure
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
mph	miles per hour
MT	metric tons
MTC	Metropolitan Transportation Commission
MTS	Metropolitan Transportation System
MWELO	model water efficient landscaping ordinance
MWh	megawatt-hour
MXD	mixed-use development
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
nb	northbound
NEAP	North Entry Area Plan
NCRA	North Coast Rail Authority
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NF	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOC	Notice of Completion
NOP	Notice of Preparation
NO_X	nitrous oxide
NSCAPCD	Northern Sonoma County Air Pollution Control District
O_3	ozone

OAL	Office of Administrative Law
OEHHA	California Office of Environmental Health Hazard Assessment
ONAC	Federal Office of Noise Abatement and Control
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric
PM_X	particulate matter
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PPV	peak particle velocity
PVC	polyvinyl chloride
RCPA	Regional Climate Protection Authority
REC	Renewable Energy Credits
REL	reference exposure level
rms	rooms
ROG	reactive organic gases
RPS	renewable portfolio standard
RTP	Regional Transportation Plan
SB	Senate Bill
sb	southbound
SCS	Sustainable Communities Strategy
SCT	Sonoma County Transit
SCTA	Sonoma County Transportation Authority
SF_6	sulfur hexafluoride
SFPUC	San Francisco Public Utilities Commission
SIP	State Implementation Plan
SLCP	short-lived climate pollutant
SMART	Sonoma Marin Area Rail Transit
SO_2	sulfur dioxide
SR	State Route
SWITRS	Statewide Integrated Traffic Records System
TAC	toxic air contaminants
TAH	time at home
TCM	transportation control measures
Tg	teragram
therms/y	therms per year

TMA	Transportation Management Association
U.N.	United Nations
U.S.	United States
UNFCCC	United Nations Framework Convention on Climate Change
VdB	vibration in decibels
VDECS	Verified Diesel Emission Control Strategies
VMT	vehicle miles traveled
VOC	volatile organic compound
wb	westbound
WHO	World Health Organization
WUI	wildland urban interface
ZEV	zero-emission vehicle

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

Purpose

This Environmental Impact Report (EIR) is prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with the implementation of the proposed North Entry Area Plan ("proposed plan" or "NEAP"). This document is prepared in conformance with CEQA (California Public Resources Code, Section 21000, et seq.) and the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000, et seq.).

The purpose of this EIR is to inform decision-makers, representatives of affected and responsible agencies, the public, and other interested parties of the potential environmental effects that may result from implementation of the proposed plan. This EIR describes potential impacts relating to a wide variety of environmental issues and methods by which these impacts can be mitigated or avoided.

Project Summary

Project Location

The plan area for the NEAP is located at 16977 Healdsburg Avenue in the City of Healdsburg, Sonoma County, California. The approximately 30.16-acre plan area is located within the northern Healdsburg city limit and is bounded by U.S. 101 (west); Healdsburg Avenue (east); a vacant parcel within the County of Sonoma (north); and a vacant parcel owned by Simi Winery within city limits (south). The Montage Healdsburg property is located on the east side of Healdsburg Avenue across from the plan area and the Parkland Farms residential subdivision is located to the southeast of the plan area. The plan area is comprised primarily of four parcels that are owned by Comstock Healdsburg, LLC, and which are referred to by the NEAP as the "North Village site."

Project Description

The proposed NEAP provides policy guidelines and development standards for the future construction and operation of a mixed-use community on the North Village site. As discussed in Chapter 1: Introduction, the plan assumes that the North Village site will be developed consistent with the Mixed Use land use designation it has been assigned by the Healdsburg 2030 General Plan. The NEAP establishes a maximum buildout scenario for the site of up to 435,000 gross square feet (gsf) of residential and 200,000 gsf of nonresidential uses. (An average of 1,500 gsf is assumed for the residential units to account for a range of unit sizes).

Development would be located on approximately 18 acres of the North Village site and would include multi-story buildings up to 50 feet in height. Buildings near the railway right-of-way and Healdsburg Avenue frontage are anticipated to maintain lower heights of not more than 35 feet, with taller heights increasing toward the hillside portions of the plan area. The overall development footprint would allow for approximately 12 acres of open and undeveloped land to remain in the plan area, primarily located on the hillsides of the North Village site.

Land uses contemplated under the proposed plan would be built in phases over time. It is anticipated that the plan and this EIR will be relied upon by the City when considering a specific proposal by Comstock Healdsburg, LLC to develop the North Village site in phases with senior residential, hotel, restaurant, retail, commercial office, and multi-family residential uses. Future projects would employ full- and part-time positions.

Project Objectives

The City's objectives for the NEAP are to:

1. Create a community-supported, long-term vision for a mix of residential and commercial development that will help develop the plan area into an attractive gateway into Healdsburg from the north;
2. Create a livable and welcoming neighborhood for plan area residents and the surrounding Healdsburg community that complements, and does not undermine, the role of the downtown area as the commercial center of the City of Healdsburg;
3. Establish a visual character for plan area development that harmonizes with the rural character and natural landscape of its surroundings;
4. Provide development limitations and standards that make it feasible to develop a high quality, mixed use community on the North Village site; and
5. Define and realize the plan area's full development potential to support a variety of feasible commercial developments and to provide new housing within the City of Healdsburg.

Significant Unavoidable Adverse Impacts

The proposed plan was analyzed for potentially significant impacts on each of the environmental issues discussed in Sections 3.1 through 3.5. Based on the analyses contained in this EIR, the City has determined that the proposed plan in conjunction with cumulative development in Healdsburg would result in the following respective plan-level and cumulative-level significant and unavoidable impacts:

- **Transportation/Traffic (Plan-level Impact):** With respect to vehicle circulation system performance (intersection level of service) at the south off-ramp approach from U.S. 101 to Dry Creek Road, the intersection would be expected to experience additional delay upon adding plan-generated trips. The City is implementing a project to install all-way stop signs at this location, which will improve intersection operations. However, the traffic related to the Existing-Plus-Plan Scenario would result in the intersection operating at an unacceptable LOS E level during the PM peak-hour. Mitigation measures were identified to signalize the intersection that, if implemented, would reduce the impact to less than significant. However, the City cannot guarantee that the improvements will be completed by the time development under the proposed plan occurs. Thus, the impacts to the performance of the vehicle circulation system would remain significant and unavoidable.

- **Transportation/Traffic (Plan-level Impact):** With respect to traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/U.S. 101 South Ramp, the queueing would exceed available storage in the westbound left-turn lane with plan-generated trips. Mitigation measures were identified that would require improvements to operation at the intersection. However, traffic safety hazards impacts remain significant and unavoidable until the separate project to signalize the intersection is completed and widening to provide longer turn lane storage is constructed.
- **Transportation/Traffic (Cumulative-level Impacts):** With respect to vehicle circulation system performance (intersection level of service) and traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/Grove Street intersection, operation is projected to fall to unacceptable LOS E with plan-generated trips added to the Cumulative Plus Plan volumes. Identified mitigation (signal modifications and restriping) would result in acceptable operations, however, improvements are infeasible due to right-of-way constraints. Thus, both vehicle circulation system performance and traffic safety hazards impacts would remain significant and unavoidable.

As discussed in Section 3.2, Transportation and Traffic, the City mitigates impacts of the proposed plan to the greatest extent feasible as required by CEQA. However, mitigation is economically infeasible, because the City cannot guarantee the funding of needed roadway improvements to ensure adequate right-of-way to accommodate vehicular traffic and the planned bike lane. The City cannot ensure mitigation would be implemented to reduce potential plan- and cumulative-level impacts to less than significant. Therefore, the City will be required to prepare a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093.

Summary of Project Alternatives

Pursuant to CEQA Guidelines Section 15126.6, this EIR presents a range of reasonable alternatives to the proposed plan for analysis and evaluation of their comparative merits. These alternatives are considered to address a range of development alternatives that would meet the basic objectives of the proposed NEAP while lessening one or more of its significant impacts. CEQA Guidelines Section 15126.6(a) states that an EIR need not evaluate every conceivable alternative to a project or plan. CEQA also requires that an EIR analyze a "no project" alternative (CEQA Guidelines, Section 15126.6(e)). Where, as here, this alternative means the proposed plan would not proceed, the discussion "[sh]ould compare the environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved" (CEQA Guidelines, Section 15126.6(e)(3)(B)). A "no project" alternative shall describe existing conditions at the time the NOP is prepared, as well as what "would reasonably be expected in the foreseeable future if the project [or plan] were not approved, based on current plans and consistent with available infrastructure and community services." (CEQA Guidelines, Section 15126.6(e)(3)(C)).

The City identified and considered four alternatives to the proposed NEAP. As described and analyzed in Chapter 4, Alternatives, this includes the No Project, the General Plan Quaker Hills, North Village Project, and a Reduced Commercial alternatives. Under the No Project Alternative, no development would occur in accordance with existing Healdsburg 2030 General Plan land use

designations or land uses contemplated by the proposed plan. Under the General Plan Quaker Hills Alternative, the plan area would be developed but modified per the assumed Healdsburg 2030 General Plan mixed use alternative. Under the North Village Project Alternative, the plan area would be developed with a range of land uses as proposed by the property owner of the North Village site. Under the Reduced Commercial Alternative, the plan area would be developed with residential use permitted under the proposed plan but include substantially less commercial development. Impacts associated with the proposed plan are compared with each alternative. Table 4-4 (Summary of Alternatives' Impacts) provides a comparison of impacts. As discussed in Section 4.8 Environmentally Superior Alternative, the environmentally superior alternative is considered Alternative 4 (Reduced Commercial Alternative) but fails to meet three of the City's five plan objectives.

Areas of Controversy

Pursuant to CEQA Guidelines Section 15123(b), a summary section must address areas of controversy known to the lead agency, including issues raised by agencies and the public, and it must also address issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects.

A Notice of Preparation (NOP) for the proposed plan was issued on July 21, 2018. The NOP describing the proposed plan and issues to be addressed in the EIR was distributed to the State Clearinghouse, responsible agencies, and other interested parties for a 30-day public review period extending from June 21, 2018, through July 23, 2018. The NOP identified the potential for significant impacts on the environment related to the following topical areas:

- Aesthetics
- Transportation and Traffic
- Air Quality
- Greenhouse Gas Emissions and Energy
- Noise

Disagreement Among Experts

This EIR contains substantial evidence to support all the conclusions presented herein. It is possible that there will be disagreement among various parties regarding these conclusions, although the City of Healdsburg is not aware of any disputed conclusions at the time of this writing. Both the CEQA Guidelines and case law provide the standards for treating disagreement among experts. Where evidence and opinions conflict on an issue concerning the environment, and the lead agency knows of these controversies in advance, the EIR must acknowledge the controversies, summarize the conflicting opinions of the experts, and include sufficient information to allow the public and decision-makers to make an informed judgment about the environmental consequences of the proposed plan.

Potentially Controversial Issues

Below is a list of potentially controversial issues that may be raised during the public review and hearing process for this EIR:

- U.S. 101 is an important regional arterial that carries between 38,500 and 55,000 vehicles per day on segments that pass through the City. The highest volumes occur near the junction with Dry Creek Road and careful consideration of potential cumulative traffic impacts along this roadway will be needed.
- As U.S. 101 and Healdsburg Avenue are designated as scenic roadways in the Healdsburg 2030 General Plan, aesthetics impacts to views from these roadways will need to be closely evaluated. Additionally, changes to the visual character of the plan area that result from plan implementation will be assessed for consistency with the Healdsburg 2030 General Plan, the Healdsburg Municipal Code, and the proposed NEAP design guidelines.
- The plan area is bounded by U.S. 101 to the west and Healdsburg Avenue and the North Coast Railroad Authority rail line to the east. With residential uses proposed in the plan area, potential neighborhood impacts related to air quality, noise, and local traffic will also need to be assessed.

It is also possible that evidence will be presented during the 45-day, statutory Draft EIR public review period that may create disagreement. Decision-makers would consider such evidence during the public hearing process.

In rendering a decision on a project or plan where there is disagreement among experts, the decision-makers are not obligated to select the most environmentally preferable viewpoint. Decision makers are vested with the ability to choose whatever viewpoint is preferable and need not resolve a dispute among experts. In their proceedings, decision-makers must consider comments received concerning the adequacy of the Draft EIR and address any objections raised in these comments. However, decision-makers are not obligated to follow any directives, recommendations, or suggestions presented in comments on the Draft EIR, and can certify the Final EIR without needing to resolve disagreements among experts.

Public Review of the Draft EIR

Upon completion of this Draft EIR, the City of Healdsburg filed a Notice of Completion (NOC) with the State Office of Planning and Research to begin the public review period (Public Resources Code, Section 21161). Concurrent with the NOC, this Draft EIR has been distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the Draft EIR in accordance with Public Resources Code 21092(b)(3). During the public review period, the Draft EIR, including the technical appendices, is available for review at the City of Healdsburg offices. The address is provided below:

City of Healdsburg
Planning and Building Department
401 Grove Street
Healdsburg, CA 95448

Hours:
Monday–Thursday: 7:30 a.m.–5:30 p.m.
Every other Friday: 8:00 a.m.–5:00 p.m.

Agencies, organizations, and interested parties have the opportunity to comment on the Draft EIR during the 45-day public review period. Written comments on this Draft EIR should be addressed to:

Maya DeRosa, Planning and Building Director
City of Healdsburg
Planning and Development Department
401 Grove Street
Healdsburg, CA 95448
Phone: 707.431.3348
Email: mderosa@ci.healdsburg.ca.us

Submittal of digital comments in Microsoft Word or Adobe PDF format is encouraged. Upon completion of the public review period, written responses to all significant environmental issues raised will be prepared and made available for review by the commenting agencies at least 10 days prior to the public hearing before the City of Healdsburg on the proposed plan, at which the certification of the Final EIR will be considered. Comments received and the responses to comments will be included as part of the record for consideration by decision-makers for the proposed plan.

Executive Summary Matrix

Table ES-1 below summarizes the impacts, mitigation measures, and resulting level of significance after mitigation for the relevant environmental issue areas evaluated for the proposed plan. The table is intended to provide an overview; narrative discussions for the issue areas are included in the corresponding section of this EIR. Table ES-1 is included in the EIR as required by CEQA Guidelines Section 15123(b)(1).

Table ES-1: Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Section 3.1—Aesthetics		
Impact AES-1: The proposed plan would not result in visually-obtrusive development on scenic ridgelines designated in the Healdsburg General Plan.	None	No Impact
Impact AES-2: The proposed plan would not substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within the viewshed of a State scenic highway or a scenic highway designated in the Healdsburg General Plan.	None	Less than significant
Impact AES-3: The proposed plan would not substantially degrade the existing visual character or quality of the plan area and its surroundings.	None	Less than significant
Impact AES-4: The proposed plan would not create a new source of substantial light or glare that would adversely affect nighttime or daytime views in the area.	None	Less than significant
Cumulative Impact	None	Less than significant
Section 3.2—Transportation/Traffic		
Impact TRANS-1: The proposed plan could conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all transportation modes, including public transit and non-motorized travel and relevant components of the circulation system.	**MM TRANS-1a**: To address anticipated deficient roadway operations, the City has planned for roadway improvements to Dry Creek Road/U.S. 101 South Ramps (study intersection 1) include signalization. New development within the plan area shall be required to contribute a proportional share allocation towards the cost of installation of a traffic signal at Dry Creek Road/U.S. 101 South. **MM TRANS-1b**: New development within the plan area shall be required to contribute a proportional share allocation towards the cost of improvements to the northbound approach to Dry Creek Road/Grove Street (study intersection 3). The approach shall be restriped to include a separate left-turn lane and the signal modified to provide protected left-turn phasing, with the existing right-turn lane converted to use for through/right-turn movements.	Significant and unavoidable with mitigation

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Impact TRANS-2: The proposed plan would not conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	None	No impact
Impact TRANS-3: The proposed plan could result in inadequate emergency access.	Implement Mitigation Measures HAZ-2 and the following: **MM TRANS-3**: Prior to development of the plan area, an emergency vehicle only access point shall be established such that access and egress can be maintained during a train pre-emption.	Less than significant with mitigation
Impact TRANS-4: The proposed plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycling, or walking facilities, or otherwise decrease the performance or safety of such facilities.	None	Less than significant
Impact TRANS-5: The proposed plan could increase hazards due to a design feature (e.g., sharp curves or dangerous intersections or lane storage) or incompatible uses (e.g., farm equipment).	**MM TRANS-5**: New development within the plan area shall be required to contribute a proportional share allocation towards the cost of widening Dry Creek Road to accommodate a westbound left-turn lane the entire length between the U.S. 101 South and North Ramps. The amount paid shall include a proportional share of the cost to widen the westbound approach to Dry Creek Road/U.S. 101 North Ramps to include a second lane; the left lane would feed into the left-turn lane at the U.S. 101 South Ramps and the right lane would be a shared through/right-turn lane serving through traffic and right turns onto the U.S. 101 North on-ramp. These improvements would allow queues in the westbound left-turn lane at the U.S. 101 South Ramps to stack beyond the Dry Creek Road/U.S. 101 North Ramps intersection, if needed, without impacting through traffic.	Significant and unavoidable with mitigation
Cumulative Impact	None	Significant and Unavoidable

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Section 3.3—Air Quality		
Impact AIR-1: The proposed plan would not violate an applicable federal or state ambient air quality standard or contribute substantially to an existing or projected air quality violation.	None	Less than significant
Impact AIR-2: The proposed plan would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which, exceed quantitative thresholds for ozone precursors).	None	Less than significant
Impact AIR-3: The proposed plan would not expose sensitive receptors to substantial pollutant concentrations.	Implement MM HAZ-1 and the following: **MM AIR-3**: Prior to occupancy of any residential components of the proposed plan that would occur while construction within the plan area is still underway, the applicant shall retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with the ARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of plan residents to TACs. The HRA shall be submitted to the Planning Division for review and approval. If the HRA concludes that the air quality risks from ongoing or future construction activities will result in health risks for on-site receptors that are above BAAQMD recommended thresholds that are in place at the time of the analysis (Section 2.3 of the 2017 BAAQMD CEQA Guidelines), then additional measures, such as the requirement for construction equipment to meet certain Tier engine standards for off-road equipment, will be required for all subsequent phases of construction. Alternatively, this mitigation measure can be satisfied by delaying occupancy of any on-site residential components until construction of the entirety of the proposed plan area is complete.	Less than significant with mitigation
Cumulative Impact	Implement MM AIR-3, and MM HAZ-1	Less than significant with mitigation

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Section 3.4—Greenhouse Gas Emissions and Energy		
Impact GHG-1: Implementation of the proposed plan could conflict with applicable measures of the Scoping Plan adopted by the State of California to reduce GHG emissions to 1990 levels by 2020.	**MM GHG-1**: Prior to the final discretionary approval for each development project in the plan area, each developer shall provide documentation to the City of Healdsburg demonstrating that the proposed development would meet the BAAQMD recommended threshold of significance for individual projects or would achieve additional GHG emissions reductions sufficient to meet recommended threshold through a combination one of more of the following measures and/or other comparable measures approved by the City: • Commit to 100 percent renewable energy use through a combination of use of on-site renewable energy and Healdsburg Electric's "Green Rate" program. • Install onsite solar panels to generate electricity on-site electricity consumption. • Provide documentation of how a ride sharing program or other transportation demand management program for hotel, office, and retail employees would be implemented starting no later than 60 days after operations begin. Use of electric vehicles for ride-share program would further reduce GHG emissions. • Install electric vehicle charging stations at workplace and multi-family residences to promote the use of electric vehicles. • Use heat-pumps (rather than natural gas) for heating of residential and commercial spaces. • Purchase voluntary carbon credits from a verified GHG emissions credit broker in an amount sufficient to offset operational GHG emissions that exceed the recommended significance threshold over the lifetime of the proposed development (or a reduced amount estimated based on implementation of other measures listed above). Copies of the contract(s) shall be provided to the City.	Less than significant with mitigation
Impact GHG-2: Implementation of the proposed plan could conflict with an applicable plan, policy, or regulation adopted by the City for the purpose of reducing GHG emissions.	Implement MM GHG-1	Less than significant with mitigation

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Impact GHG-3: Implementation of the proposed plan would not encourage activities that result in the use of large amounts of energy, or use of energy in a wasteful manner.	None	Less than significant
Cumulative Impact	Implement MM GHG-1	Less than significant with mitigation
Section 3.5—Noise		
Impact NOI-1: The proposed plan could **r**esult in a substantial temporary, periodic or permanent increase in ambient noise levels in the project vicinity that would conflict with the Healdsburg General Plan's Land Use Compatibility for Community Noise Environments guidelines of the City of Healdsburg Noise Ordinance or applicable standards of other agencies.	**MM NOI-1a**: To reduce the occurrence of potentially-significant construction noise impacts to noise-sensitive receptors in the plan area vicinity (or sensitive receptors within the plan area during future buildout), the construction contractor for each development project within the plan area shall comply with the following: • Equip internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and are appropriate for the equipment. • Locate stationary noise-generating equipment as far as possible from sensitive receptors in the vicinity. • Locate staging areas and construction material areas as far away as possible from adjacent land uses. • Prohibit all unnecessary idling of internal combustion engines. • Utilize "quiet" air compressors and other stationary noise sources where technology exists. • Erect temporary noise control blanket barriers in a manner to shield noise-sensitive uses. • Control noise levels from workers' amplified music so that sounds are not audible to sensitive receptors in the vicinity. • If impact pile driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced. • If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the	Less than significant with mitigation

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
	adjacent land uses. Such noise control blanket barriers can be rented and quickly erected. • If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing. • Designate a "disturbance coordinator" responsible for responding to complaints about each project development's construction noise and taking reasonable measures to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in any notice sent to neighbors regarding the construction schedule. • The construction contract shall prohibit noise producing construction activities between the hours of 6:00 p.m. and 7:30 a.m. Monday through Saturday, or at any time on a Sunday or legal holiday. **MM NOI-1b:** Prior to the issuance of building permits for each development project within the plan area, the following requirements shall be implemented: • For multi-family residential or motel/hotel projects proposed in areas where exterior day/night average noise levels are, or are projected to exceed, 65 dBA L_{dn} (i.e., within 290-feet of the centerline of U.S. 101), an acoustic analysis shall be prepared that recommends project improvements, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. This can typically be accomplished with the incorporation of an adequate forced air mechanical ventilation system in the residential units to allow residents the option of controlling noise by keeping the windows closed. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis. • For school, library, church, hospital, nursing home, neighborhood park, or commercial projects proposed in areas where exterior day-night average noise levels are, or are projected to exceed 70 dBA L_{dn} (i.e., within 140-	

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
	feet of the centerline of U.S. 101) an acoustic analysis shall be prepared that recommends project improvements, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}, if needed. Standard office construction methods typically provide about 25 to 30 decibels of noise reduction in interior spaces. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis. **MM NOI-1c:** Prior to the issuance of building permits for each development project within the plan area, the following requirement, if applicable, shall be met : • For any noise-sensitive land uses proposed within 50-feet of the railroad centerline, the City shall ensure that an acoustic analysis be prepared that recommends project improvements, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.	
Impact NOI-2: The proposed plan could expose persons to, or generate excessive groundborne vibration or groundborne noise.	**MM NOI-2:** Prior to the issuance of building permits for each development project within the plan area, an acoustic analysis is conducted by a qualified noise specialist shall be prepared for structures in the plan area that are located within 100 feet of the centerline of the railroad. The analysis shall specify measures including, but not limited to, setbacks and structural design features that will reduce vibration levels at or below the guidelines of the FTA Groundborne Vibration Impact Criteria shown in Table 3.5-7. The City shall confirm that the recommendations will reduce vibration levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.	Less than significant with mitigation
Impact NOI-3: The proposed plan would not cause a substantial permanent increase in ambient noise levels in the vicinity of the plan area above levels existing without the project.	None	Less than significant

Table ES-1 (cont.): Executive Summary Matrix

Impacts	Mitigation Measures	Level of Significance After Mitigation
Impact NOI-4: The proposed plan could result in a substantial temporary or periodic increase in ambient noise levels in the vicinity of the site above levels existing without the project.	Implement MM NOI-1a	Less than significant with mitigation
Cumulative Impact	None	Less than significant

CHAPTER 1: INTRODUCTION

This Environmental Impact Report (EIR) for the proposed North Entry Area Plan has been prepared in accordance with—and complies with—criteria, standards, and procedures of the California Environmental Quality Act (CEQA), as amended (California Public Resources Code, Section 21000, et seq.) and the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000, et seq.). In accordance with Sections 21067, 15367, and 15050–15053 of the CEQA Guidelines, the City of Healdsburg (City) is the lead agency under whose authority this document has been prepared. As an informational document, this EIR is intended for use by City and other public agency decision-makers and members of the public in evaluating the potential environmental impacts of the proposed plan.

Section 1.1 - Plan Overview

The Healdsburg 2030 General Plan identifies five areas within the City that warrant further study beyond the policies contained in the Healdsburg 2030 General Plan (at the time of its adoption in 2009). These special study areas were selected based on unique locations or functions in the City. One of these five study areas is the North Entry Study Area, which encompasses the vacant 30.16-acre property currently owned by Comstock Healdsburg, LLC, (referred to as the "North Village site") on the west side of Healdsburg Avenue, Healdsburg Avenue from the northern City boundary south to Foss Creek, and approximately 256 acres of land immediately to the east of the identified portion of Healdsburg Avenue.

The City is preparing the North Entry Area Plan (referred herein as the "proposed plan" or the "NEAP") as an amendment to the Healdsburg 2030 General Plan land use element and policies, to establish more specific guiding principles and a design framework for development of the 30.16-acre North Village site. The primary purpose is to create a long-term vision for development that will realize the site's potential and that is consistent with the Healdsburg 2030 General Plan. As an "area plan," the NEAP is a regulatory document that amends the Healdsburg 2030 General Plan and provides clear guidance to City decision-makers and members of the public when considering future site-specific development projects in the plan area.

The 30.16-acre North Village site consists of four vacant lots. The plan area also encompasses an existing railroad right-of-way, a 0.15-acre State-owned parcel, and Healdsburg Avenue (a public street). Following adoption of the proposed NEAP, Comstock Healdsburg, LLC intends to develop the property with mixed-use development. The plan area is an important location at the northern gateway to Healdsburg where the landscape transitions from Alexander Valley agricultural uses to Healdsburg town uses. It is anticipated that the NEAP will be relied upon by the City when considering future proposals for development of the North Village site.

Section 1.2 - Plan Area Background

In 2004, the 30.16-acre North Village site within the plan area was improved to help facilitate future development. Improvements consisted of demolition of structures associated with a former lumber mill, contaminated soil remediation, grading, drainage improvements, and wetland mitigation. The

property was graded to establish positive sheet flow drainage toward Healdsburg Avenue, and an on-site stormwater collection, retention, and a discharge system was installed to improve the overall quality of stormwater runoff. A ditch along the western side of the North Village site was realigned to a location closer to the toe of the U.S. 101 embankment slope. The flat portion of the property was extended to the north, and the ditches along the toe of the hill to the north were realigned, creating approximately 18 acres of level land area. Realigned ditches along the toes of the western and northern slopes of the property were planted with native vegetation to mitigate impacts.

A ditch along the eastern side of the North Village site, which runs parallel to the railroad right-of-way, was previously re-sloped to reduce bank erosion. As a result, stormwater drainage generally flows southeastward towards the drainage ditch, and then flows into a 0.7-acre stormwater detention basin at the southern end of the property. The basin is sized to handle smaller storm events and is used to filter sediments and contaminants, thus improving the quality of stormwater runoff from the plan area into Foss Creek. The site demolition and regrading work was completed and inspected in January 2005.

On September 23, 2010, the California Public Utilities Commission (CPUC) approved the conversion of an existing private at-grade rail crossing at an entry to the North Village site from Healdsburg Avenue to a public crossing (CPUC Decision 10-09-034; CPUC Crossing No. 005-70.85, US DOT No. 968011 N.) The proposed improvements will increase the width of the railroad crossing easement from 20 feet to 70 feet in order to consolidate access for vehicles, pedestrians, and utilities at one location, and to accommodate future improvements for the roadway. The City of Healdsburg has entered into an agreement to accept the crossing once the property owner completes installation of approved crossing improvements.

Section 1.3 - Environmental Review Process

An EIR is an informational document used by a lead agency (in this case, the City) when considering approval of a project or plan. The purpose of an EIR is to provide public agencies and members of the public with detailed information regarding the environmental effects associated with implementing a project or plan. An EIR should analyze the environmental consequences of a project or plan, identify ways to reduce or avoid the associated potential environmental effects, and identify alternatives to the project or plan that can avoid or reduce impacts. Pursuant to CEQA, State and local government agencies must consider the environmental consequences of projects over which they have discretionary authority. This EIR provides information to be used in the planning and decision-making process. It is not the purpose of an EIR to recommend approval or denial of a project or plan.

Before approval of the NEAP, the City of Healdsburg, as lead agency and the decision-making entity, is required to certify that this EIR has been completed in compliance with CEQA, that the information in the EIR has been considered, and that the EIR reflects the independent judgment of the City. Pursuant to CEQA, decision makers must balance the benefits of a project or plan against its unavoidable environmental consequences. If environmental impacts are identified as significant and unavoidable, the City may still approve the plan if it finds that social, economic, or other benefits outweigh the unavoidable impacts. The City would then be required to state in writing the specific reasons for approving the plan, based on information in the EIR and other information sources in the administrative

record. This reasoning is called a "statement of overriding considerations" (PRC Section 21081; CEQA Guidelines Section 15093).

In addition, the City as lead agency must adopt a mitigation monitoring and reporting program (MMRP) describing the measures that were made a condition of plan approval to avoid or mitigate significant effects on the environment (PRC Section 21081.6; CEQA Guidelines Section 15097). The MMRP is adopted at the time of plan approval and is designed to ensure compliance with the project description and EIR mitigation measures during and after plan implementation. If the City decides to approve the NEAP, it would be responsible for ensuring that the MMRP is implemented. The EIR will be used primarily by the City during approval of future discretionary actions and permits.

The environmental impacts of the proposed plan are analyzed in this EIR in accordance with CEQA Guidelines Section 15146. This EIR provides a program-level analysis of the environmental effects of the NEAP, and it also provides project-level analysis to the degree that reflects available development information.[1] This document addresses the potentially significant adverse environmental impacts that may be associated with implementation of the proposed plan. It also identifies appropriate and feasible mitigation measures and alternatives that may be adopted to significantly reduce or avoid these impacts.

CEQA requires that an EIR contain, at a minimum, certain specific components. These components are contained in this EIR and include:

- Table of Contents
- Introduction
- Executive Summary
- Project Description
- Environmental Setting
- Significant Environmental Impacts
- Mitigation Measures
- Cumulative Impacts
- Significant Unavoidable Adverse Impacts
- Alternatives
- Growth-Inducing Impacts
- Effects Found Not to be Significant (described in the Initial Study, included in Appendix A)
- Areas of Known Controversy

The City of Healdsburg is designated as the lead agency for the plan. CEQA Guidelines Section 15367 defines the lead agency as ". . . the public agency, which has the principal responsibility for carrying out or approving a project." Other public agencies may use this EIR in the decision-making or permit process and consider the information in this EIR along with other information that may be presented during the CEQA process.

[1] A project-level EIR focuses on the environmental changes caused by a development project, including planning, construction, and operation. A program EIR looks at the broad policy of a planning document and may not address potential site-specific impacts of the individual projects that may be developed in compliance with the planning document. Since only some project-level details are known for future development under the NEAP, a combination project- and program-level EIR is appropriate.

This EIR was prepared by FirstCarbon Solutions (FCS), an environmental consultant. Prior to public review, it was extensively reviewed and evaluated by the City of Healdsburg. This EIR reflects the independent judgment and analysis of the City of Healdsburg as required by CEQA. Lists of organizations and persons consulted and the report preparation personnel is provided in Chapter 6 of this EIR.

Section 1.4 - Purpose and Legal Authority

1.4.1 - Notice of Preparation and Public Scoping Process

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, the City of Healdsburg, as lead agency, sent the Notice of Preparation (NOP) to responsible and trustee agencies, and interested entities and individuals on June 21, 2018, thus beginning the formal CEQA scoping process. The purpose of the scoping process is to allow the public and government agencies to comment on the issues and provide input on the scope of the EIR. The NOP mailing list included federal, State, and local agencies, regional and local interest groups, and property owners within 300 feet of the plan area. The scoping period began on June 21, 2018, and ended on July 20, 2018, representing the statutory 30-day public review period. The NOP is contained in Appendix A.

Pursuant to Section 15083 of the CEQA Guidelines, the City of Healdsburg held a public scoping meeting on June 28, 2018, starting at 6:00 p.m. at 401 Grove Street, Healdsburg, CA 95448. Attendees were given an opportunity to provide comments and express concerns about the potential effects of the plan. No individuals provided verbal comments on the content of the EIR at the scoping meeting; however, environmental concerns were raised in comment letters and during the scoping period. Appendix A contains a copy of the one written comment letter that was received in response to the NOP. Comments from that written letter are summarized in Table 1-1, with cross-references to applicable EIR appendices and sections where comments are addressed.

Table 1-1: Summary of Comments Received in Response to the Notice of Preparation

Agency/Organization	Author	Date	Comment Summary	Coverage in the DEIR
Public Agencies				
California Department of Transportation (Caltrans)	Patricia Maurice—District Branch Chief, Local Development—Intergovernmental Review	7/20/2018	The EIR should study biological resources, cultural resources and traffic impacts. The cultural analysis should consider archaeological resources and include tribal consultation.	• Appendix A (Initial Study) • Section 3.2: Transportation/ Traffic
Source: FCS, 2018.				

1.4.1 - Public Review

Upon completion of this Draft EIR, the City of Healdsburg filed a Notice of Completion (NOC) with the State Office of Planning and Research to begin the public review period (Public Resources Code, Section 21161). Concurrent with the NOC, the Draft EIR has been distributed to responsible and trustee agencies, other affected agencies, surrounding cities, and interested parties, as well as all parties requesting a copy of the Draft EIR in accordance with Public Resources Code 21092(b)(3). During the public review period, the Draft EIR, including the technical appendices, is available for review at the City of Healdsburg at the location provided below. Agencies, organizations, and interested parties have the opportunity to comment on the Draft EIR during the 45-day public review period. Written comments on the Draft EIR should be addressed to:

Maya DeRosa, Planning and Building Director
City of Healdsburg
Planning and Development Department
401 Grove Street
Healdsburg, CA 95448
Phone: 707.431.3348
Email: mderosa@ci.healdsburg.ca.us

Submittal of electronic comments in Microsoft Word or Adobe PDF format is encouraged. Upon completion of the public review period, written responses to all significant environmental issues raised will be prepared and made available for review by the commenting agencies at least 10 days prior to the public hearing before the Healdsburg City Council on the plan, at which the certification of the Final EIR will be considered. Comments received and the responses to comments will be included as part of the record for consideration by decision makers for the plan.

1.4.2 - Environmental Issues Determined Not to be Significant

The Initial Study (included in Appendix A) identified individual sub-topical areas that were determined not to be significant. Therefore, the following specific issues are not further analyzed in this EIR:

- Scenic Resources within a State Scenic Highway (Section 2.1, Aesthetics)
- Farmland Conversion (Section 2.2, Agriculture and Forestry Resources)
- Williamson Act Lands (Section 2.2, Agriculture and Forestry Resources)
- Zoned Forest Lands (Section 2.2, Agriculture and Forestry Resources)
- Forest Lands Conversion (Section 2.2, Agriculture and Forestry Resources)
- Conversion of Farmland or Forest Land (Section 2.2, Agriculture and Forestry Resources)
- Air Quality Plan (Section 2.3, Air Quality)
- Policies Protecting Biological Resources (Section 2.4, Biological Resources)
- Habitat, Natural Community, or Other Conservation Plan (Section 2.4, Biological Resources)
- Cultural Resource Determined by Lead Agency (Section 2.5, Cultural Resources)
- Wastewater Disposal Systems (Section 2.6, Geology and Soils)
- Exposure of Schools to Hazardous Materials (Section 2.7, Hazards and Hazardous Materials)
- Private Airstrips (Section 2.7, Hazards and Hazardous Materials)

- 100-Year Floods (Section 2.8, Hydrology and Water Quality)
- Conservation Plans (Section 2.10, Land Use and Planning)
- Regional and Local Mineral Resources (Section 2.11, Mineral Resources)
- Aviation Noise (Section 2.12, Noise)
- Displace Housing (Section 2.13, Population and Housing)
- Displace People (Section 2.13, Population and Housing)
- Construction of Recreational Facilities (Section 2.15, Recreation)
- Air Traffic Patterns (Section 2.16, Transportation/Traffic)
- Waste Regulations (Section 2.17, Utilities and Service Systems)

1.4.3 - Potentially Significant Environmental Issues

The Initial Study (included in Appendix A) found that the following topical areas may contain potentially significant environmental issues that will require further analysis in the EIR. These sections are as follows:

- Aesthetics
- Transportation/Traffic
- Air Quality
- Greenhouse Gas Emissions and Energy
- Noise

The City prepared the Initial Study to identify potential environmental impacts from implementation of the proposed plan. The purpose of the Initial Study was to determine the level of environmental analysis required and to solicit input from the public, public agencies, and other interested parties. As discussed in the Initial Study, the City identified ways to avoid or lessen environmental effects through plan-level mitigation measures, impact-specific requirements, and City-imposed conditions of approval that would apply to subsequent development projects within the plan area. The analysis contained in the Initial Study determined that the following mitigation measures, as required prior to plan approval and in conjunction with plan implementation, would adequately address potential environmental impacts, and no further respective analysis was required. The mitigation measures identified in the Initial Study are provided below and incorporated by reference in this EIR.

- Mitigation Measure BIO-1 related to migratory birds and nesting raptors
- Mitigation Measure BIO-2 related to federally protected wetlands
- Mitigation Measure CUL-1 related to potentially significant cultural resources
- Mitigation Measure CUL-2 related to fossils or fossil-bearing deposits
- Mitigation Measures CUL-3 related to discovery of human remains
- Mitigation Measure HAZ-1 related to fugitive dust emissions
- Mitigation Measure HAZ-2 related to secondary emergency vehicle access point

Section 1.5 - EIR Document Organization

This EIR is organized into the following chapters and sections:

- **Chapter ES: Executive Summary.** This Chapter includes a summary of the proposed plan and alternatives to be addressed in the EIR. A brief description of the areas of controversy and issues to be resolved, and overview of the Mitigation Monitoring and Reporting Program—in addition to a table that summarizes the impacts, mitigation measures, and level of significance after mitigation—are also included in this Chapter.
- **Chapter 1: Introduction.** This Chapter provides an introduction and overview describing the purpose of this EIR, its scope and components, and its review and certification process.
- **Chapter 2: Project Description.** This Chapter includes a detailed description of the proposed plan, including its location, site, and development characteristics. A discussion of the plan objectives, intended uses of the EIR, responsible agencies, and approvals that are needed for the proposed plan is also provided.
- **Chapter 3: Environmental Impact Analysis.** This Chapter analyzes the environmental impacts of the proposed plan. Impacts are organized into major topical areas. Each topical area includes a description of the environmental setting, regulatory framework, significance criteria, significance thresholds, methodology, impacts (plan-level and cumulative-level), and mitigation measures if applicable. The specific environmental topics that are addressed within Chapter 3 are as follows:
  - **Section 3.1—Aesthetics:** Addresses the potential visual impacts of development intensification and increase in glare and nighttime illumination produced by development under the plan.
  - **Section 3.2—Transportation/Traffic:** Addresses the impacts of plan-related traffic on the local and regional roadway system, public transportation, bicycle, and pedestrian access.
  - **Section 3.3—Air Quality:** Addresses the potential air quality impacts associated with plan implementation, as well as consistency with the Bay Area Clean Air Plan (2017).
  - **Section 3.4—Greenhouse Gas Emissions and Energy:** Addresses the potential impacts of plan implementation on greenhouse gas (GHG) emissions and energy consumption.
  - **Section 3.5—Noise:** Addresses the potential noise impacts during construction, and at plan buildout from mobile and stationary sources. The section also addresses the impact of noise generation on neighboring uses.
- **Chapter 4: Alternatives.** This Chapter compares the impacts of the proposed plan with land-use plan alternatives. An environmentally superior alternative is identified. In addition, alternatives initially considered but rejected from further consideration are discussed.
- **Chapter 5: Other CEQA Considerations.** This Chapter provides a summary of significant environmental impacts, including unavoidable and growth-inducing impacts.
- **Chapter 6: Persons and Organizations Consulted/List of Preparers.** This Chapter contains a list of persons and organizations that were consulted during the preparation of the EIR. This

Chapter also contains a full list of the authors who assisted in the preparation of the EIR, by name and affiliation.

- **Appendices.** The EIR appendices include notices and other procedural documents pertinent to the EIR, as well as supporting technical materials. The following appendices were prepared for the proposed plan in support of preparation of this EIR:
  - EIR NOP, Initial Study, and EIR Public Scoping Comments (Appendix A)
  - Transportation Impact Study, prepared by W-Trans (Appendix B)
  - Air Quality and Greenhouse Gas Emissions Modeling Outputs, prepared by FirstCarbon Solutions (Appendix C)
  - Noise Modeling Outputs, prepared by FirstCarbon Solutions (Appendix D)

CHAPTER 2: PROJECT DESCRIPTION

The City of Healdsburg proposes to adopt the North Entry Area Plan (NEAP). The proposed NEAP (also referred to as the "proposed plan") would establish specific guiding principles and a design framework for development of a 30.16-acre area (herein referred to as the "plan area") located within the northern city limits. The purpose of this Environmental Impact Report (EIR) is to identify potential environmental impacts from implementation of the proposed plan within the City of Healdsburg, California. This chapter provides a detailed overview of the plan area and setting, project objectives, proposed plan development details, characteristics, and phases, and required permits and approvals.

Section 2.1 - Project Location and Setting

2.1.1 - Regional Location

The City of Healdsburg is located in northern Sonoma County within the nine-county San Francisco Bay Area and 12 miles north of the City of Santa Rosa, which serves as the County seat (Exhibit 2-1). The Town of Windsor lies 4 miles to the south of Healdsburg, and the unincorporated community of Geyserville is located 8 miles to the north. The City of Cloverdale is located approximately 18 miles further north.

The City is situated in an inland valley defined principally by U.S. 101, the Russian River and surrounding agricultural lands, the Mayacamas Mountains to the east, and the Sonoma and Coast Ranges to the west. U.S. 101 is the principal route between San Francisco and the Oregon border. The Russian River flows through Healdsburg on its way to the Pacific Ocean, approximately 20 miles to the west. The City lies at the intersection of three rich agricultural valleys: the Russian River Valley, Dry Creek Valley, and Alexander Valley. Terrain in the City varies between 100 to 430 feet in elevation. To the east and west, flanking the agricultural valleys, rise subsystems of the Coastal Mountain Range.

2.1.2 - Plan Area Location and Property Ownership

The plan area encompasses a property located at 16977 Healdsburg Avenue in the City of Healdsburg, Sonoma County, California (see Exhibit 2-2). The plan area is located within the northern Healdsburg city limit between U.S. 101 and Healdsburg Avenue. The plan area consists of the following:

- Three contiguous parcels owned by Comstock Healdsburg, LLC, totaling 30.16 acres (APN 091-060-022, 091-060-019, 091-060-009) located west of Healdsburg Avenue. These parcels are referred to as the "Quaker Hill site" and "Quaker Hill property" in the Healdsburg 2030 General Plan. The parcels are referred to as the "North Village site" in the proposed plan. For the purposes of this EIR, these parcels are referred to as the "North Village site" to maintain consistency with the proposed plan.

- A portion of the North Coast Rail Authority (NCRA) right-of-way (APN 091-060-033) traverses the plan area on an alignment roughly parallel to Healdsburg Avenue. The rail line is currently inactive, but is planned for future passenger rail service operated by Sonoma-Marin Area Rail Transit (SMART).
- Property between the NCRA right-of-way and Healdsburg Avenue is also owned by Comstock Healdsburg, LLC and will be improved in conjunction with development of the North Village site (APN 091-060-025). There is also a 0.15-acre parcel owned by the State of California (APN 091-060-026). The State of California parcel is located adjacent to the northeast corner of the North Village site. An existing pipeline easement (for the City of Santa Rosa's Geysers pipeline) runs along the State-owned parcel and a portion of the plan area.

The plan area is located on the Healdsburg, California, United States Geological Survey 7.5-minute topographic quadrangle map, Township 9 North, Range 9 West, Section 8 (Latitude 38°61'04" North; Longitude 122°86'91" West).

2.1.3 - Existing Plan Area Characteristics

The plan area comprises a transition area between the rural landscape of the Alexander Valley to the north, and the more urbanized downtown core of Healdsburg approximately two miles to the south.

The irregularly-shaped plan area is vacant and unimproved except for the railroad right-of-way, drainage improvements, and a portion of Healdsburg Avenue. Roughly 18 acres of the plan area is located on relatively flat, grass-covered land that was previously graded. The northern and southwestern edges of the plan area consist of sloping hillsides with woodland vegetation. Existing drainage on-site includes swales at the perimeter of the graded pad, and a stormwater detention basin in the southeast. There are two active faults within the plan area that were identified by a geotechnical investigation.[1] Both faults run diagonally from northwest to southeast; one on the northern portion of the plan area, and the other on the southern portion of the plan area. The NCRA rail line traverses the plan area from north to south along an 80-foot-wide right-of-way located along the eastern portion of the plan area roughly parallel to Healdsburg Avenue. The SMART District, created by the State Legislature in 2003, obtained a perpetual passenger service easement over the rail line. Passenger rail services are planned along this line through the plan area in the future.

2.1.4 - Existing General Plan Land Use Designation and Zoning

Land Use Designation

The Healdsburg 2030 General Plan currently designates the plan area as Mixed Use (MU) allowing residential densities of 10-16 units per acre.

Zoning

The Healdsburg Municipal Code (HMC) currently assigns the plan area the MU zoning designation.

[1] Kleinfelder, Inc. Geotechnical Investigation for Quaker Hill Property, Healdsburg, California (September 2017).

Source: Census 2000 Data, The CaSIL

FIRSTCARBON SOLUTIONS™

5 2.5 0 5 Miles

Exhibit 2.1
Regional Location Map

THIS PAGE INTENTIONALLY LEFT BLANK

Source: bing Aerial Imagery.

FIRSTCARBON SOLUTIONS™

1,000 500 0 1,000
Feet

Exhibit 2.2
Plan Area Boundary

THIS PAGE INTENTIONALLY LEFT BLANK

Pursuant to HMC section 20.08.155, the MU zoning district allows for a broad range of land uses. The MU zoning district allows the following land use categories as either permitted or conditionally permitted uses: residential, retail trade, service, entertainment, food and beverage production, utilities, and accessory uses incidental to an allowable land use.[2] Healdsburg 2030 General Plan Policy LU-18 specifically prohibits the following commercial uses within the MU district in the planning area: Regional or community shopping center; Grocery- or drugstore-anchored neighborhood shopping center; Home improvement or hardware store; and Automobile dealership or service station.

2.1.5 - Surrounding Land Uses

Land uses near the plan area include U.S. 101 to the west, Healdsburg Avenue and the Montage Healdsburg development to the east, a hillside parcel owned by Lytton Rancheria of California to the north, and Foss Creek and a vacant parcel owned by Simi Winery to the south (Exhibit 2-2). Farther west and east of the plan area are agricultural areas, and farther south and southeast of the plan area are residential uses including the Parkland Farms subdivision on the east side of Healdsburg Avenue.

Section 2.2 - Plan Objectives

The City's objectives for the NEAP are to:

1. Create a community-supported, long-term vision for a mix of residential and commercial development that will help develop the plan area into an attractive gateway into Healdsburg from the north;
2. Create a livable and welcoming neighborhood for plan area residents and the surrounding Healdsburg community that complements, and does not undermine, the role of the downtown area as the commercial center of the City of Healdsburg;
3. Establish a visual character for plan area development that harmonizes with the rural character and natural landscape of its surroundings;
4. Provide development limitations and standards that make it feasible to develop a high quality, mixed-use community on the North Village site; and
5. Define and realize the plan area's full development potential to support a variety of feasible commercial developments and to provide new housing within the City of Healdsburg.

Section 2.3 - Proposed Plan Components

The Healdsburg 2030 General Plan identifies five areas within the City that warrant further study (referred therein as "special study areas"). These special study areas were selected based on unique locations or functions in the City. The proposed plan addresses the North Entry Study Area. The proposed plan will be adopted as an amendment to the Healdsburg 2030 General Plan land use

[2] City of Healdsburg. HMC, Section 20.08.155 *P*ermitted and conditionally permitted uses: MU District, see table 12. Website: http://www.codepublishing.com/CA/Healdsburg/#!/Healdsburg20/Healdsburg2008.html#20.08.130. Accessed August 20, 2018.

element and policies. The proposed plan is intended to establish guiding principles and a design framework for the development of the 30.16-acre North Village site.

As discussed in Chapter 1: Introduction, following adoption of the proposed plan, Comstock Healdsburg, LLC intends to develop the North Village site with a mixed use development which may include senior residential, hotel, restaurant, retail, and multi-family residential uses. The plan and this EIR will be relied upon by the City when considering when considering future development proposals for the North Village site.

2.3.1 - Land Uses

The proposed plan contemplates the future construction and operation of a mixed-use community that would include residential and nonresidential land uses. Table 2-1 summarizes the land use types and building assumptions of the proposed plan:

Table 2-1: Proposed Plan Area Land Use Type and Buildout Assumptions

Land Use Type	Buildout Assumption Size
Residential[1]	290 units[3] (435,000 gsf)
Nonresidential (Retail/Services/Restaurant)[2]	200,000 gross square feet (gsf)[4]

Notes:
[1] Includes residential mixed use, multi-family housing (including families, singles, workforce and seniors), and residential care facilities.
[2] Includes grocery market or specialty food sales (e.g., 3,500 gsf or less), other retail (clothing, art, home décor, flowers, books, etc.), personal services (daycare, dry cleaning, fitness, massage, pet grooming, etc.), business support services, instructional services, medical services and visitor lodging, restaurant and café, and similar uses, and does not include large-box retail stores or regional retailer shopping centers.
[3] Roughly equivalent to 16 units per acre based on 18 acres of developable land.
[4] Roughly equivalent to 0.25 FAR based on 18 acres of developable land.
Source: City of Healdsburg, 2018.

An average of 1,500 gross square feet (gsf) is assumed for the proposed residential units to account for a range of unit sizes. Thus, a potential buildout of up to 435,000 gsf of residential and 200,000 gsf of nonresidential uses would result in a total approximate building area of 635,000 gsf. Development would be located on approximately 18 acres of the North Village site and would include multi-story buildings up to 50 feet in height. Buildings near the railway right-of-way and Healdsburg Avenue frontage are anticipated to maintain lower heights of not more than 35 feet, with taller heights increasing toward the hillside portions of the plan area. The overall development footprint would allow for approximately 12 acres of open and undeveloped land to remain in the plan area, primarily located on the hillsides of the North Village site. Table 2-2 more specifically breaks down the proposed residential and non-residential land uses listed in Table 2-1 to establish a "maximum" development scenario, which is used for the technical analyses in this EIR.

Table 2-2: Specific Development Summary

Land Use Type	Buildout Assumption Size
Multi-family Residences	290 units (435,000 gsf)
Hotel	130 rooms (130,000 gsf)
Commercial/Professional Services	40,000 gsf
Retail Uses	30,000 gsf
Note: This EIR modeling and analysis is based on the land use assumptions included in this specific development summary table. Source: City of Healdsburg, 2018	

Location of Future Uses within Plan Area

For the purposes of the environmental analysis, assumptions were made regarding the location of various uses within the plan area. These assumptions were made in consultation with the property owner (Comstock Healdsburg, LLC) and are anticipated to approximate their future proposal for the North Village site.

Residential uses types (i.e., multi-family housing) would be generally located in the southern half of the plan area and west of Healdsburg Avenue and the NCRA rail line. A hotel would be generally located in the northwestern portion of the plan area to the east of U.S. 101. Commercial buildings with a mix of professional services would be generally located in the northeastern portion of the plan area to the west of Healdsburg Avenue and the NCRA rail line. A retail center would be generally located in the northeastern portion of the plan area to the west of Healdsburg Avenue and the NCRA rail line.

2.3.2 - Circulation, Access, and Parking

Automobile

A new entrance road would replace the existing private railroad crossing to provide vehicular access to the North Village site via a public at-grade crossing. The planned improvements received approval from the California Public Utilities Commission (CPUC) and NCRA and included major safety improvements to the railway crossing. The at-grade crossing improvements are anticipated to be completed by the end of 2018.

Roadways within the plan area would be curvilinear to create visual interest and support a pedestrian-oriented environment. Travel lanes would be a relatively narrow 11 feet to limit vehicle speeds and calm traffic with a minimum road width of 22 feet and additional width provided where necessary to meet fire safety requirements. Two classifications of internal streets would be provided: a primary street and secondary streets.

The primary street would lead from the North Village entry at Healdsburg Avenue to anticipated areas of activity at the north end of the site. The primary street would include on-street parking and walkways on both sides, separated from the street by landscaping. Secondary streets would branch

off the primary street and lead between building clusters to parking areas and service entries in the interior of the development Secondary streets would serve as service roads and would not include on-street parking, but would have pedestrian walkways.

Vehicular parking would be focused primarily at the plan area edges in surface parking lots. The parking lots would be divided into smaller lots, separated by landscaping. Parking at the perimeter would free up interior space for landscaped open areas and gathering spaces. On-street parking on the primary street would provide for short-term and Americans with Disabilities Act (ADA)-compliant parking. Underground and podium parking would also provide convenient vehicular parking for plan area residents.

Emergency access would be provided via the plan area's entrance road at Healdsburg Avenue and by a secondary emergency vehicle access within the plan area.

Public Transit

Sonoma County Transit bus route 60 runs along Healdsburg Avenue and travels north-south through Santa Rosa, Windsor, Healdsburg, and Cloverdale. Recent infrastructure improvements by the Montage Healdsburg project include bus stops and turnouts on both sides of Healdsburg Avenue near the plan area entry.

Bicycle

In partnership with the Sonoma County Transportation Authority, the City prepared and adopted the 2008 Healdsburg Bicycle and Pedestrian Master Plan.[3] The City developed the plan, in part, to improve coordination in realizing the countywide bicyclist and pedestrian system. The plan assesses the needs of bicyclists and pedestrians in Healdsburg. The plan also identifies needed improvements and serves as a resource for local development projects. To achieve the City's transportation and multi-modal goals, the plan helps to enhance and expand existing facilities, close existing gaps, remove constraints, provide for greater local and regional connectivity and increase the potential for walking and bicycling.

The City anticipates improvements along Healdsburg Avenue to provide extended sidewalks north of Parkland Farms Boulevard. Improvements include newly constructed public and private trails that would provide bicycle and pedestrian circulation as well as Class I and II bicycle lanes. Bicycle access in the plan area would be provided via:

- **Healdsburg Avenue.** Bicyclists would access the plan area via Class II bicycle lanes along both sides of Healdsburg Avenue between Parkland Farms Boulevard and the northern city limits. These bike lanes are a component of the recently completed Healdsburg Avenue improvements.
- **Signalized Crossing.** Crosswalks across the planned Healdsburg Avenue signalized intersection would lead to multi-use paths for bicyclists and pedestrians adjacent to the entrance road leading into the plan area.

[3] City of Healdsburg. Healdsburg Bicycle and Pedestrian Master Plan (October 2008). Website: https://www.ci.healdsburg.ca.us/367/Bicycle-Pedestrian-Master-Plan.

- **Foss Creek Pathway.** The Foss Creek Pathway would be extended into the plan area as a Class I bicycle and pedestrian trail along the west side of Healdsburg Avenue.

Internal bicycle circulation would be incorporated along roadways where motor vehicles and bicyclists share roadway space. Low traffic speeds and volumes in the plan area coupled with street designs that meet minimum safety criteria such as adequate line of sight at intersections would enhance safety for bicyclists. Furthermore, signage and pavement markings ("sharrows") would be placed throughout internal roadways and at intersections to alert motorists of bicyclists sharing the road. Off-street multi-use paths that connect across the railroad at the primary street entry to the plan area may be provided for pedestrians and bicyclists. These multi-use paths would be a minimum of 12 feet wide.

Short-term bicycle parking would be provided at bicycle parking facilities located conveniently at building entries and gathering places.

Pedestrian

Pedestrian access would be provided to the plan area from two points: one along Healdsburg Avenue, and another at the Foss Creek Pathway. The signalized intersection at the entrance road at Healdsburg Avenue will incorporate an enhanced pedestrian crossing allowing access to the plan area from the east side of Healdsburg Avenue. A pedestrian sidewalk recently has been installed on the east side of Healdsburg Avenue from a point just north of the proposed signalized intersection to the existing sidewalk south of Foss Creek as part of the Healdsburg Avenue improvement project. Pedestrians would also be able to access the plan area from the south via the Foss Creek Pathway extension.

Internal pedestrian circulation would be provided on a pathway network that connects building clusters and open spaces. Pedestrian circulation would remain separated from roadways to provide a safe and pleasant pedestrian experience. In addition, a perimeter pathway could connect buildings, parking, open spaces, and plazas in a loop around the plan area.

2.3.3 - Design, Landscaping, and Lighting

Building Design, Height and Orientation

As discussed above, the MU zoning district allows a wide range of land uses. Table 2-3 summarizes the development standards in the proposed plan, which would be implemented by an amendment to the HMC to establish specific standards for a "North Entry Mixed Use" zoning designation.

Table 2-3: Development Standard Summary

Development Standard	Description
Minimum Lot Area	20,000 square feet
Maximum Floor-Area-Ratio[1]	48 percent
Maximum Site Coverage[1]	60 percent
Maximum Building Height[2]	28–35 feet for buildings within a band closest to Healdsburg Avenue right-of-way, as determined by Design Review approval process. 35 feet for building or portions of buildings fronting on the primary street.

Table 2-3 (cont.): Development Standard Summary

Development Standard	Description
	50 feet for buildings or portions of building within a band closest to western plan area boundary. Exceptions to this requirement are prescribed in HMC Section 20.16.065. Accessory building heights are regulated in HMC Section 20.16.030.
Maximum Floor Plate (per floor)	50,000 square feet for an individual building
Other Development Restrictions	No habitable structure shall be allowed on parcels located between the NCRA and Healdsburg Avenue rights-of-way. No habitable structure shall be allowed on slopes greater than 25 percent. No habitable structure shall be allowed within the 50-foot buffers of the fault traces in the plan area[3]. No habitable structure shall be allowed within the perimeter storm drainage easements.

Notes:
[1] Maximum floor-area-ratio and site coverage shall be calculated for the entire 32-acre site, not individually subdivided parcels. Residential floor area shall be counted when calculating the maximum Floor Area Ratio (FAR) for the plan area.
[2] Building heights shall be measured in accordance with HMC Section 20.16.060.
[3] See "Geologic and Geotechnical Investigation Healdsburg 32-acre Parcel Healdsburg California Project No. 17383" report (Kleinfelder, 2003) for locations of fault traces.
Source: City of Healdsburg, 2018

The proposed plan contains building design guidelines that seek to integrate buildings into the landscape and contours of the site. Cuts would be minimized and, where necessary, contoured to create a natural transition to the surrounding site. Building elements would be arranged in discrete clusters separated by generous landscaped areas and nestled against the hillsides to create a sense of a village. Buildings would be set back from the NCRA right-of-way at varying distances to create a diverse and interesting edge facing Healdsburg Avenue.

Buildings would be arranged in informal cluster around interior open spaces. The proposed plan provides for taller buildings (up to four or five stories) to be located at the base of the western slopes adjacent to U.S. 101. The buildings would gradually step down from west to east to lower scale buildings (two- to three-stories) fronting along Healdsburg Avenue. Table 2-4 summarizes permitted building heights by plan area location.

Table 2-4: Building Height Restrictions Summary

Plan Area Location	Permitted Height
Area closest to existing Healdsburg Avenue right-of-way	28 to 35 feet
Area fronting proposed central primary street	35 feet
Area closest to western plan area boundary	50 feet
Source: City of Healdsburg, 2018.	

A curving primary street leading into the site connects to a loose network of secondary streets that run between building clusters with pedestrian access provided by a network of pathways through open spaces and landscaping. Ground floors of buildings along the primary street are oriented toward the street with ground floor entries and commercial activity facing the street. Upper stories are oriented toward the street. Buildings along the eastern frontage present a welcoming edge to viewers on Healdsburg Avenue.

Parking lots would be primarily located underneath or at the rear or side of buildings, away from the primary street. Surface parking would be screened from views from Healdsburg Avenue by buildings and landscaping. Surface parking areas would be broken up into smaller discrete areas separated by landscaping. Along Healdsburg Avenue, parking areas are set back from the frontage and screened from view.

Landscaping and Open Space

The plan area is characterized as a rural setting with views of surrounding landscapes that include hillsides and vineyards to the east. The policy guidelines and development standards in the proposed plan highlight these attributes. Publicly accessible gathering spaces in future development would be landscaped with plants that reference the agrarian heritage of the region. For example, olive or fruit trees or trellises of grape or hop vines would be incorporated throughout the plan area. Landscaped areas would be sited to take advantage of views outward to the surrounding landscape.

As discussed above, a pathway network would provide a pedestrian-scale circulation network. The pathways would integrate and link interior open spaces between buildings. A visual connection between spaces–including private spaces–would create a greater sense of open space throughout the plan area. In addition to the internal open spaces, the proposed plan recommends a perimeter pedestrian trail around the entire plan area. The perimeter trail would serve as a recreational amenity that provides access throughout the plan area and allows direct views of the surrounding natural setting. As part of the perimeter trail, the proposed plan envisions a passive-use open space at the south end of the plan area. Given the natural topography of the plan area, the passive-use open space area would be adjacent to the on-site stormwater detention basin and the riparian habitat of Foss Creek. This location capitalizes on available scenic views of the surrounding landscape.

To the east of the plan area and Healdsburg Avenue, the Montage Healdsburg project includes future development of a 40-acre community park. The community park site is adjacent to the existing North Detention Basin and the 6-acre public Barbieri Brothers Park in the Parkland Farms residential neighborhood. The Montage community park is close enough to the plan area so that residents can walk to the park. Safe and convenient connections for bicyclists and walkers would be made between the plan area and the community park, and wayfinding signage leading to the park would be provided.

Lighting and Signage

Streetlights were installed along the east side of Healdsburg Avenue as part of the Healdsburg Avenue improvements implemented by the Montage project. A decorative street light standard was used to complement the aesthetics of the plan area, and to match existing and planned lighting in

the downtown and other prominent locations. Additional lighting will be required along the west side of Healdsburg Avenue and the Foss Creek Pathway extension when the plan area develops.

All exterior lighting would be designed to be compatible with the rural context of the surroundings. The proposed plan includes the following design parameters and guidance:

- The lighting scheme internal to the plan area would follow International Dark-Sky Association standards given the proximity to the rural surroundings of Healdsburg. Fixtures would be shielded from leakage off-site or upward.
- Street lighting would be limited to the minimum necessary for public safety and security of residents, visitors, and employees in order to maintain a rural character.
- Lighting should focus on smaller-scale, low-level lighting that illuminates pedestrian pathways and building entrances.
- Street, parking, and walkway lighting should be decorative and pedestrian scaled. Fixtures that light pavement at private streets and parking areas shall be no more than 20 feet in height, and pathways should be lit with bollards or pedestrian-scaled fixtures of no more than 12 feet in height.
- Fixtures shall be fully shielded to illuminate only downward. Shielded fixtures that direct light onto building surfaces such as porch roofs or walls to limit glare should illuminate entries into buildings. Uplighting of buildings, outdoor structures, or trees shall be limited to key ornamental features only.

2.3.4 - Infrastructure Improvements

City water, sewer, gas, and electrical services located within the Healdsburg Avenue right-of-way were recently upgraded as part of the Healdsburg Avenue improvement project completed by the Montage development. Services and connections for the plan area were considered in the design of those improvements and the new at-grade rail crossing at the plan area entry. Utilities will be encased under the NCRA right-of-way for ease of future maintenance. All necessary utilities will be extended on-site and will be located underground and serviced via Public Utility Easements. Utilities onto individual parcels will be extended from the private streets.

Water

The City currently provides water service to the plan area. Existing water services would be updated or replaced as part of future site development. Utilities will be encased under the NCRA right-of-way for ease of future maintenance. Water mains ranging from 2 to 12 inches in diameter would be extended into the plan area in a looped water system.

The City's water system includes two well fields adjoining the Russian River (Gauntlett and Fitch Mountain), one well field adjoining Dry Creek, several pumping stations, distribution lines, and six storage tanks and reservoirs. The Healdsburg Urban Water Management Plan and the Healdsburg Water System Master Plan guide the City's water supply, conservation, and capital improvement planning. The Gauntlett well field is at Digger's Bend on the Russian River, south of the plan area.

This water is pumped to the Gauntlett and Iverson reservoirs that have a combined capacity of 2.3 million gallons per day. The reservoirs are on a ridge just west of the Gauntlett well field and have a base elevation of approximately 400 feet. The Gauntlett well field and its reservoirs would be the primary water supply for the plan area.

Water mains in the plan area would be sized to provide adequate fire flow. New fire hydrants would be located on the internal street network per City of Healdsburg Engineering Design Standards and as directed by the City Engineer. All fire hydrant tees would be required to meet minimum fire flows and pressure. If water pressures are not sufficient to meet standards, development would be required to install a specially designed system with components (e.g., booster pumps and a standby generator for power backup) to ensure adequate water flow.

Stormwater

The plan area would have a private drainage system consisting of a combination of existing drainage swales around the perimeter and future improvements to storm drain infrastructure. All stormwater from the plan area would drain to an existing on-site stormwater detention pond located at the southeast corner of the plan area. The pond would treat and detain stormwater prior to release in Foss Creek. Piped stormwater would be filtered by vegetation-based stormwater control measures or filtered by proprietary stormwater treatment units prior to draining to the existing stormwater treatment pond or drainage swales. Treatment and stormwater detention would be designed in compliance with the Russian River Watershed Storm Water Low Impact Development Manual.

Sanitary Sewer

The City of Healdsburg currently provides the plan area with sewer service. An existing 15-inch sewer trunk in Healdsburg Avenue was sized to provide adequate capacity to serve the plan area. Existing sewer services would be updated or replaced as part of future site development. A 10-inch public sewer was extended to the plan area from Healdsburg Avenue in conjunction with the Healdsburg Avenue Improvement Project. Future extensions of sanitary sewer lines in the plan area would be within the rights-of-way of internal streets. The on-site wastewater collection system would be a private system owned and operated by the owner or owners.

Solid Waste and Recycling Collection

The City of Healdsburg's solid waste franchise operator would provide solid waste and recycling services to the plan area. The City currently contracts with Recology to provide solid waste collection and curbside recycling for commercial and residential uses. Services include individual bins to sort composting, recyclables, and solid waste. Recology currently provides a ZeroWaste recycling program, which helps commercial and residential properties apply best management practices to collect compostable, recyclable, and solid waste materials. Recology collects and transports residential and commercial solid waste to the Central Disposal Site Transfer Station at 500 Meacham Road in the City of Petaluma. Once at the transfer station, solid waste is sorted and hauled to three county landfills within the Bay Area: Redwood Landfill in Marin County, Keller Landfill in Contra Costa County, and

Potrero Hills Landfill in Solano County. Keller Canyon and Potrero Hills are expected to reach capacity in 2030, and Redwood Landfill is expected to reach capacity in 2039.[4]

Natural Gas, Electric and Telecommunication Services

Pacific Gas & Electric currently services the plan area with gas. The City of Healdsburg currently provides the plan area with electrical services. Existing services would be upgraded or replaced as part of future site development.

Natural gas service for the plan area would come from an existing gas main beneath Healdsburg Avenue.

Electric service for the plan area would be extended from Healdsburg Avenue. Existing utility poles along Healdsburg Avenue would be required to be removed and utilities undergrounded in conjunction with future development in the plan area. Utility lines within the plan area would be located underground.

Telecommunications point of connection would be located along the Healdsburg Avenue frontage of the plan area. Telecommunications would be located underground in utility easements or in the private right-of-way within a joint trench.

2.3.5 - Proposed General Plan Land Use Designation and Zoning

Land Use Designation

The plan area is identified as a special study area in the Healdsburg 2030 General Plan and designated Mixed Use. The land use designation in the General Plan would not change. However, the NEAP builds upon the General Plan's specific objectives for the North Entry Study Area and ensures that future development would be consistent with General Plan Policy LU-18. Pursuant to General Plan Policy LU-18, the City would require future development to obtain a conditional use permit or similar land use entitlement. In addition to a design review permit, the conditional use permit would define the physical and operational characteristics of development. The conditional use permit would also help to ensure that the mix of uses is compatible and consistent with the intent of the North Entry Area Plan.

Zoning

To implement the NEAP, the City would amend the HMC to establish a new "North Entry Mixed Use" zoning designation. The newly established zoning designation would include the specific development standards established in the NEAP. Development standards include a maximum floor-area-ratio of 48 percent. According to the proposed plan, maximum floor-area-ratio and site coverage would be calculated for the entire 32-acre site, not individually subdivided parcels. A zoning amendment would be processed concurrently with the proposed plan to provide specific MU requirements for future development on the North Village site.

[4] CalRecycle. Solid Waste Information System (SWIS) Facility/Site Search. Website: https://www2.calrecycle.ca.gov/swfacilities/Directory/43-AN-0015/Index.

2.3.6 - Phasing and Construction

Development of the North Village site under the proposed plan is expected to occur in two phases with the first phase starting in mid-2019 and lasting approximately 6 months. Phase 1 would include construction of internal circulation and access, utility infrastructure extensions and connections, and site preparation. Site grading is expected to be minimal as the North Village site was graded in conjunction with previous environmental remediation activities in 2005. The at-grade, railroad crossing at the plan area's primary street entrance immediately west of Healdsburg Avenue will be completed in late 2018. Phase 2 would last approximately 24 months and would include construction of a mixed use neighborhood with residential and commercial uses. Construction staging would occur within the developable portion of the plan area. For purposes of evaluating impacts in this EIR, Phase 2 is assumed to start construction in early 2020 with its various development components to open operationally in 2021. Thus, there would be an overlap of construction and operation within the developable portion of the plan area for a period of approximately 6 months in 2021. The timing is ultimately dependent on market conditions and construction scheduling.

Construction truck routes would be from U.S. 101 via the Dry Creek Road exit and north along Healdsburg Avenue to the plan area, or from U.S. 101 via the Lytton Springs Road exit and south along Healdsburg Avenue to the plan area.

Section 2.4 - Required Approvals

In order to adopt the proposed plan, the Healdsburg City Council must certify the Final EIR as the Lead Agency under CEQA, and adopt a resolution amending the Healdsburg 2030 General Plan. Implementation of the proposed plan will require City Council approval of an amendment of the HMC to establish a new "North Entry Mixed Use" zoning designation with the specific development standards identified by the proposed plan. Additional discretionary approvals and permits would be required for implementation of development projects within the plan area including the following:

- Tentative Map or Lot Line Adjustment to reconfigure parcel boundaries (note: a Lot Line Adjustment is a ministerial action);
- Tentative Map or major Conditional Use Permit to establish backbone infrastructure and authorize proposed conditional uses; and
- Design Review.

In addition, subsequent ministerial actions by the City of Healdsburg would be required for implementation of the proposed plan including issuance of grading and building permits.

A number of agencies in addition to the City of Healdsburg would serve as Responsible and Trustee Agencies, pursuant to CEQA Guidelines Section 15381 and Section 15386, respectively. This EIR will provide environmental information for agencies that may be required to grant approvals or to coordinate with other agencies, as part of proposed plan implementation. These agencies may include but are not limited to the following:

- California Public Utilities Commission

- California Department of Transportation
- Sonoma Marin Area Rail Transit

Section 2.5 - Intended Uses of the Draft EIR

This Draft EIR has been prepared to assess the potential environmental impacts that may arise in connection with actions related to implementation of the proposed plan. Pursuant to CEQA Guidelines Section 15367, the City of Healdsburg is the lead agency for the proposed plan and has legislative authority to adopt the proposed plan and implementing measures. The Draft EIR is intended to address environmental impacts associated with proposed public infrastructure improvements and future development within the parameters of the proposed plan.

The Draft EIR will be circulated for a minimum of 45 days, during which time comments regarding the analysis contained in the Draft EIR should be sent to:

Maya DeRosa, Planning and Building Director
City of Healdsburg
Planning and Development Department
401 Grove Street
Healdsburg, CA 95448
Phone: 707.431.3348
Email: mderosa@ci.healdsburg.ca.us

CHAPTER 3: ENVIRONMENTAL SETTING AND IMPACTS

This chapter sets forth the physical and regulatory environmental setting and addresses the environmental impacts of the proposed plan with respect to five environmental resource areas. The environmental setting describes the present physical or baseline conditions in the NEAP planning area. The baseline used for the analysis of environmental impacts under the California Environmental Quality Act (CEQA) reflects the conditions present at the time the Notice of Preparation (NOP) for this Environmental Impact Report (EIR) was published. The potential impacts of the proposed plan are compared against the existing baseline conditions for each environmental resource.

Environmental Topics Addressed in this EIR

The proposed plan is analyzed in this EIR with regard to impacts in the following five environmental resource areas:

- Aesthetics
- Transportation/Traffic
- Air Quality
- Greenhouse Gas Emissions and Energy
- Noise

Format of the Environmental Analysis

Each resource area analyzed in this chapter includes the subsections summarized below.

Introduction

This subsection summarizes what will be discussed in each environmental topic section, states what informational documents are used as the basis for the section, and indicates what related comments, if any, were received during the public scoping period for the NOP.

Environmental Setting

This subsection describes the existing, baseline physical conditions of the plan area and surroundings (e.g., existing land uses, transportation conditions, noise environment) with respect to each resource topic at the time the NOP was issued. Conditions are described in sufficient detail and breadth to provide a foundation for the subsequent analysis of environmental impacts of the proposed plan.

Regulatory Framework

This subsection describes federal, State, and local regulatory requirements that are directly relevant to the environmental topic being analyzed.

Impacts and Mitigation Measures

This subsection evaluates the potential for the proposed plan to result in direct and indirect adverse impacts on the existing physical environment, with consideration of both short-term and long-term impacts. The analysis covers all phases of the proposed plan, including construction and operation of contemplated land uses. The City of Healdsburg CEQA Implementation Procedures establish specific thresholds of significance for environmental impacts and are listed at the beginning of the subsection. A discussion of the approach to the analysis then explains how the significance thresholds have been applied to evaluate the impacts of the proposed plan.

Both project-level and cumulative impacts are analyzed in this EIR. Project-level impacts could result from actions related to development under the proposed plan. Cumulative impacts could result from implementation of the proposed plan in combination with other cumulative projects in the study area. As discussed in "Cumulative Impacts," the buildout of the Healdsburg 2030 General Plan is considered the cumulative scenario for the analysis of cumulative impacts.

Impacts are analyzed, and the respective assessment and findings are included in this Draft EIR. Impacts are identified based on the following definitions of significance:

- **No Impact.** A conclusion of No Impact is reached if no potential exists for impacts, or if the environmental resource does not occur in the plan area or the area of potential impacts.
- **Less than Significant Impact.** This determination applies if the impact does not exceed the defined significance criteria or would be eliminated or reduced to a less than significant level through compliance with existing local, State, and federal laws and regulations. No mitigation is required for impacts determined to be less than significant.
- **Less than Significant Impact with Mitigation.** This determination applies if the proposed plan would result in a significant impact, exceeding the established significance criteria, but feasible mitigation is available that would reduce the impact to a less than significant level.
- **Significant and Unavoidable Impact.** This determination applies if the proposed plan would result in an adverse impact that exceeds the established significance criteria, and no feasible mitigation is available to reduce the impact to a less than significant level. Therefore, the residual impact would be significant and unavoidable. This determination also applies in instances where it is anticipated that development activities may occur prior to implementation of mitigations and significant, unavoidable impacts may occur until such time as mitigations are implemented.
- **Significant and Unavoidable Impact with Mitigation.** This determination applies if the proposed plan would result in an adverse impact that exceeds the established significance criteria, and although feasible mitigation might lessen the impact, the residual impact would be significant, and, therefore, the impact would be unavoidable.

Impacts are defined in terms of their context and intensity. Context is related to the uniqueness of a resource; intensity refers to the severity of the impact. Where applicable, best management practices or improvement measures, or both, are incorporated into the proposed plan to limit the

potential for a significant impact. Where necessary, mitigation measures are identified for significant impacts to limit the degree or lower the magnitude of the impact; rectify the impact by repairing, rehabilitating, or restoring the affected environment; or compensate for the impact by replacing or providing substitute resources or environments. These impacts conclude with a finding of Less than Significant Impact with Mitigation. Where no mitigation measures are necessary, relevant impacts are concluded to be Less than Significant or to have No Impact.

As part of the impact analysis, mitigation measures are identified, where feasible, for impacts considered significant or potentially significant consistent with CEQA Guidelines Section 15126.4, which states that an EIR "shall describe feasible measures which could minimize significant adverse impacts." CEQA requires that mitigation measures have an essential nexus and be roughly proportional to the significant impact identified in the EIR. The City would be responsible for overseeing implementation of mitigation measures in accordance with an approved Mitigation Monitoring and Reporting Program (MMRP).

Pursuant to CEQA Guidelines Section 15126.4, mitigation measures are not required for environmental impacts that are found not to be significant.

Impacts are numbered and shown in bold type. The corresponding mitigation measures, where identified, are numbered and indented, and follow the impact statements. Impacts and mitigation measures are numbered consecutively within each topic and include an abbreviated reference to the impact section (e.g., "AES" for Aesthetics). The following abbreviations are used for individual topics:

- Aesthetics (AES)
- Transportation/Traffic (TRANS)
- Air Quality (AIR)
- Greenhouse Gas Emissions (GHG)
- Noise (NOI)

Cumulative Impacts

The discussion of cumulative impacts in this EIR analyzes the cumulative impacts of the proposed plan, taken together with other past, present, and reasonably foreseeable future projects producing related impacts. Cumulative impact analyses are included at the end of each respective Chapter 3 topical section. The goal of this analysis is to determine whether the overall long-term impacts of all such projects would be cumulatively significant, and to determine whether the proposed plan itself would cause a "cumulatively considerable" incremental contribution to any such cumulatively significant impacts. To determine whether the overall long-term impacts of all such projects would be cumulatively significant, the analysis generally considers the following:

- The area in which impacts of the proposed plan would be experienced;
- The impacts of the proposed plan that are expected in the area;
- Other past, proposed, and reasonably foreseeable projects that have had or are expected to have impacts in the same area;

- The impacts or expected impacts of these other projects; and
- The overall impact that can be expected if the individual impacts from each project are allowed to accumulate.

"Cumulative impacts" refers to two or more individual impacts that, when considered together, are considerable, or that compound or increase other environmental impacts (CEQA Guidelines Section 15355). Cumulative impacts can result from individually minor but collectively significant impacts taking place over time (40 Code of Federal Regulations 1508.7). If the analysis determines that the potential exists for a project, taken together with other past, present, and reasonably foreseeable future projects, to result in a significant or adverse cumulative impact, the analysis then determines whether a project's incremental contribution to any significant cumulative impact is itself significant (i.e., "cumulatively considerable"). The cumulative impact analysis for each individual resource topic is presented in each resource section of this chapter immediately after the description of the direct project impacts and identified mitigation measures.

Buildout of the Healdsburg 2030 General Plan (adopted in 2009) identified a citywide potential for construction of up to 872 additional residential units, including approximately 578 single-family units, 241 multi-family units, industrial development of 995,975 square feet, 339 hotel rooms, and 52 mixed-use units.[1] Based on the Healdsburg 2030 General Plan, population would increase from 12,200 (2005) to 14,469 at buildout, assuming all 872 residential units are constructed and occupied. The Healdsburg 2030 General Plan buildout also includes commercial, retail, mixed use, and office space (507,508 square feet, 551,683 square feet, 15,000 square feet, 20,000 square feet, respectively, or 1,014,111 square feet total). The Healdsburg 2030 General Plan buildout is the cumulative projects scenario for this EIR.

[1] City of Healdsburg. Healdsburg 2030 General Plan Environmental Impact Report (SCH No. 2007082030), Section IV.J: Land Use and Planning. See, Table IV.J.3.

Section 3.1 - Aesthetics

3.1.1 - Introduction

This section describes the existing visual character and quality, light, and glare conditions in the plan area as well as the relevant regulatory framework. This section also evaluates the possible impacts related to aesthetics that could result from implementation of the proposed plan. Information included in this section is based on a site reconnaissance and photo inventory as well as visual simulations prepared for the proposed plan. No comments were received during the EIR scoping period related to aesthetics.

3.1.2 - Environmental Setting

Visual Character

Healdsburg Area

Healdsburg is located at the north end of the Santa Rosa Plain at the juncture of three valleys: the Russian River Valley, Dry Creek Valley, and Alexander Valley). The Mayacama Mountains, with gently rolling hills covered with swaths of oak trees, grassland, and other vegetation, form the eastern backdrop of the City. Fitch Mountain rises just east of the City and is a prominent scenic landmark in the Healdsburg area.

The City of Healdsburg encompasses approximately 4.5 square miles and has urbanized development in the City's core and less densely developed agricultural areas on the periphery. Both vineyards and residential uses are common along Healdsburg Avenue and U.S. 101 in the Healdsburg area. Non-native grassland and valley oak woodland constitute the dominant natural vegetation.

Plan Area

The plan area is located in a transition area between the rural Alexander Valley wine region to the north and the urbanized downtown core 2 miles to the south. The plan area is located within the low hills that define the western edge of Alexander Valley that is generally flanked by northwest-trending mountain ranges. The plan area lies just south of the northern city limits of Healdsburg, near the Parkland Farms residential neighborhood to the southeast and the Montage Healdsburg development immediately east of Healdsburg Avenue. Local water bodies include Lytton Lake to the northwest and Foss Creek to the south of the plan area.

The plan area includes a former industrial site located between U.S. 101 and the NCRA rail line. The plan area is presently vacant except for the railroad right-of-way, drainage improvements, and a portion of Healdsburg Avenue. The majority of the plan area is a relatively flat, grass-covered pad that was previously the site of a lumber mill. All buildings and structures associated with the lumber mill have been removed, the site was remediated and graded, and drainage improvements installed. The northern and western edges of the plan area consist of sloping hillsides with oak woodland vegetation. The previous grading activities included construction of drainage swales at the perimeter of the graded pad and a stormwater detention basin in the southeast.

The NCRA rail line traverses the plan area from north to south along an 80-foot wide right-of-way. The railroad right-of-way is located along the eastern portion of the plan area roughly parallel to Healdsburg Avenue. The rail line is currently inactive. The Sonoma-Marin Area Rail Transit (SMART) District has a perpetual passenger service easement over the rail line and passenger rail services are planned in the future at an unknown date.

Surrounding land uses nearest to the plan area include U.S. 101 to the west, Healdsburg Avenue and open space and residential uses to the east, a hillside parcel owned by Lytton Rancheria of California to the north, and Foss Creek and a vacant parcel owned by Simi Winery to the south. Farther west and east of the plan area are additional agricultural areas, while farther south are residential uses, and farther north is agricultural land outside of the city limits.

Scenic Resources

Healdsburg

Healdsburg's scenic resources include wooded ridges and hillsides, the Russian River, and adjacent agricultural valleys that provide a classic California "wine country" landscape. These scenic resources are part of what make Healdsburg an attractive place to live for local residents and a popular destination for visitors.

The Healdsburg 2030 General Plan identifies the City's unique visual resources, including its scenic ridgelines and scenic roadways. The Healdsburg 2030 General Plan identifies the following scenic resources within the City:

- **Scenic Ridgelines**. Major scenic ridgelines are designated by the Healdsburg 2030 General Plan. Fitch Mountain is the most visible scenic resource in the Healdsburg area, rising just to the east of the central part of the City. While this mountain includes some low-density residential development on its flanks, the higher portion remains open space and protected by a permanent conservation easement. Other scenic ridges frame the City to the northeast and north, including Healdsburg Ridge (Reservoir Hill) that is outside the city limits but within the Healdsburg area. Many of these ridgelines are open space, permanently protected by the Sonoma County Agricultural and Open Space District through outright ownership or conservation easements. Scenic wooded ridges also exist both within and just outside the city limits.
- **Scenic Roadways.** The Healdsburg 2030 General Plan requires the protection and enhancement of viewsheds along the following streets and highways:
  - U.S. 101—Entire length within the City
  - Healdsburg Avenue—North of Chiquita Road within the City
  - North Fitch Mountain Road—East of Benjamin Way within the City
  - South Fitch Mountain Road—East of Heron Drive within the City
  - Healdsburg Avenue—South of Memorial Bridge within the City

No roadways within the City are designated as scenic highways by Caltrans.[1] Existing viewsheds along City-designated scenic roads are described below.

U.S. 101 offers views of and across proximate vineyards and hillsides, particularly north of Dry Creek Road where the highway elevation is higher than most of the City. As a scenic corridor, U.S. 101 is enhanced by mature redwood plantings that partially screen neighboring town development, including various industrial and commercial uses, residential uses, and the backside of the Vineyard Plaza shopping center. At the north end of town, views of the City from southbound U.S. 101 include the Parkland Farms development, the Montage Healdsburg property, and the proposed plan area. Northbound views across the plan area include views of the oak-studded hills of the Montage Healdsburg property flanked by Fitch Mountain and distant views of Mount St. Helena.

Plan Area

The Healdsburg 2030 General Plan requires the protection and enhancement of viewsheds of scenic ridgelines along scenic roads and highways. As described in Section 3.1.3 (Regulatory Framework) below, the Healdsburg 2030 General Plan contains policies with regard to scenic resources. Policies LU-A-6, LU-C-1, T-A-14, PS-H-7, NR-B-2, and NR-C-1 through NR-C-6 provides that land uses respect natural constraints and conditions, future development projects are aesthetically pleasing, open space and natural settings are protected and enhanced, and scenic resources are protected from degradation by development.

The Healdsburg 2030 General Plan identified major scenic ridgelines throughout the city limits and sphere of influence.[2] The following scenic ridgelines are proximate to the plan area and the following scenic roadways are adjacent to the plan area:

- **Scenic Ridgeline**. The hillsides and central scenic ridgelines located southeast of the plan area (in Parkland Farms with Fitch Mountain as a backdrop) are a prominent visual feature.
- **Scenic Ridgeline**. The hillsides and central scenic ridgelines located northeast of the plan area (on the Montage Healdsburg project site) are a prominent visual feature.
- **U.S. 101**. U.S. 101 is the western boundary of the plan area. It is the major entry to the City and is a City-designated scenic highway.
- **Healdsburg Avenue**. Healdsburg Avenue is the eastern edge of the plan area. It is also a major City gateway and a City-designated scenic road.

Views

Plan Area

Field visits to the plan area were conducted in June and August 2018 to observe and document the existing visual quality and character of the area. Exhibit 3.1-1 identifies and describes specific locations near the plan area that provide a representative cross-section of visual images and

[1] State of California. Department of Transportation (Caltrans). Designated State Scenic Highways. Website: http://www.dot.ca.gov/design/lap/livability/scenic-highways/.

[2] City of Healdsburg. Healdsburg 2030 General Plan, Policy Document. Natural Resources, Figure 8: Major Scenic Resources, at page 7-4. Website: https://www.ci.healdsburg.ca.us/354/General-Plan.

information about the existing aesthetic conditions in the immediate surrounding area. These locations represent publicly accessible views available to motorists traveling along U.S. 101 or motorists and pedestrians traveling along Healdsburg Avenue. There are no views of or through the plan area from public parks, plazas, or recreational trails given the varied topography of the plan area, although the plan area is highly visible from the future community park site on the Montage Healdsburg property. As summarized in Table 3.1-1, there are various publicly accessible locations in the Healdsburg area with views toward and/or through the plan area. Exhibits 3.1-2 through 3.1-4 show existing views from the identified viewpoints.

Table 3.1-1: Summary of Viewpoint Locations for Existing Views

View point Number	View Description
1	Existing View from U.S. 101 Looking E toward Plan Area
2	Existing View from Healdsburg Avenue Looking SW toward Plan Area
3	Existing View from Healdsburg Avenue Looking N toward Plan Area

As described in Section 3.1.3 (Regulatory Framework) below, the Healdsburg 2030 General Plan contains policies with regard to views. Policy NR-C-7 provides that viewsheds along scenic highways, roads, and streets are protected and enhanced. Policy NR-C-3 provides that new development should protect important views and landmarks.

View 1—Existing View along U.S. 101 Looking East towards Plan Area

A viewpoint from U.S. 101, which roughly forms the western boundary of the plan area, is shown in Exhibit 3.1-2. Where it parallels the plan area, U.S. 101 is neither an Eligible State Scenic Highway nor an Officially Designated State Scenic Highway. However, U.S. 101 is identified as a scenic roadway in the Healdsburg 2030 General Plan. In addition, U.S. 101 serves as a visual entry into the City of Healdsburg.

Viewpoint 1 offers a short- to medium-range unblocked existing view of the plan area from U.S. 101. The existing short-range view looking east toward the plan area from this U.S. 101 viewpoint consists of a graded grassy area bordered by hillsides, trees, and other vegetation. The existing medium-range view looking east toward the plan area from this U.S. 101 viewpoint consists of hillsides and two scenic ridgelines (as identified by the Healdsburg 2030 General Plan) to the east of the perimeter of the plan area. Long-range views are not afforded from this U.S. 101 viewpoint given the varied topography surrounding the plan area and U.S. 101. As this view is from a highway, it is also a fleeting public view available to passengers of vehicles traversing northward on U.S. 101.

View 2—Existing View along Healdsburg Avenue Looking Southwest towards Plan Area

The viewpoint along Healdsburg Avenue, which is the eastern boundary of the plan area, is shown in Exhibit 3.1-3. Healdsburg Avenue is not a State-designated scenic highway. However, Healdsburg Avenue is identified as a scenic roadway in the Healdsburg 2030 General Plan. In addition, Healdsburg Avenue serves as a visual entry into the City of Healdsburg.

Source: bing Aerial Imagery.

FIRSTCARBON SOLUTIONS™

1,000 500 0 1,000
Feet

Exhibit 3.1-1
Viewpoint Location Map

THIS PAGE INTENTIONALLY LEFT BLANK

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-2
Existing Viewpoint 1

THIS PAGE INTENTIONALLY LEFT BLANK

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-3
Existing Viewpoint 2

THIS PAGE INTENTIONALLY LEFT BLANK

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-4
Existing Viewpoint 3

THIS PAGE INTENTIONALLY LEFT BLANK

Viewpoint 2 offers a short- to medium-range relatively unblocked existing view of the plan area from Healdsburg Avenue. The existing short-range view looking west toward the plan area from this viewpoint consists of a relatively flat grassy area bordered by hillsides, trees, and vegetation. The existing medium-range view looking south/southwest toward the plan area from this viewpoint consists of hillsides and one scenic ridgeline (as identified by the Healdsburg 2030 General Plan) further south of the perimeter of the plan area. Long-range views are not afforded from this viewpoint given the varied topography and intermittent vegetation along Healdsburg Avenue. This view is available to vehicles, bicycles, or pedestrians traversing southward on Healdsburg Avenue.

View 3—Existing View along Healdsburg Avenue Looking North towards Plan Area

The viewpoint is located on Healdsburg Avenue at the eastern boundary of the plan area and is shown in Exhibit 3.1-4. Healdsburg Avenue is not a State-designated scenic highway. However, Healdsburg Avenue is identified as a scenic roadway in the Healdsburg 2030 General Plan. In addition, Healdsburg Avenue at this location is a gateway to and from the City of Healdsburg.

Viewpoint 3 offers a short- to medium range view of the plan area from Healdsburg Avenue. The existing short-range view looking west toward the plan area from this viewpoint consists of a relatively flat grassy pad bordered by hillsides, trees, and vegetation. U.S. 101 forms the western boundary of the plan area and is visible from the viewpoint. The existing medium-range view looking north/northwest across the plan area from this viewpoint consists of hillsides, U.S. 101, and one scenic ridgeline (as identified in the Healdsburg 2030 General Plan) further northwest of the perimeter of the plan area. Long-range views are not afforded from this viewpoint given the varied topography along Healdsburg Avenue. However, a partial long-range view of hillsides to the west of U.S. 101 is visible. This view is available to vehicles, bicycles, or pedestrians traversing northward on Healdsburg Avenue.

Light and Glare

In CEQA context, light is nighttime illumination that stimulates sight and makes things visible, and glare results in difficulty seeing due to the presence of bright light such as direct or reflected sunlight. The primary sources of nighttime light in the area surrounding the plan area are vehicle headlights traveling along U.S. 101 and Healdsburg Avenue. Roadway improvements to Healdsburg Avenue were recently completed, which included streetlights. No permanent structures or buildings with outdoor security lighting are located near the plan area.

Plan Area

There are no large reflective surfaces associated with buildings in the surrounding area that contribute to daytime glare within the plan area. However, due to the built-out nature of the City, there is a considerable amount of ambient nighttime light in Healdsburg. Sources of nighttime light include illuminated signs, streetlights, parking lot lighting, and vehicle headlights.

The plan area is undeveloped and has no exterior lighting or nighttime light sources. In addition, no sources of daytime glare exist within the plan area.

3.1.3 - Regulatory Framework

Federal

No federal plans, policies, regulations, or laws related to aesthetics are applicable to the proposed plan.

State

California Scenic Highway Program

The California Scenic Highway Program is established to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment. U.S. 101 in Sonoma County is not a designated State scenic highway.

Title 24 of the California Code of Regulations Building Energy Efficiency Standards

California Building Code (California Code of Regulations [CCR], Title 24)—including Title 24, Part 6—includes Section 132 of the Building Energy Efficiency Standards, which regulates lighting characteristics, such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass. The majority of the City of Healdsburg, including the plan area, falls under the "urban" standard.

Regional

Sonoma County Agricultural Preservation and Open Space District

In 1990, Sonoma County residents voted to create the Agricultural Preservation and Open Space District (District) to preserve lands across the County. With funds generated from a voter-approved quarter-cent sales tax, the County has preserved almost 70,000 acres of open space and agricultural land. Located east of Healdsburg, Fitch Mountain is one of the most prominent peaks in the area.

The District began its efforts to protect the lands that now make up Healdsburg Ridge from development in 1996. As part of this effort, the District secured title and purchase lands in 2003 that created the Healdsburg Ridge Open Space Preserve. The 155-acre preserve consists of a wide array of plants and animals including wetlands and oak woodlands, rocky serpentine chaparral and open grasslands. As open space, the preserve contains a public trail system that traverses hilltops that offer wide views of the surrounding area. Immediate views consist of residential neighborhoods and vineyards with hillsides further west of U.S. 101. From the preserve and oriented north/northwest, publicly accessible areas within the preserve may offer views of the east and southeast portions of the plan area. However, the plan area is located over one mile from the preserve with intervening urban development and vegetated areas. Thus, views of the plan area are relatively limited.

Local

Healdsburg 2030 General Plan

The Healdsburg 2030 General Plan establishes the following goals and policies related to aesthetics that apply to the proposed plan:

LU-C: A pattern and intensity of land use that respects residential neighborhoods as well as natural constraints and conditions.

- **LU-C-1:** Only low-intensity urban development and open space land uses shall be allowed in areas characterized by steep slopes, environmental hazards, scenic ridgelines, and hillsides. Clustering of development in these areas shall be encouraged to preserve open space, meet the policies of the Healdsburg 2030 General Plan concerning natural hazards and scenic resources and minimize the costs of infrastructure improvements.

LU (Land Use) Implementation Measures

- **LU-10:** Continue to implement the land use and development regulations that protect hillsides and ridgelines as contained in the Zoning Ordinance, the Design Review Manual, and in adopted specific, area and neighborhood plans.

NR-B: Conservation and restoration of Healdsburg's native plants and wildlife, ecosystems and waterways.

- **NR-B-2:** Large, mature trees that contribute to the visual quality of the environment or provide important wildlife habitat shall be protected.

NR-C: Preservation and enhancement of Healdsburg's natural setting.

- **NR-C-1:** The City will protect its existing natural features to give shape and form to Healdsburg. To this end, new development shall not be allowed to breach the Urban Growth Boundary except under the exceptional circumstances allowed by the Healdsburg 2030 General Plan.
- **NR-C-3:** Development shall be allowed only in a manner that protects important views and landmarks such as Fitch Mountain, Russian River, and the foothills to the north, west, and east of the City.
- **NR-C-5:** Major scenic ridgelines designated by the Healdsburg 2030 General Plan, Figure 8, and highly visible hillsides shall be protected from visually obtrusive development.
- **NR-C-6:** Protection of distinctive natural vegetation such as oak woodlands, riparian corridors, and mixed evergreen forest is encouraged.
- **NR-C-7:** The viewshed along scenic highways, roads and streets shall be protected and enhanced. The following road segments are declared scenic roads for the purposes of the Healdsburg 2030 General Plan and City land use regulations as depicted on the Healdsburg 2030 General Plan, Figure 9:
  (a) U.S. 101—Entire length within the Planning Area;
  (b) Healdsburg Avenue—North of Grove Street;
  (c) North Fitch Mountain Road—East of Benjamin Way;
  (d) South Fitch Mountain Road—East of Heron Drive; and
  (e) Healdsburg Avenue—South of the Russian River Bridge.

- **NR-C-8:** City scenic road and street efforts shall be coordinated with the County's scenic highway program.

NR (Natural Resources) Implementation Measures

- **NR-10:** Require a visibility analysis for the creation of new lots, new structures or significant additions and other projects over which the City exercises discretionary authority located within 200 feet on either side (based on a horizontal projection) of the center line of major scenic ridgelines as shown on the Healdsburg 2030 General Plan, Figure 8, Major Scenic Ridgelines. Only developments that are shown to be unobtrusive based on this analysis may be approved. Structural projections above the ridgeline shall not be allowed unless it can be demonstrated that existing natural features will screen the projection.
- **NR-25:** Encourage the planting of large shade trees where adequate space can be provided for the trees' ultimate size, such as in open space areas, parks, large lots and wide parkway strips.

CD-A: Preservation and enhancement of the most desirable qualities of Healdsburg's built environment.

- **CD-A-1:** The City will encourage building design that is in scale with adjacent development and which harmonizes with surrounding development.
- **CD-A-2:** The City will encourage and support the efforts of individual business owners and business associations to improve the visual appearance of commercial development.
- **CD-A-3:** The City will encourage and support the efforts of individual homeowners and homeowner and neighborhood associations to improve the visual appearance of residential neighborhoods.
- **CD-A-4:** The City will discourage visual clutter.
- **CD-A-5:** City project approvals and other actions relating to physical development shall be consistent with design guidelines set forth in the Design Review Manual, in addition to General Plan policies, the Zoning Ordinance and any specific plan design guidelines.
- **CD-A-6:** Revitalization of City entryways from U.S. 101 and Healdsburg Avenue is among the City's top priorities for upgrading the visual and aesthetic character of Healdsburg.
- **CD-A-7:** The City will require the undergrounding of utilities as new development occurs to the extent that this does not adversely impact trees or cause similar undesirable consequences.
- **CD-A-10:** The integrity of distinct and identifiable neighborhoods and districts shall be preserved and strengthened.
- **CD-A-11:** Landscaping shall be used in public and private development projects to enhance the city's visual qualities, provide shade and minimize glare.
- **CD-A-12:** Gates controlling access to residential subdivisions and multi-family residential development are discouraged.
- **CD-A-13:** Property owners shall maintain their property in a manner that avoids an unsightly appearance and reflects the desirable visual qualities of Healdsburg.

CD (Community Design) Implementation Measures

- **CD-5:** Require the undergrounding of utilities by new development where feasible while seeking to avoid adverse impacts on trees or similar undesirable consequences.

- **CD-6:** Require the perimeter and interior of parking lots to be landscaped with shrubs and shade trees selected from a City-approved list of trees to improve aesthetics and to provide relief from solar radiation, heat and glare.

North Entry Area Plan Design Guidelines

The City prepared the North Entry Area Plan (NEAP) to establish specific guiding land use principles and a design framework for development.[3] The NEAP design framework and supporting design objectives operate to help ensure consistency with Healdsburg 2030 General Plan policies as well as applicable zoning regulations and development standards established in the Healdsburg Municipal Code (HMC). As a regulatory document, the NEAP contains design objectives for future development. Future development contemplated under the NEAP would undergo design review prior to permitting for construction of improvements.

Overall, the NEAP reinforces and highlights the character of the existing surrounding landscape. The NEAP seeks to create a harmonious blend of rural and town character. The NEAP also strives to create a livable and welcoming neighborhood that complements the role of downtown as the commercial center of Healdsburg. To achieve the Healdsburg 2030 General Plan land use and design objectives, the NEAP includes guidelines, standards, and development parameters. As described below, this includes building heights, layout, and orientation, and circulation layout, parking, landscaping, and open space.

The NEAP design guidelines address specific locations within and aspects of the plan area. Briefly, development along street frontages should illustrate a relationship between buildings and adjoining streets and public spaces. The NEAP addresses building design (massing, architectural, and materials) in order to ensure that new development relates to the character of the area. Development siting (placement, orientation, and scale) should integrate into the landscape and site contours thereby new development would avoid dominating the visual landscape. Development should also retain existing major natural features (topography and views) by minimizing site grading and maintain scenic views to the plan area as well as from the plan area.

The NEAP design guidelines also address landscaping, lighting, and signage throughout the plan area. Specific to each element, the NEAP design guidelines focus on promoting a rural to town-like pedestrian-scale environment. To accomplish this, the NEAP emphasizes common areas, compatible vegetative landscaping, signage elements, suggested building materials, and incorporating features that minimize glare.

Healdsburg Municipal Code

Zoning Ordinance

HMC Chapter 20.24 Article 1 (Environmental Performance Standards) ensures that all properties, operations, and processes are maintained in a healthful and safe manner and do not interfere with public health, safety, or welfare. Pursuant to Section 20.24.015 (Glare), the City requires projects to minimize indirect or diffuse lighting away and/or minimize spillage onto adjacent properties. In

[3] City of Healdsburg. Preliminary Draft North Entry Area Plan, Chapter 5: Design Framework (August 31, 2018). Website: https://www.ci.healdsburg.ca.us/842/North-Entry-Area-Plan. Accessed October 23, 2018.

addition, lighting for outdoor courts or field games shall require approval of a conditional use permit by the Planning Commission.

HMC Chapter 20.28 Article 4 (Design and Architecture Review) is to preserve the community's natural beauty and improve its appearance through design review. Section 20.28.075 specifies whether development proposals are subject to City design review requirements and establishes procedures for obtaining permit approvals. In general, design review is required for all commercial, office, and industrial projects, and projects involving more than one residential unit. Additionally, design review is required for single-family dwellings in certain specific plan areas (i.e., Planning Sub-Area A and the Grove Street Neighborhood Plan area). Section 20.28.125 further requires that specific findings be made prior to design review approval.

Mixed Use District

HMC Section 20.08.135 (Special Purposes of Mixed Use [MU] District) implements the Mixed Use land use designation of the Healdsburg 2030 General Plan. The section allows a range of commercial uses that would serve the day-to-day needs of residents, while providing uses and activities of interest to visitors to the community.[4] Among other things, the MU District seeks to incorporate residential uses with commercial uses and ensures that mixed-use projects include a commercial component that is adequate in terms of functionality and commercial appearance.

Pursuant to HMC Section 20.08.175, residential dwellings constructed on commercially zoned property must conform to prescribed standards. Standards include a minimum of 200 square feet of usable open space per dwelling (subject to location and design criteria prescribed in Section 20.20.015) with the following exceptions:

- The Planning Commission may reduce or waive this requirement in consideration of open space or recreational facilities that are available within reasonable proximity. Required open spaces may be either group (common) or private open space;
- Private usable open space located at ground level shall have a minimum area of 120 square feet; and
- Up to 75 percent of ground level open space may be covered by an overhang or balcony.

Creekside Development

HMC Section 20.24.090 (Riparian Setback Standards) establishes development limits along waterways within the city limits. The section provides, in general, that no development shall be allowed within 35 feet of Foss Creek and within 25 feet of all other streams or creeks. The section further provides that setbacks shall be measured from the top of the existing bank, and that existing riparian vegetation within setback areas shall be maintained and protected from disturbance. The City may grant a variance, however, where the provision of the required setback is infeasible. When granted, the City would require a detailed riparian mitigation plan prepared by a qualified professional with the goal of ensuring no net loss of acreage or of functional value of riparian habitat.

[4] See, City of Healdsburg, HMC Section 20.08.155, Permitted and Conditionally Permitted Uses [in MU District] (Table 12).

Outdoor Lighting

HMC Chapter 20.24 Article 1 of the City's Zoning Ordinance (Environmental Performance Standards) ensures that all properties, operations, and processes are maintained in a healthful and safe manner and do not interfere with public health, safety, or welfare. Section 20.24.015 (Glare) requires performance standards to minimize glare, indirectly or from diffused lighting, to be directed away and/or shielded to minimize spillage onto adjacent properties.

Landscaping

HMC Chapter 20.16, Article VI contains landscaping standards for general uses and parking lots as well as general water-efficient landscaping and screening standards. Section 20.16.095 contains regulations that apply to the location and treatment of landscaped areas. In general, the City requires all visible portions of a yard adjoining a public or private street to be planted or landscaped with trees, shrubs, or groundcover, or may be treated with ornamental gravel, crushed rock, or similar landscape material. The scale and nature of landscape material should consider the size of the site and proposed structure. The City would require large-scale buildings to be complemented with large-scale landscaping, as appropriate. In addition, the City requires landscaped areas to be maintained with a permanent underground irrigation system.

The City has identified a surrounding wildland urban interface (WUI) and designated areas prone to fire hazards.[5] Coupled with landscaping requirements under HMC Chapter 20.16, development located in a City-designated WUI area is subject to minimum development standards (fire-resistant building materials, landscaping standards, and vegetation management and defensible space requirements). The Healdsburg Fire Department Fire Prevention Bureau administers a portion of the City's review and inspection efforts to ensure compliance with current development standards in designated WUI areas.[6] Recent changes to Government Code Section 51182, for example, expanded the defensible space clearance requirement maintained around buildings and structures from 30 feet to 100 feet (or to the property line). The plan area is located within the WUI and designated as having a risk for moderate fire hazard.

HMC Section 20.16.100 (Parking Lot Landscaping) applies to parking lots in commercial zoning districts. The section contains generally applicable standards including but not limited to: a landscaped planter with a minimum width requirement when adjacent to any public or private street; tree planting minimums to provide visual relief to long rows of parked vehicles; and evenly distributed landscaped areas throughout the entire vehicle parking and circulation areas.

HMC Section 20.16.105 (Water-efficient Landscaping) governs the efficient use of water for landscaped areas within the City. The section provides water-efficient landscape standards that protect local water supplies through the implementation of a whole systems approach to design, construction, installation, and maintenance of the landscape resulting in water-conserving and climate-appropriate landscapes. The standards also seek to improve water quality and minimize

[5] City of Healdsburg. Healdsburg 2025 General Plan. Background Report, Figure 6: Wildland Fire Hazard Zones. Website: https://www.ci.healdsburg.ca.us/DocumentCenter/View/435/General-Plan-WUI-Map-PDF/.

[6] City of Healdsburg. Healdsburg Fire Department, Fire Prevention Bureau. Construction and Defensible Space Standards within Designated Fire Severity Zones. Website: https://www.ci.healdsburg.ca.us/DocumentCenter/View/434/Defensible-Space-Construction-Standards-PDF.

resource consumption. The requirements of Section 20.16.105 apply to new residential, commercial, public or quasi-public construction that requires design review and/or a building or grading permit. Furthermore, a project applicant is required to provide a landscape design plan and irrigation design plan to the City for review. Section 20.16.105 is not fully compliant with the State model water efficient landscaping ordinance (MWELO).[7] Thus, the City would review future projects for compliance with MWELO guidelines, provisions, and standards.

Heritage Tree Ordinance

HMC Section 20.24.040 (Heritage Tree Protection) governs the removal of heritage trees. The ordinance applies to private property and the public right of way. The ordinance applies to activities (grading, excavation, storage, etc.) that may intrude into a protected zone established for the purpose of protecting a defined heritage tree. Pursuant to Section 20.24.045, a heritage tree is defined as any tree that has a diameter of thirty inches or more (measures two feet above level ground, or any tree or group of trees identified by the City Council and under specified conditions). In the event of encroachment or removal, a tree permit is required and subject to City review followed by approval with conditions.

Signage

HMC Chapter 20.16, Article IX contains general provisions that apply to signage throughout the City. In general, signs may be permitted in conformance with applicable design guidelines and prescribed limits on mounting, size, height, lighting, and location detailed in Section 20.16.195 (General Provisions) of the HMC. In addition, all signs with an area of 20 square feet or greater, all illuminated signs, all flashing, blinking, scintillating or moving signs, and all signs projecting above a roof, coping, parapet, or ridgeline would be subject to design review.

3.1.4 - Impacts and Mitigation Measures

Specific Thresholds of Significance

The City of Healdsburg CEQA Implementation Procedures establishes that a significant impact related to aesthetics would occur if the proposed plan:

- Results in visually-obtrusive development on scenic ridgelines designated in the Healdsburg 2030 General Plan.
- Substantially damages scenic resources, including but not limited to trees, rock outcroppings, and historic buildings, within the viewshed of a State scenic highway or a scenic highway designated in the Healdsburg 2030 General Plan.
- Substantially degrades the existing visual character or qualify of the site and its surroundings.
- Creates a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

[7] State of California. Department of Water Resources. 2015 Updated Model Water Efficient Landscape Ordinance: Guidance for California Local Agencies. Website: https://water.ca.gov/LegacyFiles/wateruseefficiency/landscapeordinance/docs/2015%20MWELO%20Guidance%20for%20Local%20Agencies.pdf.

The plan area does not include any scenic ridgelines. Therefore, the first criterion is not addressed in the impact evaluation.

Approach to Analysis

This analysis provides a discussion of the visual impacts associated with the proposed plan. Several variables affect the degree of visibility, visual contrast, and ultimately impacts of future development under the proposed plan: (1) scale and size of facilities, (2) viewer types and activities, (3) distance and viewing angle, and (4) influences of adjacent scenery or land uses. Viewer response and sensitivity vary depending on viewer attitudes and expectations. Viewer sensitivity is distinguished among project viewers in identified scenic corridors and from publicly accessible recreational and plaza areas. Recreational areas and scenic corridors are considered to have relatively high sensitivity.

As part of this analysis, various areas in the City of Healdsburg and adjacent unincorporated lands were screened as potential view locations. The screening was based on whether the existing plan area is visible from these locations and the degree to which viewers at those locations would be sensitive to proposed physical changes within the plan area during the proposed construction and operational periods. A set of locations that constitute a representative cross-section of views experienced by a representative cross section of observers was chosen for the analysis. Views from these locations were photographed and are included in this EIR to illustrate existing conditions. Consequently, visual change discussions were provided for these same views to facilitate project-related impact determinations. Policies in the proposed plan relating to height and massing were relied upon to identify whether or when the proposed structures would result in visual impacts. The Healdsburg 2030 General Plan and the HMC were also evaluated to determine whether policies and design requirements were applicable to the proposed plan.

Impact Evaluation

Scenic Vistas of Scenic Ridgelines

Impact AES-1:	**The proposed plan would not result in visually-obtrusive development on scenic ridgelines designated in the Healdsburg General Plan.**

Impact Analysis

A significant impact would occur if the proposed plan had a substantial adverse effect on a scenic vista,[8] particularly a scenic vista of a scenic ridgeline, as defined and identified in the Healdsburg 2030 General Plan. The Healdsburg 2030 General Plan policy NR-10 requires a visibility analysis for new development located within 200 feet on either side of the centerline of major scenic ridgelines. The nearest designated scenic ridgelines to the plan area are (1) the central ridgeline of the hillsides to the southeast and (2) the central ridgeline of the hillsides to the northeast.[9] However, neither ridgeline is within 200 feet of the plan area. Implementation of the Plan would not result in visually-obtrusive development on a scenic ridgeline designated in the Healdsburg 2030 General Plan. Thus, no impact related to scenic vistas of scenic ridgelines would occur.

[8] A scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the public.
[9] City of Healdsburg. Healdsburg 2030 General Plan, Figure 8 at page 7-4.

Level of Significance

No impact

Scenic Resources from Scenic Highways

Impact AES-2: **The proposed plan would not substantially damage scenic resources, including but not limited to trees, rock outcroppings and historic buildings, within the viewshed of a State scenic highway or a scenic highway designated in the Healdsburg General Plan.**

Impact Analysis

A scenic roadway is defined as a road that, in addition to providing a transportation function, provides opportunities for the enjoyment of natural and human-made scenic resources. Scenic roads direct views to areas of exceptional beauty, natural resources or landmarks, or historic or cultural interest.

State Scenic Highways

The U.S. 101 corridor adjacent to the plan area is not listed as a State-designated scenic highway, nor is the corridor listed as an eligible state scenic highway (California Department of Transportation 2013). No other State highway has views of the plan area. Therefore, implementation of the Healdsburg 2030 General Plan would have no impact on scenic resources within a State scenic highway.

Local Scenic Highways

The sections of Healdsburg Avenue and U.S. 101 that border the plan area are locally-designated scenic roadways[10] and have views of the Mayacama Mountains and the proximate scenic ridgeline.

Construction

Construction activities within the plan area and associated infrastructure improvements in the area could result in short-term effects on the viewshed of U.S. 101 and Healdsburg Avenue that are typical of construction activities. For example, construction activities would result in temporary ground disturbance, landscape alterations, and construction staging areas. Because construction related effects would be temporary and the opportunity for viewing such temporary affects would be fleeting when traveling at the posted speed limit on U.S. 101 and Healdsburg Avenue, the impact of construction activities upon views from U.S. 101 and Healdsburg Avenue would be less than significant.

Operation

There are no scenic ridgelines visible to the west of Healdsburg Avenue that could be blocked by development under the plan; thus, buildout under the proposed plan would not obscure any important sightlines from Healdsburg Avenue. By contrast, if left unregulated, buildout under the proposed plan could obscure important sightlines from U.S. 101 to scenic resources to the east of the plan area (i.e., Fitch Mountain, Mount St. Helena, the Mayacama Mountains, and other hillsides and wooded ridges) by adding new buildings, landscaping, and signs adjacent to these scenic roads. However, the proposed plan would limit building heights to 50 feet in the westerly portions of the plan

[10] Healdsburg 2030 General Plan Policy NR-C-7; Sonoma County General Plan 2020, Open Space and Resource Conversation Element: Scenic Resource Areas OS-3.

area and require lower heights closer to Healdsburg Avenue. Thus, roofs of the tallest buildings along that U.S. 101 frontage would be at the level of the highway surface (see Exhibit 3.1-5). The height restrictions would ensure that development would not block views along U.S. 101 to Fitch Mountain, Mount St. Helena, the Mayacama Mountains, and the scenic ridgelines east of the plan area.

There are no rock outcroppings or historic buildings within the plan area along U.S. 101 or Healdsburg Avenue that are visible. Therefore, no damage to the viewshed along U.S. 101 or Healdsburg Avenue would occur, and both temporary and permanent impacts to the viewshed along U.S. 101 and Healdsburg Avenue would be less than significant.

Level of Significance

Less than significant

Visual Character and Quality

Impact AES-3: The proposed plan would not substantially degrade the existing visual character or quality of the plan area and its surroundings.

Impact Analysis

The proposed plan would have a significant impact if it allowed new development to substantially degrade the existing visual character or quality of the plan area and its surroundings. The main visual features of the plan area and surrounding areas are natural hillsides, scenic ridgelines and vegetation, residential and agricultural uses, and views of the Mayacama Mountains and Fitch Mountain.

The area surrounding the plan area has an open space, agricultural, and rural residential character. U.S. 101 is located to the west, Healdsburg Avenue and agricultural uses to the east, a vacant hillside parcel is located to the north, and Foss Creek and a vacant parcel are to the south. Farther west and east of the plan area are agricultural and undeveloped areas, farther south of the plan area are residential and commercial uses, and farther north of the plan area is agricultural and sparsely developed land outside of the city limits.

The Healdsburg 2030 General Plan designates the plan area as mixed-use (MU 10-16 units per acre) land use, and City zoning establishes the plan area as a Mixed Use (MU) district. The proposed plan maintains a Mixed Use designation but refines it in conformance with Healdsburg 2030 General Plan Policy LU-18, which allows for mixed-use development in the plan area, provided that nonresidential uses serve residents and/or visitors in a manner that does not undermine the role of the downtown as the commercial center of Healdsburg.

Construction

Construction activities associated with buildout under the proposed plan could result in short-term effects on the visual character and quality of the plan area. For example, construction activities would result in temporary ground disturbance, landscape alterations, construction staging areas and the presence of large construction vehicles that would be visible. Most people have accepted that a certain amount of construction activity will take place from time to time and that a reasonable amount of construction is necessary for new projects. Therefore, because construction related effects would

be temporary and typical of construction activities, the temporary impact on visual character and quality of the plan area would be less than significant.

Operation

While implementation of the proposed plan would change the existing visual character of the area; the change would not substantially degrade that visual character. The proposed plan would allow a mix of multi-family residential uses and commercial uses throughout the plan area, resulting in an alteration of the physical surroundings and experience of visitors. However, the proposed plan provides site design, building design (height, massing, orientation, setbacks, and landscaping), and signage that will protect open space areas, important views, such as those of nearby scenic ridgelines, Fitch Mountain, and the Mayacama Mountains. These guidelines respect the existing natural topography of the plan area and require that buildings within a band closest to Healdsburg Avenue right-of-way be a maximum of 28 to 35 feet in height. The buildings fronting the primary internal street would be limited to 35 feet in height, and buildings within a band closest to the western plan boundary and U.S. 101 could be up to 50 feet in height.

The proposed plan would concentrate development on the flat portion of the site and leave nearly 40 percent of the plan area in its existing open space condition. It requires that buildings in line with where views open up from U.S. 101 should maintain broad view corridors to the eastern hills and should not distract from views with fussy or ostentatious architecture. The proposed plan includes design guidelines for multi-family and commercial development, which emphasize the incorporation of existing natural features into site plans and include height restrictions and building setback requirements. By complying with HMC standards and the NEAP design guidelines, development under the proposed plan would minimize its impact related to visual character and quality such that no mitigation would be required.

View 1—Proposed View from U.S. 101 Looking East toward Plan Area

Exhibit 3.1-5 depicts a publicly accessible view of the proposed plan area, as seen by motorists and passengers in vehicles traveling northbound along U.S. 101, looking west toward the plan area. As shown, buildings (which are depicted at the 50-foot height limit) are visible in the foreground. Landscaping would include drought-tolerant low-lying shrubs as well as trees that would help soften the appearance of the proposed buildings. The upper portion of the hillsides and scenic ridgelines east of the plan area in the existing view would still be visible from U.S. 101. Though development under the proposed plan would be visible from this vantage point, it would not dominate the view and would continue to afford views of the hillsides and scenic ridgelines. Therefore, impacts to this view would be less than significant, and the proposed plan would not substantially degrade the existing visual character or quality of the site and its surroundings.

View 2—Proposed View from Healdsburg Avenue Looking Southwest toward Plan Area

Exhibit 3.1-6 depicts a publicly accessible view of the proposed plan area, as seen by motorists and passengers in vehicles as well as bicyclists and pedestrians traveling southbound along Healdsburg Avenue, looking south/southwest toward the plan area. As shown, proposed buildings are visible in the foreground through intermittent trees and vegetation along Healdsburg Avenue. In addition to roadside vegetation, landscaping would include drought-tolerant shrubs as well as trees that would help soften the appearance of the proposed buildings. The upper portion the hillsides and scenic

ridgeline south of the plan area in the existing view would still be visible from Healdsburg Avenue. Though new development in the plan area would be visible from this vantage point, structures and buildings would not dominate the view and would continue to afford views of the hillsides and scenic ridgeline. Therefore, impacts to this view would be less than significant, and the proposed plan would not substantially degrade the existing visual character or quality of the site and its surroundings.

View 3—Proposed View from Healdsburg Avenue Looking North toward Plan Area

Exhibit 3.1-7 depicts a publicly accessible view of the proposed plan area, as seen by motorists and passengers in vehicles as well as bicyclists and pedestrians traveling northbound along Healdsburg Avenue, looking north/northwest toward the plan area. As shown, proposed buildings are visible in the foreground. Landscaping would include drought-tolerant shrubs as well as trees that would help soften the appearance of the proposed buildings. The upper portion of the hillsides and scenic ridgeline northeast of the plan area in the existing view would still be visible from Healdsburg Avenue. Though new development in the plan area would be visible from this vantage point, structures and buildings would be set back from the roadway and would continue to afford views of the hillsides and scenic ridgeline. Therefore, impacts to this view would be less than significant, and the proposed plan would not substantially degrade the existing visual character or quality of the site and its surroundings.

Summary

Although new physical development would be introduced to the plan area, the proposed plan includes development standards that regulate the physical aspect of the development, including site landscaping, natural topography, and scale, orientation, and massing of buildings, to help ensure that development under the proposed plan would not substantially degrade the existing visual character or quality of the plan area or its surroundings, and impacts related to visual character and quality would be less than significant.

Level of Significance

Less than significant

Light and Glare

Impact AES-4:	**The proposed plan would not create a new source of substantial light or glare that would adversely affect nighttime or daytime views in the area.**

Impact Analysis

The proposed plan would have a significant impact if substantial light or glare would adversely affect nighttime or daytime views in the area.

Nighttime Light

Development under the proposed plan would introduce new sources of nighttime lighting in the plan area, including lighting from residences, common areas, and street lighting. Overall, nighttime lighting would increase and could adversely affect views on and near the plan area.

The NEAP design guidelines and the City's project-level design review process are intended to ensure that a project's contribution to existing light sources would be minimized to the extent practicable.

As described above (Regulatory Framework), the plan area would be developed in compliance with applicable regulations and design guidelines that address potential nighttime light impacts. The North Village site topography would help to minimize light from trespassing off the plan area. The NEAP also contains specific standards for internal sources of light to minimize trespass. The NEAP also addresses the potential for external sources of light to reflect across internal surfaces. In general, all lighting within the plan area would be designed to ensure compatibility with the rural context of the surroundings. Internal lighting scheme would follow the International Dark-Sky Association standards such that fixtures would be shielded from leakage off site or upward. Streetlights would be limited to the extent necessary for public safety in order to maintain a rural character. As such, lighting would focus on smaller-scale, low-level lighting that illuminates pedestrian pathways and building entrances. Fixtures that light paved areas, private streets, and surface parking areas would be no more than 20 feet in height, and pathways would be lit with bollards or pedestrian-scaled fixtures of no more than 12 feet in height. Up lighting of buildings, outdoor structures, or trees would also be limited to key ornamental features. To implement the NEAP design guidelines, the City would review development proposals for consistency with design measures intended to maintain the rural character of the plan area and to minimize the impacts of night lighting. Further, consistent with HMC Section 20.24.015, outdoor lighting would be required to minimize spillage onto adjacent properties. Outdoor lighting would be limited in height to 17 feet. Outdoor lighting fixtures would be designed to shield and/or direct light downward. Thus, HMC and NEAP standards would reduce light trespass to adjacent properties. Therefore, nighttime light impacts would be less than significant.

Daytime Glare

The proposed plan would introduce new sources of daytime glare in the plan area, including glazing (windows) and other potentially reflective materials used in the façades of proposed structures as well as the reflective surfaces of vehicles parking and traveling in and around the plan area. Highly reflective façade materials could cause excessive daytime glare, as buildings would reflect periods of bright sunlight. Overall, daytime glare would increase and could adversely affect views on and near the plan area. This would represent a potentially significant impact.

The City would review project proposals and features for consistency with applicable land use regulations and standards to minimize glare-related impacts. The NEAP contains specific design guidelines that address sources of daytime glare throughout the plan area.

The NEAP provides a design framework from which projects may consider elements and features to minimize daytime glare. As described above (Regulatory Framework), the NEAP is intended to preserve the rural and town-like feel of the existing area. Among the NEAP design parameters, buildings would be constructed with non-reflective materials such as composition shingles or flat concrete tiles. Exterior building colors would be compatible with the natural environment such as natural or muted earth tones (reds, browns, greens, yellows, etc.). Build trim would similarly complement that body color. Exterior surfaces would consist of natural-looking materials that harmonize with the rural landscape (wood siding, board and batten siding, brick, stone masonry, etc.). Thus, sources of daytime glare would be minimized to the extent practical.

Therefore, impacts to daytime glare would be less than significant.

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-5
Proposed Viewpoint 1

THIS PAGE INTENTIONALLY LEFT BLANK

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-6
Proposed Viewpoint 2

THIS PAGE INTENTIONALLY LEFT BLANK

FIRSTCARBON SOLUTIONS™

Exhibit 3.1-7
Proposed Viewpoint 3

THIS PAGE INTENTIONALLY LEFT BLANK

Level of Significance

Less than significant

3.1.5 - Cumulative Impacts

Scenic Vistas, Scenic Resources, and Visual Character/Quality

The geographic scope of the cumulative aesthetics analysis is the visible area surrounding the plan area and the City jurisdictional limits. The cumulative analysis considers the full buildout of the Healdsburg 2030 General Plan and the cumulative effect of development along portions of U.S. 101 and Healdsburg Avenue designated by the Healdsburg 2030 General Plan as scenic roadways.

The affected area is a mix of residential and commercial development, agricultural land uses (primarily vineyards), and open space. The proposed plan and cumulative projects throughout the City would result in a mix of urban and lower density development. New development would reduce the amount of existing open space. Open space areas such as hillsides and vegetation provide scenic value to the area, and a reduction of open space areas or blocking of scenic vistas to such scenic resources could result in a cumulatively significant aesthetics impact.

However, the proposed plan would retain 40 percent of the plan area in its existing open space condition. The proposed plan and other cumulative projects would also be required to comply with provisions of the HMC pertaining to building heights, creek-side development and hillside development, which are designed to minimize impacts on these open space features. The proposed plan must comply with the NEAP design guidelines and other cumulative projects must comply with the Citywide Design Guidelines, both of which emphasize the incorporation of existing natural features into site plans and include height restrictions and building setback requirements. By complying with applicable NEAP design guidelines, Citywide Design Guidelines, and HMC regulations, the cumulative impact related to scenic vistas and visual character/quality would be minimized such that no additional mitigation would be required.

In addition, the Healdsburg 2030 General Plan identifies and contemplates development potential throughout the City. The Healdsburg 2030 General Plan identified and mapped visual resources (i.e., significant visual resources, scenic ridgelines, etc.). As described above (Regulatory Framework), the Healdsburg 2030 General Plan contains policies to protect specific visual resources (preserving view corridors) and conditions on development (building height limits) to preserve views of scenic ridgelines. Overall, cumulative projects would comply with applicable Healdsburg 2030 General Plan policies intended to address the cumulative effect of development throughout the City on visual resources.

The plan area is located in the northern portion of the city limits and was previously developed with industrial uses. While the plan area is currently vacant, the Healdsburg 2030 General Plan anticipated mixed-use development in the plan area to provide for future growth. Development in the plan area as well as other development in the City would be subject codes and guidelines to reduce aesthetic impacts and would be reviewed for potential aesthetic and visual resource impacts. As such, there would be a less than significant cumulative impact related to scenic vistas and visual character/quality.

Light and Glare

Development within the proposed plan area would include streetlights, as well as exterior and interior residential and care center lighting. The proposed plan lighting scheme would be subject to design guidelines in the NEAP as well as HMC Section 20.24.015, which establish standards for outdoor lighting. These include height limits for light poles, shielded or recessed lighting fixtures, and directing light downward to prevent indirect illumination of adjoining properties. Other projects that may involve the installation of new exterior lighting fixtures would be required to implement similar measures to prevent light spillage. Therefore, the proposed plan, in conjunction with other existing, planned, and probable future projects, would have a less than significant cumulative impact related to light and glare.

Overall

The cumulative impacts related to scenic vistas, scenic roadways, visual character/quality, and light and glare would be less than significant.

Level of Cumulative Significance

Less than significant

Section 3.2 - Transportation and Traffic

3.2.1 - Introduction

This section describes existing conditions related to transportation and traffic in the plan area vicinity as well as the relevant regulatory framework. This section also evaluates the possible impacts related to transportation and traffic that could result from implementation of the proposed plan. Information included in this section is based on the Healdsburg 2030 General Plan and the plan-specific traffic modeling results utilizing Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (complete modeling output is provided in Appendix B). One comment letter was received from the California Department of Transportation (Caltrans) during the EIR scoping period, which included the following transportation/traffic-related recommendations:

- Recommendation to provide VMT Analysis. (Lead agencies are not currently required to evaluate traffic impacts using a "vehicle miles traveled" (VMT) analysis but will be required to do so beginning on January 1, 2020. The City of Healdsburg will be defining CEQA thresholds of significance for traffic impact studies utilizing VMT metrics in the coming year.)
- Recommendation to designate the plan area as a Priority Development Area. (Priority Development Areas are locally-designated infill opportunity sites. While the City of Healdsburg has not identified any Priority Development Areas, the North Entry Area is identified as a development opportunity site in the Healdsburg 2030 General Plan.)
- Recommendation for the City to establish a Transportation Management Association. (TMAs are typically independent non-profit entities offering options, incentives and information on alternatives available to single-occupant vehicle commuters. Many of the Circulation Goals and policies in the proposed plan address alternative modes of transportation.)
- Request for Cultural Resources records searches and analysis. (See the Initial Study in Appendix A for the Cultural Resources analysis and supporting records searches.)
- Request for Biological Resources analysis and pre-construction survey mitigation. (See the Initial Study in Appendix A for the Biological Resources analysis and corresponding pre-construction survey mitigation required of the proposed plan)
- Request for contribution of fair share traffic impact fees to be included as cumulative regional transportation impact mitigation in the EIR and corresponding Mitigation Monitoring and Reporting Program; and
- Advisement regarding encroachment permit. (The proposed plan would not include development or signage within the Caltrans right-of-way with respect to U.S. 101 and, thus, an encroachment permit would not be required).

3.2.2 - Existing Conditions

Roadway Facilities

Regional

U.S. Highway 101 ("U.S. 101") is a four-lane regional freeway located immediately west of the plan area. U.S. 101 passes through the City of Healdsburg, providing access to and from areas north and south of the City. The highway connects the region to the Northern California coast to the north and San Francisco and beyond to the south. The highway connects to Mendocino and Marin counties to the north and south, respectively. Vehicles traveling to or from north or south of the plan area would traverse U.S. 101 via interchanges at either Lytton Springs Road, to the north or the Dry Creek Road interchange to the south.

Local

Healdsburg Avenue

Healdsburg Avenue is a two- to five-lane north-south arterial that traverses the city and connects to the regional network at either end of the city. The posted speed limit is 40 miles per hour (mph) north of Parkland Farms Boulevard and 35 mph south of that intersection. The roadway has both commercial and residential development on adjacent parcels. Daily traffic counts collected on Healdsburg Avenue near the plan area in April 2018 indicate an average daily traffic volume (ADT) in the plan area vicinity of approximately 5,400 vehicles per day.

Dry Creek Road

Dry Creek Road is a two- to four-lane east-west oriented arterial that connects the Dry Creek Valley to the City, ending at the intersection with Healdsburg Avenue, where it becomes March Avenue. The posted speed limit is 30 mph and a center left-turn lane is present between the U.S. 101 North Ramps and Healdsburg Avenue. The road provides access to adjacent commercial development and connects to other arterial and collector streets.

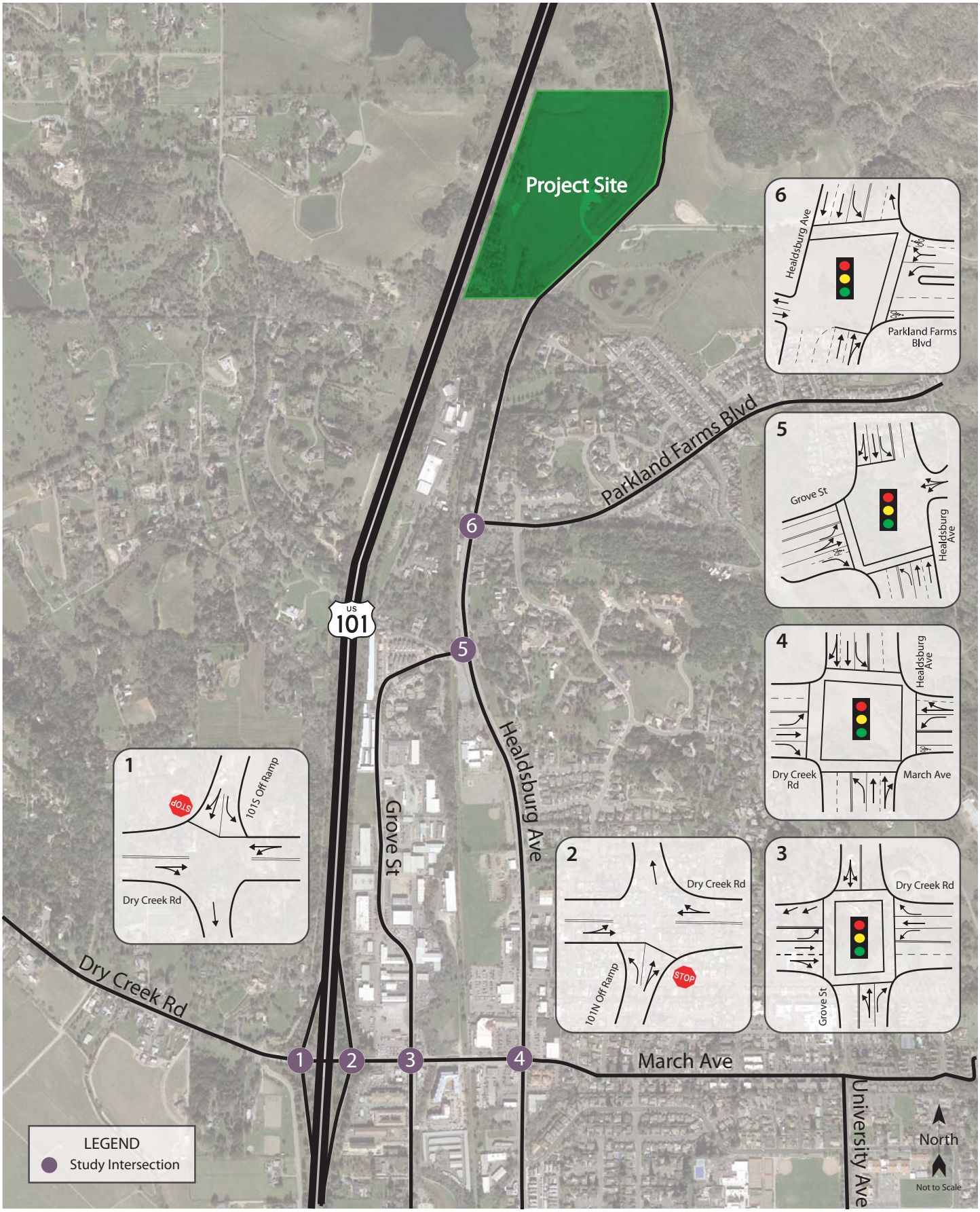
Grove Street

Grove Street is a three-lane collector street that changes alignment from north-south to east-west and intersects both Healdsburg Avenue and Dry Creek Road. A center two-way left-turn lane is present for most of the roadway and the posted speed limit is 35 miles per hour. Class II bike lanes are present along most of the roadway.

Study Area

The following provides a description of the existing principal roadways within the study area. The study area includes the main roadways and intersections around the plan area that would be most impacted by plan-generated traffic volumes. The study traffic area and roadways are depicted in Exhibit 3.2-1.

The study area consists of seven intersections; no roadway segments were selected for operational analysis. These intersections are listed below and shown along with their existing lane configurations and controls. The respective jurisdiction (if not the City of Healdsburg) is indicated in brackets. The study area was selected in consultation with City staff.



hea068.ai 8/18

Traffic Impact Study for the North Entry Area Plan

Exhibit 3.2-1 - Study Area and Existing Lane Configurations

W-Trans

THIS PAGE INTENTIONALLY LEFT BLANK

Intersections

1. Dry Creek Road/U.S. 101 South Ramps (Caltrans)
   - A four-legged intersection. The stop-controlled north leg is the U.S. 101 southbound off-ramp, and the south leg is the on-ramp.
2. Dry Creek Road/U.S. 101 North Ramps (Caltrans)
   - A four-legged intersection where the south leg is the off-ramp for U.S. 101 northbound; it is stop-controlled. The north leg is the on-ramp to U.S. 101 North.
3. Dry Creek Road/Grove Street
   - A four-legged signalized intersection. Grove Street, which runs north-south, has permitted left turns and Dry Creek Road, which runs east-west, has protected left turns. There are crosswalks and pedestrian phasing on each leg.
4. Dry Creek Road-March Avenue/Healdsburg Avenue
   - A four-legged signalized intersection with protected left-turn phasing and pedestrian crossings on each approach.
5. Healdsburg Avenue/Grove Street
   - A signalized tee intersection with a driveway forming a fourth leg. Protected left-turn phasing exists on approach to Healdsburg Avenue and the driveway and Grove Street approaches are split-phased. Crosswalks exist on the south and west legs.
6. Healdsburg Avenue/Parkland Farms Boulevard
   - A signalized tee intersection with protected left-turn phasing on the Healdsburg Avenue approach. There are crosswalks on the north and east legs.
7. Healdsburg Avenue/Plan Area Access
   - A new fire station is included as part of the Montage Healdsburg project and a traffic signal is proposed to serve the fire station on the east side of Healdsburg Avenue and future development in the plan area.

Plan Area

There are no roadways on the plan area. An unimproved entryway connects the plan area to Healdsburg Avenue. The entryway will be improved in late 2018 to install an enhanced at-grade rail crossing across a currently inactive rail line owned by the North Coast Rail Authority (NCRA).

Vehicle Level of Service

Study Area

Traffic operations at each study roadway facility were evaluated using Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade from A (best) to F (worst) is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. LOS was evaluated for weekday AM, PM, and Saturday Midday peak hours.

Plan Area

Since there are no formal roadways within the plan area, there is no vehicle LOS information available relevant to the plan area.

Intersection Levels of Service

The study intersections were analyzed using methodologies published in the Highway Capacity Manual (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. The Levels of Service for the intersections were evaluated under different strategies based on whether they are signalized, un-signalized, or stop-controlled. For more detailed information on how the study intersections were analyzed, refer to the technical memorandum in Appendix B.

The Levels of Service for the intersections with side-street stop controls, or those which are un-signalized and have one or two approaches stop controlled, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines an LOS for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections that are currently controlled by a traffic signal, or may be in the future, were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

Study Area

There are currently no all-way stop-controlled intersections in the study area. However, the City has identified installation of all-way stop-controls at Dry Creek Road/U.S. 101 South Ramps as an interim solution for congestion at that intersection until funds for a traffic signal are secured. That project is fully funded and is anticipated to be completed by Summer 2019. The "All-Way Stop-Controlled" methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection overall, then related to a Level of Service.

Table 3.2-1 specifies the average delay range for each LOS category based on HCM procedures. The reported average delay values are rounded to the nearest second. The associated LOS is based on the hundredths decimal point of the delay values. For instance, a signalized intersection with average delay of 34.85 seconds would have a reported LOS of C, whereas a signalized intersection with average delay of 35.05 seconds would have a reported LOS of D. However, the reported delay for both instances would be "35 seconds."

Table 3.2-1: Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.
Source: Highway Capacity Manual, Transportation Research Board, 2010			

Existing vehicle turning movement counts were collected at the study intersections in April 2018 while area schools were still in session and not during holidays. Conditions during the AM and PM peak periods were documented to capture the highest existing volumes on the local transportation network. The morning peak hour typically occurs between 7:00 a.m. and 9:00 a.m. and reflects conditions during the home to work or school commute, while the PM peak hour occurs between 4:00 p.m. and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Under existing conditions, all but one of the study intersections are operating acceptably during both the AM and PM hours. The study intersection at Dry Creek Road/U.S. 101 South Ramps operates at LOS F during both peak hours under the current controls and configuration but would be expected to improve to acceptable operation at LOS C with installation of all-way stop-controls. Exhibit 3.2-2

provides existing traffic volumes for each study intersection. A summary of the intersection LOS calculations is contained in Table 3.2-2.

Table 3.2-2: Existing Peak hour Intersection Levels of Service

Study Intersection *Approach*	AM Peak		PM Peak	
	Delay*	LOS	Delay*	LOS
1. Dry Creek Road/U.S. 101 South Ramps	**55.0**	**F**	**70.4**	**F**
Southbound Approach	***490.7***	***F***	***740.6***	***F***
With All-way Stop Controls	*16.5*	*C*	*23.0*	*C*
2. Dry Creek Road/U.S. 101 North Ramps	14.0	B	6.4	A
Northbound Approach	*33.4*	*D*	*21.4*	*C*
3. Dry Creek Road/Grove Street	24.5	C	39.0	D
4. Dry Creek Road-March Avenue/Healdsburg Avenue	35.8	D	34.5	C
5. Healdsburg Avenue/Grove Street	9.5	A	11.7	B
6. Healdsburg Avenue/Parkland Farms Boulevard	6.4	A	6.2	A
7. Healdsburg Avenue/Plan Area Access[1]	N/A	N/A	N/A	N/A

Notes:
[1] Intersection is not currently in use.
* Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold text** = deficient operation; Underlined text = conditions with planned improvements
Source: W-Trans, 2018.

Plan Area

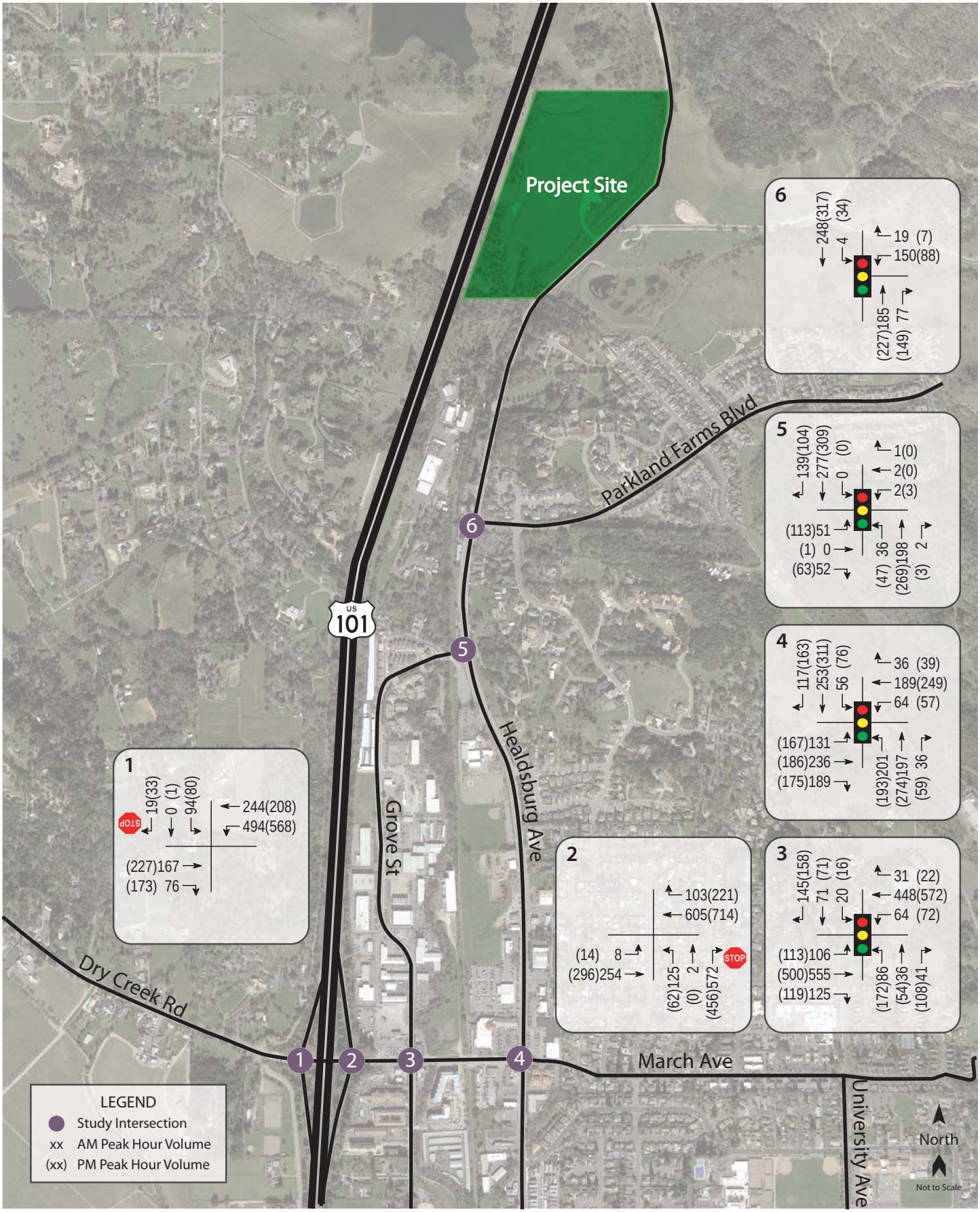
Since there are no formal roadways within the plan area, there is no vehicle LOS information available relevant to the plan area.

Existing Public Transit Service and Facilities

Sonoma County

Sonoma County Transit (SCT) provides transit service throughout Sonoma County. Sonoma County Transit Routes 60 and 60X provide service to the cities of Cloverdale, Healdsburg, Windsor, and Santa Rosa via surface streets and US 101, with stops on Healdsburg Avenue at Alexander Valley Road to the north of the plan area and Parkland Farms Boulevard to the south. Routes 60 and 60X operate Monday through Sunday with approximately 15-minute headways from 5:00 a.m. to 10:00 p.m.

Route 60 and 60X bus stops are shared with five Sonoma County Transit Route 67 bus stops. Route 67 operates solely within the City of Healdsburg providing service Monday through Saturday with approximately one-hour headways between 8:30 a.m. and 4:30 p.m. The nearest stop to the plan area is at Parkland Farms Boulevard, approximately one-half mile to the south.



hea068.ai 8/18

Traffic Impact Study for the North Entry Area Plan

Exhibit 3.2-2 - Existing Traffic Volumes

W-Trans

THIS PAGE INTENTIONALLY LEFT BLANK

Two bicycles can be carried on most SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

City of Healdsburg

Sonoma County Transit (SCT) operates within city limits on a variable fixed route system. Bus service runs weekdays and Saturday from 8:30 a.m. to 4:20 p.m. All the HT buses are equipped with wheelchairs lifts and handicap accessible. The City of Healdsburg has approved funding to subsidize fares for all riders on Route 67 for a two-year period beginning July 1, 2018. The new "Fare-Free" program is designed to make using local transit services easier and to encourage hop-on, hop-off travel on the local transit system.

Dial-a-Ride

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within the City of Healdsburg and the greater Healdsburg area.

Plan Area

No public transit currently serves the plan area, although the Healdsburg Avenue Improvement Project (currently under construction) includes two bus stops for SCT Route 67 on Healdsburg Avenue adjacent to and across the street from the plan area.

Existing Bicycle Facilities

The Caltrans Highway Design Manual defines four types of bicycle facilities:

- Class I Multi-Use Path—a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- Class II Bike Lane—a striped and signed lane for one-way bike travel on a street or highway.
- Class III Bike Route—signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- Class IV—Class IV facilities, commonly referred to as protected bicycle lanes or cycle tracks, are a facility that combines elements of Class I and Class II facilities. They offer an exclusive bicycle route immediately adjacent to a roadway similar to a Class II facility but provide a physical separation from traffic with plastic delineators, raised curb, or parked automobiles.

City of Healdsburg

The City's bicycle network includes Class I (off-street paths), Class II (bicycle lanes) and Class III (bicycle routes) facilities. The bulk of the system is comprised of Class III routes. However, there is a Class I path adjacent to the west side of the railroad tracks between Vine Street/Mill Street to Norton Slough north of City Hall and Class II bike lanes are provided on Parkland Farms Boulevard, Rosewood Drive and sections of Grove Street and Poppy Hill Drive. Signs are posted along the bicycle routes that utilize local collector and arterial streets. The Foss Creek Pathway, when

completed, will provide a 4.1-mile long, off-street bicycle and pedestrian path running from the northern City boundary to just north of the Russian River Bridge.

The Foss Creek Pedestrian & Bike Trail is a Class I multi-use path which currently starts approximately 900 feet south of the Dry Creek Road/Grove Street intersection. The trail extends south to the intersection of Vine Street/Mill Street/Healdsburg Avenue. The extension of this trail is planned along the railroad tracks which transect the City between Grove Street and Healdsburg Avenue. The paved trail is planned to extend from the northern city limits to the intersection of Front Street in the southern part of the City.

Proximate to the plan area, Class II bike lanes are present along March Avenue between Healdsburg Avenue and University Street, along Grove Street between Healdsburg Avenue, and about 650 feet north of Dry Creek Road and on the entirety of Parkland Farms Boulevard. Class II bike lanes are planned for Healdsburg Avenue north of Parkland Farms Boulevard, including along the plan area frontage, and on Dry Creek Road starting at the U.S. 101 interchange. Additionally, the existing gap on Grove Street north of Dry Creek Road is planned to be constructed in the future.

Class III bike routes are present along Dry Creek Road west of Healdsburg Avenue and on Healdsburg Avenue between Dry Creek Road-March Avenue and Parkland Farms Boulevard. Table 3.2-3 summarizes the existing and planned bicycle facilities near the plan area, and Exhibit 3.2-3 shows the City's plan for bicycle facilities in the vicinity.

Table 3.2-3: Bicycle Facilities Proximate to Plan Area

Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
Foss Creek Pedestrian and Bike Trail	I	1.3	900 feet South of Dry Creek Road/Grove Street	Vine Street/Mill Street/Healdsburg Avenue
Parkland Farms Boulevard	II	0.8	Healdsburg Avenue	Terminus
March Avenue	II	0.5	Healdsburg Avenue	University Street
Grove Street	II	0.6	650 feet North of Dry Creek Road	Healdsburg Avenue
Rosewood Drive	II	0.4	Parkland Farms Boulevard	Paul Wittke Drive
Poppy Hill Drive	II	0.1	Rosewood Drive	100 feet East of Clear Ridge Drive
Healdsburg Avenue	III	0.8	Dry Creek Road–March Avenue	Parkland Farms Boulevard
Planned				
Foss Creek Trail Extension	I	1.8	900 feet South of Dry Creek Road/Grove Street	Northern city limits
Grove Street	II	0.1	Dry Creek Road	650 feet North of Dry Creek Road

Table 3.2-3 (cont.): Bicycle Facilities Proximate to Plan Area

Status Facility	Class	Length (miles)	Begin Point	End Point
Dry Creek Road	II	0.3	U.S. 101	Healdsburg Avenue
Healdsburg Avenue	II	0.8	Parkland Farms Boulevard	Northern city limits
Source: Healdsburg Bicycle and Pedestrian Master Plan.				

Plan Area

No bicycle lanes or facilities exist within the plan area.

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc.

Study Area

Sidewalk facilities are discontinuous along all roadways in the study area, including Dry Creek Road west of the SMART railroad tracks, Grove Street north of Dry Creek Road, and Healdsburg Avenue north of Grove Street. There are no pedestrian facilities along the U.S. 101 interchange at Dry Creek Road.

Pedestrian facilities at the intersection of Dry Creek Road/Grove Street include pedestrian signal heads and push buttons at all four corners. In addition, crosswalks are present on all four legs of the intersection though there are no sidewalks on the northwest or northeast corners.

Dry Creek Road-March Avenue/Healdsburg Avenue has crosswalks, curb ramps, pedestrian signal heads, and push buttons at all four corners. Continuous sidewalk is present along all roadways.

There are curb ramps, pedestrian signal heads, and push buttons at all corners of the intersection of Grove Street/Healdsburg Avenue. Crosswalks are present on the western and southern legs.

Pedestrian facilities at the intersection of Healdsburg Avenue/Parkland Farms Boulevard include curb ramps, pedestrian signal heads, and push buttons at all corners except the southwest corner. Crosswalks are present along the northern and eastern legs, and continuous sidewalk is present along all roadways except on the western side of Healdsburg Avenue north of the intersection with Parkland Farms Boulevard.

Plan Area

No sidewalks exist within the plan area. Existing sidewalks on both sides of Healdsburg Avenue terminate just south of the plan area at Foss Creek. As part of the Healdsburg Avenue Improvement Project funded by the Montage Healdsburg development, a sidewalk is currently being installed on the east side of Healdsburg Avenue from Foss Creek to a point just north of the intersection with the Plan Area access road.

3.2.3 - Regulatory Framework

Federal

Americans with Disabilities Act

The Americans with Disabilities Act (ADA), which provides comprehensive rights and protections to individuals with disabilities, would apply to future development contemplated under the proposed plan. The goal of the ADA is to assure equality of opportunity, full participation, independent living and economic self-sufficiency. To implement this goal, the U.S. Access Board has created accessibility guidelines for public rights-of-way. The guidelines address various issues, including roadway design practices, slope and terrain, pedestrian access to streets, sidewalks, curb ramps, street furnishings, pedestrian signals, parking and other components of public rights-of-way.

State

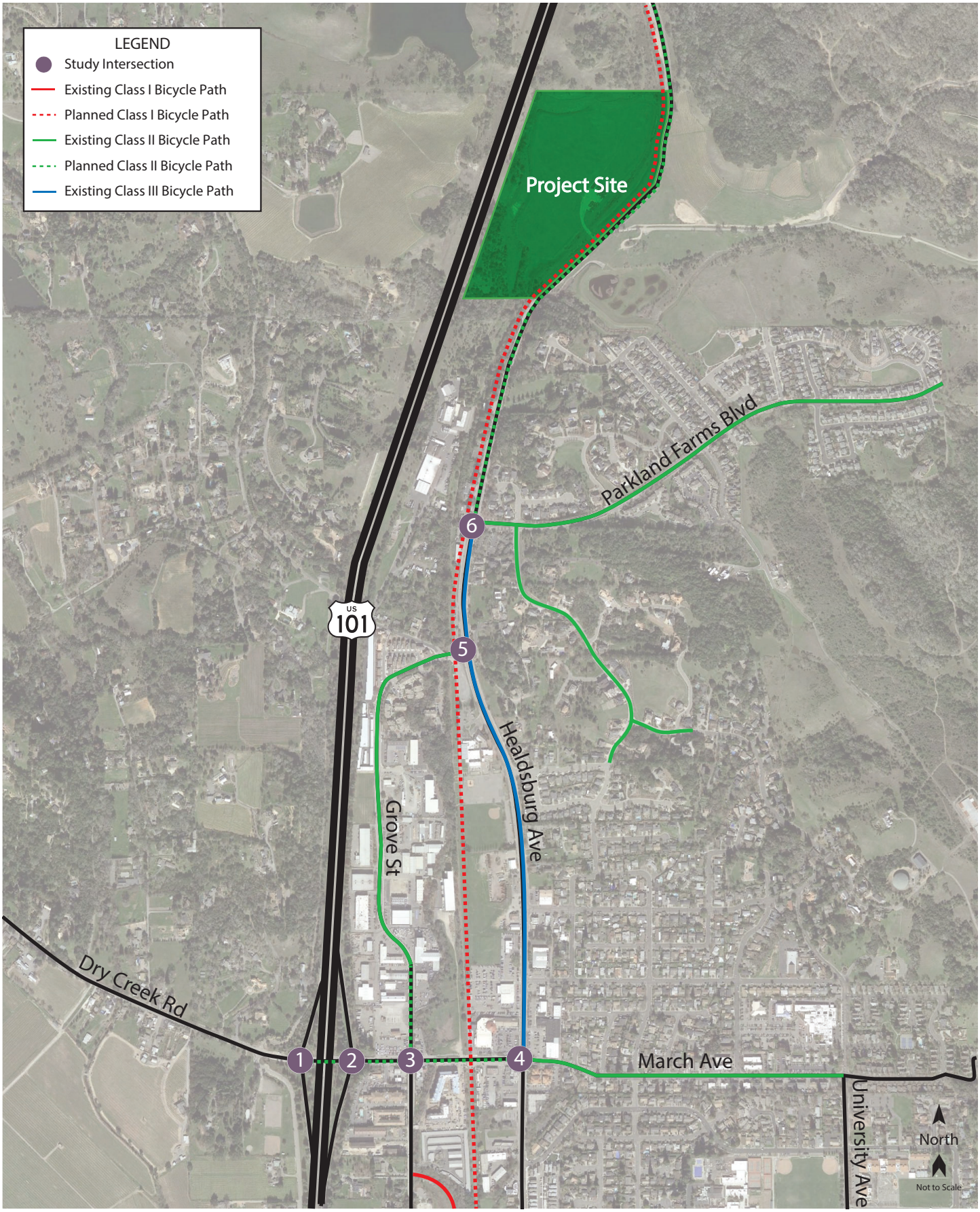
California Department of Transportation LOS Goals

Caltrans is responsible for planning, design, construction and maintenance of all interstate freeways and state routes. The study intersections of Dry Creek Road with the U.S. 101 North Ramp and South Ramp are located on a state route, and therefore, under the jurisdiction of Caltrans. Caltrans requirements are described in the agency's Guide for Preparation of Traffic Impact Studies. The Guide describes the information needed for Caltrans to review a proposed project's impacts on State highway facilities; including freeway segments, on- and off-ramps, and signalized intersections.

Pursuant to agency standards, Caltrans strives to maintain operation at the transition from LOS C to LOS D, which translates to an allowable delay of approximately 25 seconds for un-signalized intersections. Based on previous discussions with Caltrans staff, it is understood that the standard is to be applied to the overall average intersection delay, not a delay associated with any single movement or approach. Under this approach, if one movement experiences very high delay and has moderate to high traffic volumes, the overall delay and LOS should reflect the critical nature of the condition. However, if one movement is expected to experience high delay, but has very low traffic volumes, the overall intersection operation will likely still meet Caltrans standards.

Senate Bill 743

In November 2017, the Governor's Office of Planning and Research (OPR) released a technical advisory containing recommendations regarding the assessment of VMT, proposed thresholds of significance, and potential mitigation measures for lead agencies to use while implementing the required changes contained in Senate Bill 743. Also in November 2017, OPR released the proposed text for Section 15064.3, "Determining the Significance of Transportation Impacts," which summarized the criteria for analyzing transportation impacts for land use projects and transportation projects and directs lead agencies to "choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure." OPR recommends that for most instances a per service population threshold should be adopted and that a fifteen percent reduction below that of existing development would be a reasonable threshold.



hea068.ai 8/18

Traffic Impact Study for the North Entry Area Plan

Exhibit 3.2-3 - Existing and Planned Bicycle Facilities

THIS PAGE INTENTIONALLY LEFT BLANK

As noted in the OPR guidelines, agencies are directed to choose metrics that are appropriate for their jurisdiction to evaluate the potential impacts of a project in terms of VMT. The current deadline for adopting policies to implement SB 743 is January 2020; the change to VMT is anticipated to be formally adopted as part of updates to the CEQA guidelines in 2018. The City of Healdsburg has not yet adopted VMT policies, and, until the City does, there is no guidance on how to evaluate the proposed plan in terms of VMT.

Regional

Metropolitan Planning Commission Regional Transportation Plan (Plan Bay Area 2040)

The current Regional Transportation Plan (RTP) produced by MTC, Plan Bay Area 2040, was adopted in 2017 and is considered a focused update to Plan Bay Area, which was adopted in 2013. Plan Bay Area sets forth regional transportation policy and provides capital program planning for all regional, State, and Federally funded projects. In addition, Plan Bay Area provides strategic investment recommendations to improve regional transportation system performance over the next 22 years. Investments in regional highway, transit, local roadway, bicycle, and pedestrian projects are set forth. Plan Bay Area includes no roadway improvement projects within or immediately adjacent to the City of Healdsburg, though it does include regional funding to implement Sonoma County's Safe Routes to School program as well as bicycle and pedestrian improvements countywide, and to enhance bus service frequencies in the County.

Sonoma County Transportation Authority Comprehensive Transportation Plan

Sonoma County Transit Authority (SCTA) acts as the county-wide planning and programming agency for transportation-related issues in Sonoma County. The SCTA plays a leading role in transportation by securing funds, providing project oversight, and initiating long term planning activities. Every four years the SCTA updates the long-range Countywide Transportation Plan (CTP), a multi-modal transportation plan that documents existing conditions and prioritizes regional transportation needs throughout Sonoma County for the next 25 years. The CTP establishes countywide goals, objectives, and policies for improving mobility on Sonoma County's streets, highways, transit systems, and bicycle/pedestrian facilities, as well as strategies to reduce transportation related impacts.

Local

City of Healdsburg 2030 General Plan

The Healdsburg 2030 General Plan sets forth the following goals and policies relevant to transportation:

Goal T-A: A circulation system that is correlated with existing and proposed land use and provides for the efficient movement of people, goods, and services within and through Healdsburg.

- **Policy T-A-1:** The City shall strive to maintain at least a [LOS] D operation during periods of peak traffic flow at critical intersections, and Level of Service C operation at all other times. LOS F operation shall be acceptable for a stop-controlled approach to a through street provided the higher levels of delay affect 25 or fewer vehicles per hour. Attainment of these levels of service shall be consistent with the financial resources available and the limits of technical feasibility.

In the Healdsburg 2030 General Plan Update Environmental Impact Report, 2009, the following additional guidance is provided.

An impact on intersection operation would be considered significant if:

- The addition of traffic generated by a project degrades the peak-period LOS of an all-way stop-controlled or signalized intersection from A, B, C, or D (without the project) to E or F (with the project);
- The addition of project-generated traffic degrades the overall operation on a minor, stop-controlled approach to an un-signalized intersection from LOS A, B, C, D, or E (without the project) to LOS F (with the project) and the affected approach or movement serves 25 or more vehicles per hour; or
- The LOS (without project) is E or F and project-generated traffic would increase the peak period average vehicle delay by 5 seconds or more.

Additionally, for purposes of assessing potential safety impacts, an impact would be considered significant if it resulted in the queuing to exceed the available stacking space or, where queuing already exceeded available stacking space, increased the queue length by more than 25 feet, or one vehicle-length.

3.2.4 - Impacts and Mitigation Measures

Specific Thresholds of Significance

The City of Healdsburg CEQA Implementation Procedures establish that a significant impact to transportation and traffic would occur if the plan:

- Conflicts with an adopted plan, ordinance, policy, or program of the City that establishes a performance measure of the circulation system, taking into account all transportation modes, including public transit and non-motorized travel and relevant components of the circulation system
- Conflicts with an adopted plan, policy, or program of the City regarding public transit, bicycling or waking facilities
- Conflicts with an applicable congestion management program, including but not limited to level of service standards and travel demand measures or other standards established by the congestion management agency for designated roads or highways
- Decreases the safety of public transit, bicycling, or walking facilities
- Increases air traffic of changes the location of air traffic that results in substantial safety risks
- Substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Results in inadequate emergency access

As discussed in the Initial Study for the proposed plan, there would be no changes in air traffic patterns. Therefore, no impact would occur with regard to air traffic, and this topic will not be further evaluated in this section.

Approach to Analysis

Analysis in this section is based on the traffic modeling prepared by W-Trans for the proposed plan. The complete traffic modeling outputs are included in Appendix B. The following is a summary of the analysis methodology. Trip generation was estimated using the Institute of Transportation Engineers (ITE) in Trip Generation Manual, 9th Edition, for the land use designations identified in Table 2-2 in Chapter 2, Project Description. Further information on how trip generation was prepared and analyzed is provided in technical memorandums included in Appendix B.

Trip Generation

The anticipated trip generation for contemplated land use development (as assumed for the traffic analysis) was estimated using standard trip rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 as well as the 9th edition published in 2012. The standard trip rates for Multifamily Housing (Land Use #220), Hotel (Land Use #310), General Office (Land Use #710) and Specialty Retail Center (Land Use #826) were applied as these descriptions most closely match the proposed land uses. It should be noted that the Specialty Retail Center is a land use category included in the *9th* Edition of the *Trip Generation Manual* but deleted from the 10th Edition. Through discussions with City staff, it was determined to be the most appropriate land use for application in this analysis as it most closely represented potential development for the site. Because the plan area is currently undeveloped, it currently generates no vehicle trips.

Based on the assumed land uses, the evaluated future land uses would be expected to generate a total of 4,930 daily trips. The expected daily trips include 259 trips during the morning peak hour and 351 trips during the evening peak hour. The expected trip generation potential for the proposed plan is indicated in Table 3.2-4.

Table 3.2-4: Trip Generation Summary

Land Use	ITE LU Code	Size[1]	Weekday		AM Peak				PM Peak			
			Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Multifamily Housing	220	290 du	7.32	2,123	0.46	133	31	102	0.56	162	102	60
Hotel	310	130 rms	8.36	1,087	0.39	51	40	11	0.48	62	19	43
General Office	710	40 ksf	9.74	390	1.16	46	40	6	1.15	46	7	39
Specialty Retail Center*	826	30 ksf	44.32	1,330	0.96	29	18	11	2.71	81	36	45
Total Plan Trips				**4,930**	**—**	**259**	**129**	**130**	**—**	**351**	**164**	**187**

Notes:
[1] du = dwelling units; rms = rooms; ksf = 1,000 square feet
* Rates from ITE Trip Generation Manual, 9th Edition
Source: W-Trans, 2018.

Trip Distribution

The pattern used to allocate proposed plan-related trips to the street network was determined by reviewing existing turning movements at the study intersections, employment patterns for residents of Healdsburg as indicated by the 2000 Census, and application of engineering judgement. A summary of trip distribution per land use is summarized in Table 3.2-5 and plus project traffic volumes at the study intersections are shown in Exhibit 3.2-4.

Table 3.2-5: Trip Distribution Assumptions

Route	Multifamily Housing	Hotel	General Office Building	Specialty Retail Center
West via Dry Creek Road	5 percent	15 percent	—	5 percent
East via March Avenue	10 percent	5 percent	5 percent	15 percent
South via Grove Street	10 percent	5 percent	5 percent	5 percent
South via Healdsburg Avenue	10 percent	15 percent	15 percent	25 percent
North via Healdsburg Avenue	15 percent	5 percent	5 percent	5 percent
East via Parkland Farms Boulevard	—	—	—	10 percent
South via U.S. 101	50 percent	55 percent	50 percent	30 percent
North via U.S. 101	—	—	20 percent	5 percent
Total	**100 percent**	**100 percent**	**100 percent**	**100 percent**

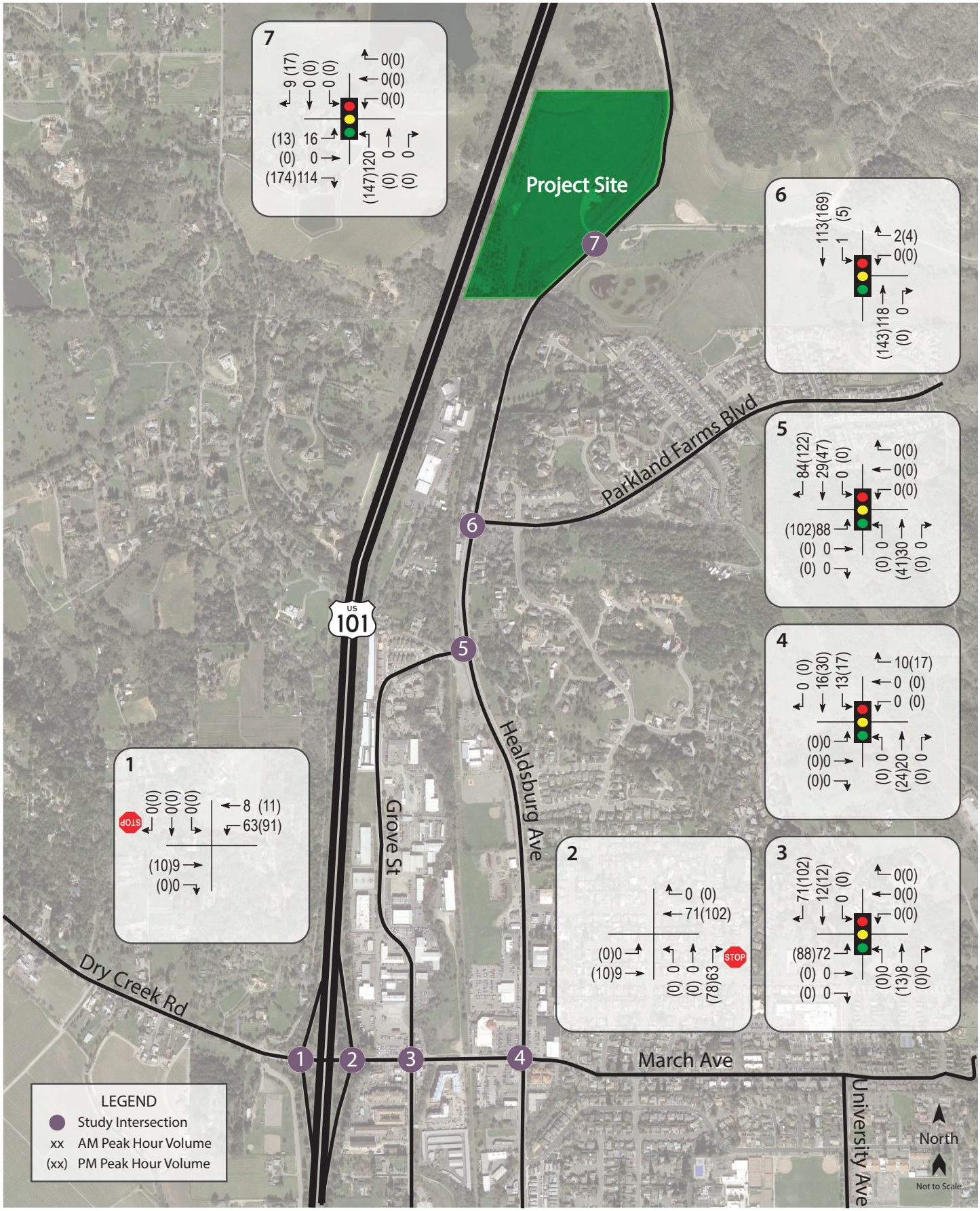
Source: W-Trans, 2018.

Traffic Signal Warrants

The point at which signalization should be considered as a mitigation measure was evaluated based on information contained in the California Manual on Uniform Traffic Control Devices (CA-MUTCD) for Streets and Highways, which has been adopted by the State of California as a replacement for the Caltrans Traffic Manual.

Chapter 4C of the CA-MUTCD provides guidance on when a traffic signal should be considered. There are nine different warrants, or criteria, presented as follows:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak-Hour Volume
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing



hea068.ai 8/18

Traffic Impact Study for the North Entry Area Plan

Exhibit 3.2-4 - Plan Traffic Volumes

W-Trans

THIS PAGE INTENTIONALLY LEFT BLANK

For the purposes of this analysis, Warrant 3, the peak-hour volume warrant, which determines the need for traffic control based on the highest volume hour of the day, was used as an initial indication of traffic control needs. The use of this signal warrant is common practice for planning studies since the peak-hour volumes are readily available. Other warrants, which are more generally applicable to existing traffic issues, require collection of traffic volumes for the highest 4 or 8 hours of the day, review of the collision history, and evaluation of the system surrounding the location.

Operation of the transportation network was evaluated under the following scenario:

- **Existing Plus Plan Conditions (**Table 3.2-6**)—**This scenario reflects the addition of plan-generated traffic volumes attributed to land uses contemplated under the proposed plan to existing traffic volumes.

Impact Evaluation

Consistency with Circulation Performance Effectiveness Measures

Impact TRANS-1: **The proposed plan could conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all transportation modes, including public transit and non-motorized travel and relevant components of the circulation system.**

Impact Analysis

To evaluate potential impacts of the proposed plan, land use assumptions included in Table 2-2 from Chapter 2, Project Description, were applied that resulted in a trip generation adequate to encompass reasonably anticipated land use development proposals for the plan area. Intersection level of service is the circulation performance effectiveness measure against which the proposed plan is assessed below.

For the purposes of this analysis, for intersections under Caltrans jurisdiction (U.S. 101), an impact is significant if it causes the overall delay of an intersection to fall from LOS C/D or better to LOS D or worse, consistent with the standard in the Guide for the Preparation of Traffic Studies. The City of Healdsburg strives to maintain LOS D at signalized intersections during peak travel periods, and LOS C at all other times. LOS F operation is acceptable for stop-controlled approaches to through streets provided the higher levels of delay affect 25 or fewer vehicles per hour. Development contemplated under the proposed plan would have a significant impact if it causes an intersection currently operating at LOS D or better to fall to LOS E or F. At intersections operating at LOS E or F without plan-related traffic, an impact attributed to plan-related development would be considered significant if it causes the average delay to increase by more than 5 seconds.

Intersection Level of Service

The potential for plan-related traffic to impact operation of local intersections was evaluated by adding plan-generated traffic to existing volumes, with impacts assessed using the standards of significance identified above.

Under volumes for the Existing plus Plan scenario all but two of the study intersections would be expected to continue operating acceptably. The off-ramp approach from U.S. 101 South to Dry Creek

Road is currently operating at LOS F and would be expected to experience additional delay upon adding plan-generated trips. The City is implementing a project to install all-way stop signs at this location to be completed in Spring 2019, and these improvements will improve intersection operations from a current LOS F to an LOS C (which is acceptable) during both the AM and PM peak hours. Existing plus plan-related traffic would result in the intersection operating at LOS E during the PM peak hour. Signalization of the intersection would be required to achieve acceptable operation.

Additionally, the intersection of Dry Creek Road/Grove Street would be expected to deteriorate from LOS D to LOS E during the evening peak hour with the addition of traffic that is generated from plan-related development. To achieve acceptable operation, the northbound Grove Street approach would need to be restriped to include a separate left-turn lane with protected left-turn phasing and the existing right-turn lane converted to use for through/right-turn movements. The Existing plus Plan operational results are summarized in Table 3.2-6.

Table 3.2-6: Existing Plus Plan Intersection Levels of Service

Study Intersection *Approach*	Existing		Existing Plus Plan	
	AM Peak	PM Peak	AM Peak	PM Peak
1. Dry Creek Road/U.S. 101 South Ramps	**55.0/F**	**70.4/F**	**84.7/F**	**130/F**
Southbound Approach	***490.7/F***	***740.6/F***	***831/F***	***1536/F***
With All-way Stop Controls	*16.5/C*	*23.0/C*	*22.0/C*	***39.5/E***
Mitigated Conditions (Signalization)	N/A	N/A	22.1/C	25.5/C
2. Dry Creek Road/U.S. 101 North Ramps	14.0/B	6.4/A	20.6/C	8.6/A
Northbound Approach	*33.4/D*	*21.4/C*	48.8/E	27.9/D
3. Dry Creek Road/Grove Street	24.5/C	39.0/D	34.7/C	**60.1/E**
Mitigated Conditions (Striping/Phasing Changed)	N/A	N/A	29.3/C	41.8/D
4. Dry Creek Road-March Avenue/Healdsburg Avenue	35.8/D	34.5/C	36.0/D	35.1/D
5. Healdsburg Avenue/Grove Street	9.5/A	11.7/B	12.0/B	13.3/B
6. Healdsburg Avenue/Parkland Farms Boulevard	6.4/A	6.2/A	6.5/A	6.1/A
7. Healdsburg Avenue/Plan Area Access	N/A	N/A	8.2/A	9.7/A

Notes:
Results are presented as Delay/LOS; delay is measured in average seconds per vehicle; LOS = Level of Service; results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **bold text** = deficient operation;
Shaded cells reflect mitigated conditions
Source: W-Trans, 2018

Implementation of Mitigation Measure (MM) TRANS-1a, which requires a proportional share payment toward signalization of Dry Creek Road/U.S. 101 South, will not reduce the impact to less than significant as there is no guarantee that the improvements will be completed by the time

development under the plan has occurred.[1] Once the signalization project is fully funded and installed, the impact would be reduced to less than significant. Until the signalization project is implemented, however, this is a significant and unavoidable impact.

Implementation of MM TRANS-1b, which requires restriping and phasing modifications to the northbound approach at Dry Creek Road/Grove Street, would reduce the operational impact of plan-related traffic at that intersection to less than significant with mitigation.

Level of Significance Before Mitigation

Potentially significant

Mitigation Measures

MM TRANS-1a To address anticipated deficient roadway operations, the City has planned for roadway improvements to Dry Creek Road/U.S. 101 South Ramps (study intersection 1) that include signalization. New development within the plan area shall be required to contribute a proportional share allocation towards the cost of installation of a traffic signal at Dry Creek Road/U.S. 101 South.

MM TRANS-1b New development within the plan area shall be required to improve the northbound approach to Dry Creek Road/Grove Street (study intersection 3). The approach shall be restriped to include a separate left-turn lane and the signal modified to provide protected left-turn phasing, with the existing right-turn lane converted to use for through/right-turn movements.

Level of Significance After Mitigation

Significant and unavoidable with mitigation

Contribution of a proportional share allocation towards improvements necessary to mitigate a significant impact would not reduce the impact to a less than significant level. The City expects to have a cost allocation plan for the signalization of the U.S. 101 South/Dry Creek Road intersection in place by late 2019. The significant impacts to this intersection as a result of plan-related development would remain significant until improvements identified in MM TRANS 1a are implemented. For the purposes of this analysis, the effect of plan-related traffic at the U.S. 101 South/Dry Creek Road intersection is considered to be a significant and unavoidable adverse impact.

New development within the plan area would be required to implement improvements to the northbound approach to Dry Creek Road/Grove Street through the implementation of MM TRANS 1b, which changes the approach to the intersection by restriping to include a separate left-turn lane and signal modification. The improvements would provide protected left-turn phasing, with the existing right-turn lane converted to use for through/right-turn movements. As a result, the impact from traffic by plan-related development would be reduced to a level of less than significant with mitigation.

[1] The City expects to have a cost allocation plan for the signalization of the U.S. 101 South/Dry Creek Road intersection in place by late 2019.

Consistency with Congestion Management Program

Impact TRANS-2: The proposed plan would not conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures or other standards established by the congestion management agency for designated roads or highways.

Impact Analysis

The Sonoma County Transportation Authority (SCTA) is the agency that provides planning, project management, finance, grant administration, and other important functions related to the transportation network in Sonoma County. In 1997, SCTA relinquished its position as the County Congestion Management Agency under new State legislation that made this function optional. As there is currently no adopted regional congestion management program in Sonoma County, implementation of the Plan would have no impact.

Level of Significance

No impact

Adequacy of Emergency Access

Impact TRANS-3: The proposed plan could result in inadequate emergency access.

Impact Analysis

The proposed plan would provide access from Healdsburg Avenue via an at-grade crossing of the NCRA rail line, which is slated for future use by the SMART light-rail transit line. The California Public Utilities Commission (CPUC) has granted approval for a new 70-foot-wide public crossing from Healdsburg Avenue over the NCRA tracks to the plan area. Plans prepared for the Healdsburg Avenue Improvement Project, which is being implemented by the Montage Healdsburg project, include roadway geometrics and conduit for future installation of a traffic signal at the main access to the plan area, with the east leg serving a new fire station being built in conjunction with the Montage Healdsburg project.

Per the approval, the at-grade rail crossing improvements include appropriate crossing arms, bells, lights, and other warning and control devices. Because of the proximity to the proposed new signal, railroad pre-emption equipment would be added to the signal controller and phasing sequence to ensure that queuing associated with the signal operation does not block the tracks when a train is approaching and vice versa.

As this crossing is the only point of access to the plan area, there could be periods during railroad pre-emption when emergency response vehicles cannot reach the site, or, if on-site, cannot leave. This could result in inadequate emergency access and would represent a potentially significant impact. However, the property owners have obtained an easement from NCRA for a secondary Emergency Vehicle Access to Healdsburg Avenue at the north end of the property. Implementation of MM TRANS-3 would ensure that the emergency access impact would be reduced to less than significant.

Level of Significance Before Mitigation

Potentially significant

Mitigation Measures

Implement the following:

MM TRANS-3 Prior to development of the plan area, an emergency vehicle only access point shall be established such that access and egress can be maintained during a train pre-emption at the public, at-grade railroad crossing at the site entry.

Level of Significance After Mitigation

Less than significant with mitigation

Consistency with Transit, Bicycle, and Pedestrian Facility Policies

Impact TRANS-4: The proposed plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycling, or walking facilities or otherwise decrease the performance or safety of such facilities.

Impact Analysis

This impact evaluates the proposed plan's potential to conflict with adopted policies, plans, or programs that pertain to public transit, bicycles, and pedestrians.

For purposes of this analysis, a significant impact would occur if the land uses contemplated under the proposed plan would:

- Violate alternative transportation policies set forth in the Healdsburg 2030 General Plan;
- Cause a substantial delay in transit service, increase demand for transit beyond existing or planned service capacity, or create barriers to travel for pedestrians walking to transit terminals and bus stops;
- Violate applicable design guidelines and standards for facilities that serve bicyclists and/or pedestrians; or
- Violate applicable design guidelines and standards for facilities that serve bicyclists and/or pedestrians.

Transit Facilities

The proposed plan contemplates land uses that would generate additional demand for transit service. Existing bus routes pass by the plan area on Healdsburg Avenue and will serve stops that have been installed on both sides of Healdsburg Avenue as part of the construction of the Montage Healdsburg project. The impact related to consistency with policies regarding transit facility and the performance and safety of such facilities is, therefore, less than significant.

Bicycle Facilities

Existing facilities are generally adequate to serve off-site bicycle trips to and from the site. Bicycle access will also be improved upon completion of bike lanes on Healdsburg Avenue, which are being constructed by the Montage Healdsburg project. The proposed plan includes plans for extending the Foss Creek Pathway along the east side of the NCRA railroad tracks, which would further provide

additional connectivity for bicycle trips. On-site connectivity would be provided through use of the local street system for bicycle travel. The proposed plan notes that short-term bicycle parking would be provided in convenient locations near building entrances and longer-term, secure parking should be provided inside all buildings. Implementation of the proposed plan, including policies relative to bicycle facilities, would be consistent with the City's policies regarding bicycle facilities and the performance and safety of such facilities, resulting in a less than significant impact.

Pedestrian Facilities

The proposed plan details provision of pedestrian facilities, including sidewalks along Healdsburg Avenue being provided by Montage Healdsburg, the Foss Creek Pathway, an internal system of sidewalks and pathways connecting building clusters and open spaces, and a perimeter pathway that loops around the site, to serve pedestrian trips. As a result, the impact related to consistency with pedestrian facility policies and the performance and safety of such facilities would be less than significant.

Level of Significance

Less than significant

Traffic Safety Hazards with Regard to Design Features

Impact TRANS-5: The proposed plan could increase hazards due to a design feature (e.g., sharp curves or dangerous intersections or lane storage) or incompatible uses (e.g., farm equipment).

Impact Analysis

The proposed plan would not include sharp curves or incompatible uses. However, plan-related traffic would affect lane storage and intersection conditions with respect to queue lengths. Existing lane storage may not sufficiently accommodate the added traffic, and thus, result in traffic exceeding the available lane storage. The analysis below assesses the study intersection design features (i.e., lane storage) and the added plan-related traffic that may cause a significant traffic safety hazard impact.

For purposes of this analysis, the proposed plan would have an impact if the addition of plan-generated trips resulted in an increase in the queue such that it would either exceed the available storage or, where that would be the case without the proposed plan, increase the queue length such that it would in turn result in increased traffic safety hazards.

Lane Storage and Intersection Conditions

The proposed plan would have an impact if the addition of plan-generated trips resulted in an increase in the queue such that it would either exceed the available lane storage or, where that would be the case without the proposed plan, increase the queue length into an adjacent intersection. Note that the available lane storage length at off-ramps was determined by subtracting the deceleration length required for speeds of 65-mph from the total ramp length from gore to stop bar. The plan-generated queueing in the planned westbound left-turn lane at the intersection of Dry Creek Road/U.S. 101 South Ramps represents a potentially significant traffic safety hazard impact.

It should be noted that while queue lengths are expected to exceed available lane storage at other locations, the proposed plan would either not increase the queue to extend into an adjacent intersection or the turn lane is already connected to a two-way left-turn lane with room to accommodate the queue. Therefore, at these locations queuing impacts were considered less than significant. Table 3.2-7 summarizes the queue at each intersection without and with the implementation of the proposed plan.

Table 3.2-7: Peak Hour 95th Percentile Queues

Intersection	Storage Length/Number of Lanes	Existing		Existing plus Plan	
		AM	PM	AM	PM
1. Dry Creek Road/U.S. 101 South Ramps					
SB Off-Ramp	440/1	250	252	287	287
WB Left-Turn Lane with AWSC	250/1	194	**289**	**277**	**464**
WB Left-Turn Lane Mitigated (Signalized)	—	N/A	N/A	388	355
2. Dry Creek Road/U.S. 101 North Ramps					
NB Off-Ramp	650/1	240	121	347	185
3. Dry Creek Road/Grove Street					
NB Right-Turn Lane	50/1	13	20	13	20
EB Left-Turn Lane	*65/1	91	86	**197**	**197**
WB Left-Turn Lane	*55/1	59	58	59	58
WB Right-Turn Lane	100/1	15	5	16	6
4. Healdsburg Avenue/Dry Creek Road-March Avenue					
NB Left-Turn Lane	*160/1	279	225	279	225
EB Left-Turn Lane	*115/1	181	202	191	202
EB Right-Turn Lane	**115/1	96	70	96	70
WB Left-Turn Lane	115/1	100	78	100	78
SB Left-Turn Lane	*90/1	88	99	105	118
5. Healdsburg Avenue/Grove Street					
NB Left-Turn Lane	*150/1	44	49	44	49
EB Left-Turn Lane	140/1	27	54	76	102
EB Right-Turn Lane	70/1	25	24	24	23
6. Healdsburg Avenue/Parkland Farms Boulevard					
SB Left-Turn Lane	*150/1	3	8	3	9
WB Left-Turn Lane	**90/1	10	6	12	7

Table 3.2-7 (cont.): Peak Hour 95th Percentile Queues

Intersection	Storage Length/Number of Lanes	Existing		Existing plus Plan	
		AM	PM	AM	PM

Notes:
All distances are measured in feet; NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound
Bold text = queue lengths exceeding available storage
Shaded cells reflect mitigated conditions
* Turn-lane is connected to a two-way left-turn lane
** Turn-lane is connected to a through lane
Source: W-Trans, 2018.

Implementation of MM TRANS-5, which requires payment of a proportional share of the cost to increase the length of the left-turn lane on the westbound approach to Dry Creek Road/U.S. 101 South, will not reduce the queueing impact to less than significant. Once the widening project is fully funded and installed, the impact would be reduced to less than significant. Until the widening project is implemented, however, the queuing and, thus, traffic safety hazard impact is significant and unavoidable.

Level of Significance Before Mitigation

Potentially significant

Mitigation Measures

MM TRANS-5 New development within the plan area shall be required to contribute a proportional share allocation towards the cost of widening Dry Creek Road to accommodate a westbound left-turn lane the entire length between the U.S. 101 South and North Ramps. The amount paid shall include a proportional share of the cost to widen the westbound approach to Dry Creek Road/U.S. 101 North Ramps to include a second lane; the left lane would feed into the left-turn lane at the U.S. 101 South Ramps and the right lane would be a shared through/right-turn lane serving through traffic and right turns onto the U.S. 101 North on-ramp. These improvements would allow queues in the westbound left-turn lane at the U.S. 101 South Ramps to stack beyond the Dry Creek Road/U.S. 101 North Ramps intersection, if needed, without impacting through traffic.

Level of Significance After Mitigation

Significant and unavoidable with mitigation

The City expects to have a cost allocation plan for the signalization of the U.S. 101 South/Dry Creek Road intersection in place by late 2019. Contribution of a proportional share allocation towards improvements necessary to mitigate a significant impact would not reduce the impact to a less than significant level. The significant impact at this intersection as a result of plan-related development would remain significant until such time as the improvements identified in MM TRANS 5 are implemented. For the purposes of this analysis, the effect of plan-related traffic as it relates to

queuing at the U.S. 101 South/Dry Creek Road intersection is considered to be a significant and unavoidable impact.

3.2.5 - Cumulative Impacts

Vehicle Circulation System Performance

The following scenarios were evaluated for purposes of assessing cumulative transportation/traffic impacts. The cumulative projects included in these scenarios represent citywide buildout through 2040.

- **Cumulative Without Plan Conditions (see** Table 3.2-8**)—**This scenario provides an evaluation of traffic associated with future traffic volumes without the proposed plan based on data from the SCTA's travel demand model. The SCTA model provides a cumulative scenario for future traffic impacts based on anticipated regional growth. The traffic volumes described are during the weekday AM and PM peak periods, which capture traffic conditions during peak morning and evening commute hours, as well as the Saturday midday peak period, which captures the highest hour of traffic occurring during the weekend midday.
- **Cumulative Plus Plan Conditions (see** Table 3.2-9**)—**This scenario is the Future Conditions scenario described above plus the addition of plan-generated traffic volumes attributed to development contemplated under the proposed plan.

Cumulative Without Plan Conditions

Segment volumes for the horizon year 2040 were obtained from the County's gravity demand model, maintained by the SCTA, and translated to weekday AM and PM peak-hour turning movement volumes at each of the study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turn movement data, base year link volumes, and future link volumes to approximate the likely future turning movement volumes at intersections.

Improvements at the intersection of Dry Creek Road/Grove Street (the all-way-stop controls contemplated under the project-level scenario), were assumed to be constructed and operational. The all-way stop sign controls will be installed in Spring 2019.

The need for future improvements to increase capacity at the U.S. 101/Dry Creek Road interchange is identified in the Healdsburg 2030 General Plan Policy Document. General Plan Policy T-A-16 indicates that the City shall, "Work with the California Department of Transportation (Caltrans), Sonoma County and the Sonoma County Transportation Authority (SCTA) to plan and implement improvements to the Highway 101 interchanges at Dry Creek and Westside Roads, based on a fair share formula for cooperative funding of improvements among jurisdictions and agencies."

The Policy has an associated Implementation Measure T-5, which says, "Seek the earliest possible inclusion in the Metropolitan Transportation Commission Regional Transportation Plan and continue to pursue funding for the signalization of the freeway ramps at Dry Creek Road and other improvements necessary to improve the operation of this intersection to an acceptable level of service."

Because the General Plan Policy Document does not provide guidance on what specific improvements are to be provided, lane configurations planned for three of the Dry Creek Road study intersections as originally detailed in the March 2002 Dry Creek Road Infrastructure Needs Analysis for the City of Healdsburg ("2002 Needs Analysis") were used. The 2002 Needs Analysis indicates that Dry Creek Road will need to be widened to accommodate two lanes in each direction starting at the U.S. 101 North Ramps east to Healdsburg Avenue. Eastbound right-turn and westbound left-turn lanes will be added at Dry Creek Road/U.S. 101 South Ramps. An eastbound left-turn lane will also be added at the U.S. 101 North Ramps. In addition, the westbound left-turn lane at the U.S. 101 South Ramps will be added in the short term in conjunction with the four-way stop sign controls to be installed in 2019 by the City.

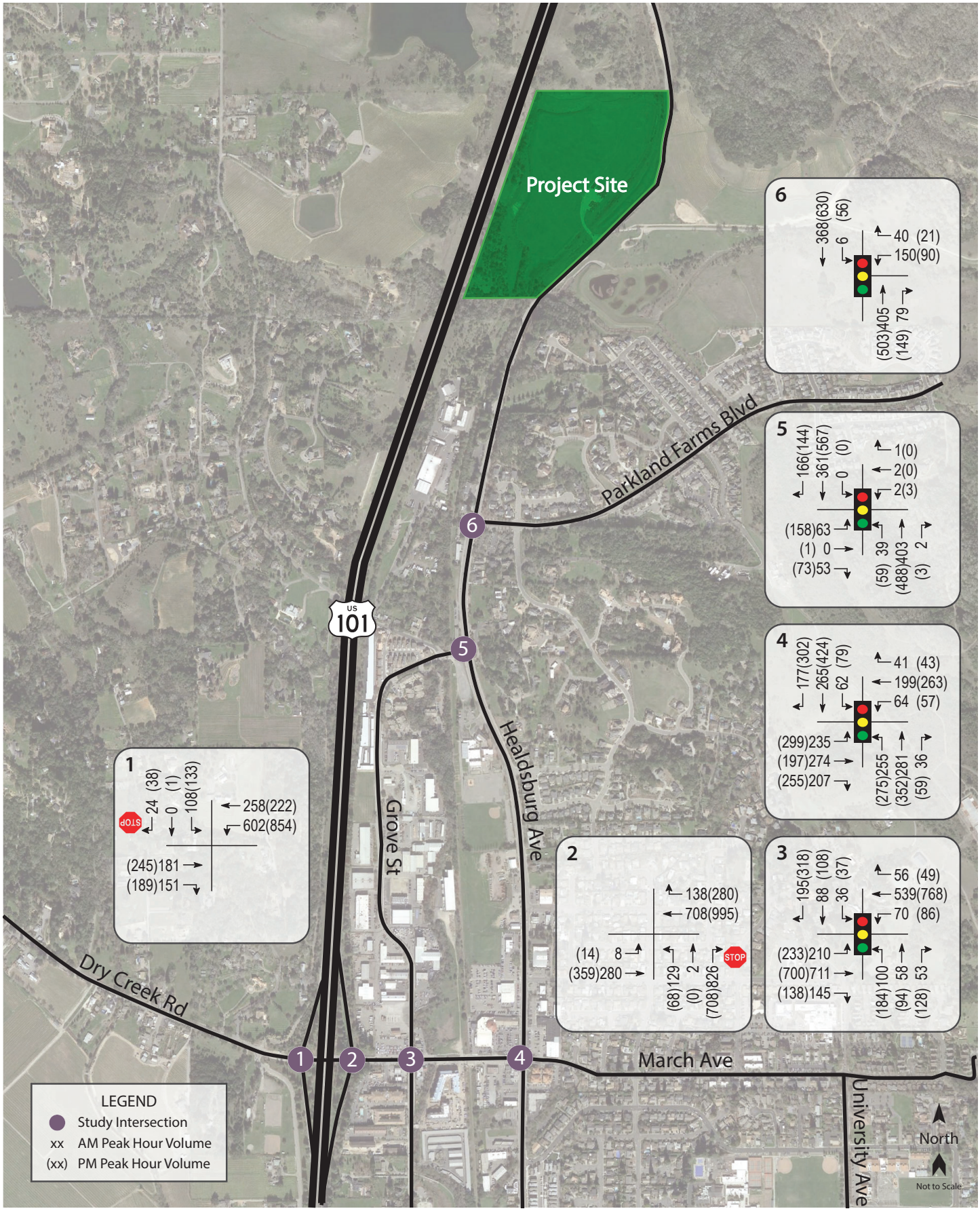
Under Cumulative Conditions, all but two study intersections (Intersections 1 and 2) are anticipated to operate acceptably during both peak-hours. These results are summarized in Table 3.2-8 and Future volumes are shown in Exhibit 3.2-5. As described in Table 3.2-8, the all-way stop controls at Dry Creek Road/U.S. 101 South Ramps would improve operations but the intersection would continue to operate at unacceptable service levels in the PM peak hour. However, the planned changes to the Dry Creek Road/U.S. 101 South Ramps and U.S. 101 North Ramps (signalization and modifications) will improve conditions at the study intersections to operate at acceptable levels of service.

Table 3.2-8: Cumulative Without Plan Intersection Levels of Service

Study Intersection *Approach*	AM Peak-Hour		PM Peak-Hour	
	Delay	LOS	Delay	LOS
1. Dry Creek Road/U.S. 101 South Ramps (with all-way stop controls)	21.1	C	**81.1**	**F**
With Planned Signal and Eastbound RT Lane	17.7	B	24.8	C
2. Dry Creek Road/U.S. 101 North Ramps	**35.7**	**E**	**22.9**	**C**
- Northbound (U.S. 101 North) Off-ramp	***78.0***	***F***	***119.5***	***F***
With Planned Signal and Eastbound LT Lane	28.2	C	43.3	D
3. Dry Creek Road/Grove Street	24.3	C	46.5	D
4. Dry Creek Road-March Avenue/Healdsburg Avenue	36.4	D	51.5	D
5. Healdsburg Avenue/Grove Street	8.1	A	10.7	B
6. Healdsburg Avenue/Parkland Farms Boulevard	6.5	A	6.2	A
7. Healdsburg Avenue/NEAP Plan Area Access	N/A	N/A	N/A	N/A

Notes:
Delay is measured in average seconds per vehicle; LOS = Level of Service. RT = Right-turn; LT = Left-turn; **Bold text** indicates unacceptable intersection operations; Underlined text indicates conditions with planned improvements as identified in the 2002 Needs Analysis
Source: FCS, W-Trans, 2018.

With the improvements identified in the 2002 Needs Analysis, all seven of the study intersections would be expected to operate acceptably.



hea068.ai 8/18

Traffic Impact Study for the North Entry Area Plan

Exhibit 3.2-5 - Cumulative Traffic Volumes

W-Trans

THIS PAGE INTENTIONALLY LEFT BLANK

Cumulative With Plan Conditions

Projected plan-generated trips were added to the 2040 Future volumes derived from the SCTA travel demand model, and then used to evaluate operation of the study intersections to determine cumulative transportation/traffic impacts. Upon adding plan-generated traffic to the Cumulative volumes (i.e., "Cumulative Plus Plan" traffic operation), and with the mitigations identified as being needed under Existing plus Plan Conditions (see MM TRANS-1b above), the intersection at Dry Creek Road/U.S. 101 South Ramps would be expected to operate deficiently during the PM peak hour. The intersection of Dry Creek Road/U.S. 101 North Ramps would also be expected to operate deficiently at LOS E or F during both peaks. The intersection at Dry Creek Road/Grove Street is expected to drop to LOS E operation during the PM peak-hour due to adding plan-generated traffic. Cumulative Plus Plan traffic operation at the study intersections is summarized in Table 3.2-9 and calculations are provided in Appendix B. This would represent a potentially significant impact with regard to level of service standards.

Table 3.2-9: Cumulative Plus Plan Intersection Levels of Service

Study Intersection *Approach*	AM Peak-Hour			PM Peak-Hour		
	Delay	LOS	Change in Delay	Delay	LOS	Change in Delay
1. Dry Creek Road/U.S. 101 South Ramps	29.4	D	—	**113.7**	**F**	**+32.6**
Mitigated Conditions (With Planned Signal and Eastbound RT Lane)	18.6	B	—	30.8	C	—
2. Dry Creek Road/U.S. 101 North Ramps	**50.8**	**F**	**+15.1**	**37.5**	**E**	**+14.6**
- Northbound (U.S. 101 North) Off-ramp	**111.2**	**F**	**+33.2**	**114.5**	**F**	**-5.0**
Mitigated Conditions (With Planned Signal and Eastbound LT Lane)	36.5	D	—	44.1	D	—
3. Dry Creek Road/Grove Street	28.0	C	—	**68.2**	**E**	**+21.7**
4. Dry Creek Road-March Avenue/Healdsburg Avenue	36.6	D	—	52.6	D	—
Mitigated Conditions (With Planned Lane Configurations and Split Phasing)	50.4	D	—	36.3	D	—
5. Healdsburg Avenue/Grove Street	10.2	B	—	12.5	B	—
6. Healdsburg Avenue/Parkland Farms Boulevard	6.5	A	—	6.4	A	—
7. Healdsburg Avenue/Plan Area Access	6.8	A	—	9.4	A	—

Notes:
Delay is measured in average seconds per vehicle; LOS = Level of Service; **bold text** = deficient operation; Underlined text indicates mitigated conditions with planned improvements as identified in the 2002 Needs Analysis; RT = Right-turn; LT = Left-turn
Source: FCS, W-Trans, 2018.

Implementation of planned future improvements as previously identified by the City for the Dry Creek Road corridor (Intersections 1, 2, and 4) would address the deficient operation at the interchange with U.S. 101, as shown in underlined text in Table 3.2-9. Payment of a proportional share of the cost of these improvements is required per MM TRANS-1a and TRANS-1c. However, the significant impacts to this intersection as a result of plan-related development would remain significant until the improvements identified in MM TRANS 1a are implemented. For the purposes of this analysis, the plan's contribution to the cumulative effect of plan-related traffic on the U.S. 101/Dry Creek Road intersection is considered to be a significant and unavoidable cumulative impact.

No improvements for Dry Creek Road/Grove Street are planned and operation is projected to fall to unacceptable LOS E with plan-generated trips added to Cumulative Plus Plan volumes. Signal modification and restriping to provide a separate right-turn lane for the southbound approach to the Dry Creek Road/Grove Street intersection to minimize congestion would result in acceptable operation and reduce the impact to less than significant (see Table 3.2-9). However, there is insufficient road right-of-way to accommodate the additional lane and to provide for planned bike lanes along this road segment. The improvements needed to achieve acceptable operations at the Dry Creek Road/Grove Street intersection are infeasible. This represents a significant and unavoidable cumulative vehicle circulation system performance (intersection level of service) impact. The proposed plan's contribution to the cumulative vehicle circulation system performance (intersection level of service) impact at this intersection is considered to be cumulatively considerable.

Transit, Bicycle, and Pedestrian Facilities

In addition to existing transit systems serving the City of Healdsburg, the planned future extension of the SMART rail transit service through Healdsburg will substantially expand transit access. Not only would this system serve commute trips to and from Healdsburg, but it would also provide a connection from the Sonoma County Airport to destinations in Healdsburg, allowing visitors to travel to and from the City using mass transit. As such, these systems would provide transit facilities that would serve the cumulative projects, including the proposed plan.

The Healdsburg Bicycle and Pedestrian Master Plan addresses the need for connected systems serving bicyclists by providing paths, bike lanes and bike routes throughout the City that connect the City to destinations within the City and in the surrounding region. Upon completion of the citywide planned facilities indicated in the Healdsburg Bicycle and Pedestrian Master Plan, adequate bicycle access would be provided throughout the City. Similarly, the Healdsburg Bicycle and Pedestrian Master Plan calls for installation of sidewalks along street frontages connecting land uses throughout the City. As currently vacant parcels are developed as part of citywide buildout, sidewalks would be installed to fill existing gaps in the network, resulting in a connected system of sidewalks and paths for pedestrian access. As such, the Healdsburg Bicycle and Pedestrian Master Plan would ensure provision of bicycle and pedestrian facilities to serve the cumulative projects, including the proposed plan. Thus, the transit, bicycle, and pedestrian facilities cumulative impact would be less than significant.

Traffic Safety Hazards

Implementation of planned future improvements as previously identified by the City for the Dry Creek Road corridor (Intersections 1, 2, and 4) would address the deficient operation at the

interchange with U.S. 101, as shown in underlined text in Table 3.2-9. Payment of a proportional share of the cost of these improvements is required per MM TRANS-5. However, the significant impacts to this intersection as a result of plan-related development would remain significant until the improvements identified in MM TRANS 5 are implemented. This represents a significant and unavoidable cumulative impact related to traffic safety hazards (queueing exceeding lane storage and intersection conditions). The proposed plan's contribution to the cumulative queueing and, thus, traffic safety hazards related to lane storage and intersection conditions at the U.S. 101/Dry Creek Road intersection is considered to be cumulatively considerable.

Overall

With respect to vehicle circulation system performance (intersection level of service) at Dry Creek Road/Grove Street intersection, operation is projected to fall to unacceptable LOS E with plan-generated trips added to the Cumulative Plus Plan volumes. Therefore, cumulative impacts related to the vehicle circulation system's performance effectiveness (intersection level of service) would be significant and unavoidable. The cumulative impacts related to transit, bicycle, and pedestrian facilities would be less than significant. Lane storage and intersection improvements to reduce queueing are infeasible due to right-of-way constraints. Therefore, cumulative impacts related to traffic safety hazards would be significant and unavoidable.

Level of Significance

Significant and unavoidable

Mitigation Measures

None available

Level of Significance After Mitigation

Significant and unavoidable

THIS PAGE INTENTIONALLY LEFT BLANK

Section 3.3 - Air Quality

3.3.1 - Introduction

This section describes existing air quality conditions regionally and locally as well as the relevant regulatory framework. This section also evaluates the possible impacts related to air quality that could result from implementation of the proposed plan. Information included in this section is based on plan-specific air quality modeling results utilizing California Emissions Estimator Model (CalEEMod) version 2016.3.2, the United States Environmental Protection Agency (EPA) AERMOD air dispersion model version 9.6.1 (complete modeling output is provided in Appendix C).

3.3.2 - Environmental Setting

Regional Climate

The California North Coast Area has a Mediterranean climate characterized by mild, dry summers and mild, moderately wet winters; moderate daytime on-shore breezes, and moderate humidity.

Local topography plays a significant role in affecting weather patterns throughout the Coastal Range. The Russian River drainage basin extends from Mendocino County into the northern portion of Sonoma County, and the air basin extends into the Santa Rosa plain to the south. The plan area lies between the Mayacama Mountains to the north and east, and the Coast Range to west. These mountain ranges tend to buffer the Healdsburg area from the marine weather systems that originate over the Pacific and are drawn inland by the jet stream. Air layer temperature inversions also occasionally occur in the region trapping pollutants in the air basin between the higher mountain ranges.

The climate of the region is typically polarized between summer and winter seasons, with cool moist winters and warm dry summers. The winter season is characterized by overcast days and lengthy periods of rain and drizzle. Winter temperatures range from an average low of 37 degrees Fahrenheit (°F) to an average high of 62°F, with occasional overnight freezing temperatures. Annual precipitation averages 30 inches, with 81 percent of the precipitation falling from November through March. Summer temperatures range from an average low of 48°F to an average high of 82°F, with temperatures in excess of 100°F occasionally.

Air Pollutant Types, Sources, and Effects

Criteria Air Pollutants

Air pollutants are termed criteria air pollutants if they are regulated by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Table 3.3-1 provides a summary of the types, sources, and effects of criteria air pollutants.

Table 3.3-1: Description of Criteria Pollutants of National and California Concern

Criteria Pollutant	Physical Description and Properties	Sources	Most Relevant Effects from Pollutant Exposure
Ozone	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), nitrous oxides (NO_X), and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.
Particulate matter (PM_{10}) Particulate matter ($PM_{2.5}$)	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (one micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes. Mobile or transportation related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.
Nitrogen dioxide (NO_2)	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides—NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide forms quickly from NO_X emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contributions to atmospheric discoloration; increased visits to hospital for respiratory illnesses.

Table 3.3-1 (cont.): Description of Criteria Pollutants of National and California Concern

Criteria Pollutant	Physical Description and Properties	Sources	Most Relevant Effects from Pollutant Exposure
Carbon monoxide (CO)	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.
Sulfur dioxide (SO_2)	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_X) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.
Lead (Pb)	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs.
Source: SCAQMD, 2007; CEPA 2002; CARB 2009; USEPA, 2003, 2009, 2010, 2011, 2012; National Toxicology Program, 2011			

Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs) are also used as indicators of air quality conditions. Air pollutant human exposure standards are identified for many TACs, including the following common TACs relevant to development: particulate matter, fugitive dust, lead, and asbestos. These air pollutants are called TACs, because they are air pollutants that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health impact may pose a threat to public health even at low concentrations. TACs can cause long-term health effects (such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage) or short-term acute affects (such as eye watering, respiratory irritation, runny nose, throat pain, or headaches).

TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to a particular TAC. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. Cancer risk is typically expressed as excess cancer cases per million exposed individuals, typically over a lifetime exposure or other prolonged duration. For noncarcinogenic substances, there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels may vary depending on the specific pollutant. Acute and chronic exposure to noncarcinogens is expressed as a hazard index (HI), which is the ratio of expected exposure levels to acceptable reference exposure levels. Table 3.3-2 provides a summary of the types, sources, and effects of TACs.

Table 3.3-2: Description of Toxic Air Contaminants of National and California Concern

Toxic Air Contaminant	Physical Description and Properties	Sources	Most Relevant Effects from Pollutant Exposure
Diesel Particulate Matter (diesel PM)	Diesel PM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives.	Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.	Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.
VOCs	Reactive organic gases (ROGs), or VOCs, are defined as certain carbon any compounds that participate in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, aerosol sprays, solvents, and cleansers. Outdoor sources of VOCs are from fuel combustion. VOCs reduction results in reduced formulation of ozone.	In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.

Table 3.3-2 (cont.): Description of Toxic Air Contaminants of National and California Concern

Toxic Air Contaminant	Physical Description and Properties	Sources	Most Relevant Effects from Pollutant Exposure
Benzene	Benzene is a VOC. It is a clear or colorless light-yellow, volatile, highly flammable liquid with a gasoline-like odor. The EPA has classified benzene as a "Group A" carcinogen.	Benzene is emitted from fuel evaporation, motor vehicle exhaust, and oil/coal burning. Benzene is used as a solvent for paints, inks, oils, waxes, plastic, and rubber and occurs naturally in gasoline at one to two percent by volume.	Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation, and at higher levels, loss of consciousness can occur. Long-term (chronic) occupational exposure of high doses has caused blood disorders, leukemia, and lymphatic cancer.
Asbestos	Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite.	Exposure to asbestos can occur during demolition or remodeling of buildings constructed prior to the 1977 asbestos use ban or during soil-disturbing activities in areas with deposits present.	Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs).
Hydrogen Sulfide	Hydrogen sulfide (H2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, and anaerobic lagoons are the primary sources of hydrogen sulfide. Sources include the combustion of sulfur-containing fuels (oil and coal).	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.
Sulfates	The sulfate ion is a polyatomic anion with the empirical formula SO42−. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are formed through photochemical oxidation of sulfur dioxide. The main source of sulfur compounds is combustion of gasoline and diesel fuel.	Health effects from sulfates include a decrease in ventilatory function, aggravation of asthmatic symptoms, and aggravation of cardio-pulmonary disease;
Vinyl Chloride	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Vinyl chloride is used to make plastic and vinyl products: pipes, cable coatings, and packaging materials. It can be formed when plastics are left to decompose	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride

Table 3.3-2 (cont.): Description of Toxic Air Contaminants of National and California Concern

Toxic Air Contaminant	Physical Description and Properties	Sources	Most Relevant Effects from Pollutant Exposure
		in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.	exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.
Lead (Pb)	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead-ore crushing and smelting and battery manufacturing are the largest sources of lead in the atmosphere. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and physical weathering.	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs.
Source: SCAQMD, 2007; CEPA, 2002; CARB, 2009; USEPA, 2003, 2009, 2010, 2011, 2012; National Toxicology Program 2011			

Air Quality

Regional

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features. Atmospheric conditions such as wind speed, wind direction, and air temperature inversions interact with the physical features of the landscape to determine the movement and dispersal of air pollutant emissions and, consequently, their effect on air quality.

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout it. The Healdsburg area is located within the five-county North Coast Air Basin, which includes Del Norte, Humboldt, Mendocino, and Trinity counties, and the northern portion of Sonoma County. Within the North Coast Air Basin, the Healdsburg area is specifically within the jurisdiction of Northern Sonoma County Air Pollution Control District (NSCAPCD). NSCAPCD is the regional agency with jurisdiction for regulating air quality within the Sonoma County portion of the North Coast Air Basin, thus, references to the "plan region" are to the NSCAPCD's jurisdictional area of the North Coast Air Basin.

Air Pollutant Standards and Attainment Designations

Air pollutant standards have been identified by the EPA and the California Air Resources Board (ARB) for the following six criteria air pollutants that affect ambient air quality: ozone, carbon monoxide (CO),

nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 microns in diameter (PM_{10}), and PM equal to or less than 2.5 microns in diameter ($PM_{2.5}$). These air pollutants are called "criteria air pollutants" because they are regulated by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. California has also established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. Table 3.3-3 presents the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS).

Table 3.3-3: Federal and State Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]
Ozone	1 Hour	0.09 ppm	—
	8 Hour	0.070 ppm	0.070 ppm[f]
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen dioxide[b] (NO_2)	1 Hour	0.18 ppm	100 ppb
	Annual	0.030 ppm	0.053 ppm
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	75 ppb
	3 Hour	—	0.5 ppm
	24 Hour	0.04 ppm	0.14 (for certain areas)
	Annual	—	0.030 ppm (for certain areas)
Particulate matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3
	Mean	20 µg/m^3	—
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3
	Annual	12 µg/m^3	12.0 µg/m^3
Visibility reducing particles	8 Hour	See note below[d]	
Sulfates	24 Hour	25 µg/m^3	—
Lead[e]	30-day	1.5 µg/m^3	—
	Quarter	—	1.5 µg/m^3
	Rolling 3-month average	—	0.15 µg/m^3
Vinyl chloride[e]	24 Hour	0.01 ppm	—
Hydrogen sulfide	1 Hour	0.03 ppm	—
Volatile organic compounds (VOC)		There are no State or federal standards for VOCs because they are not classified as criteria pollutants.	
Benzene		There are no ambient air quality standards for benzene.	

Table 3.3-3 (cont.): Federal and State Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.	

Notes:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean
30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3-Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour nitrogen dioxide national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility reducing particles: In 1989, ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[f] The EPA Administrator approved a revised 8-hour ozone standard of 0.07 ppb on October 1, 2015. The new standard went into effect 60 days after publication of the Final Rule in the Federal Register. The Final Rule was published in the Federal Register on October 26, 2015 and became effective on December 28, 2015.

Source of effects, properties, and sources: South Coast Air Quality Management District 2007a; California Environmental Protection Agency 2002; California Air Resources Board 2009; United States Environmental Protection Agency 2003, 2009a, 2009b, 2010, 2011a, and 2012; National Toxicology Program 2011a and 2011b. Source of standards: California Air Resources Board 2013c. Website: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed August 28, 2018.

Both EPA and ARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. "Attainment" status refers to those regions that are meeting federal and/or State standards for a specified criteria pollutant. "Nonattainment" refers to regions that do not meet federal and/or State standards for a specified criteria pollutant. "Unclassified" refers to regions where there is not enough data to determine the region's attainment status for a specified criteria air pollutant. Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The portion of the North Coast Air Basin regulated by the NSAPCD is in attainment for all federal and State ambient air quality standards.

Air Quality Index

The health impacts of the various air pollutants of concern can be presented in a number of ways. The clearest in comparison is to the State and federal ozone standards. If concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on the amount by which the standard is exceeded. The EPA developed the Air Quality Index (AQI) as an easy-to-understand measure of health impacts compared with concentrations in the air. Table 3.3-4 provides a description of the health impacts of ozone at different concentrations.

Table 3.3-4: Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI—51–100—Moderate	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 55–70 ppb	**Health Effects Statements**: Unusually sensitive individuals may experience respiratory symptoms.
	Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.
AQI—101–150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 86–105 ppb	**Health Effects Statements**: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
AQI—151–200—Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 86–105 ppb	**Health Effects Statements**: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
AQI—201–300—Very Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 106–200 ppb	**Health Effects Statements**: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.

Table 3.3-4 (cont.): Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
Source: Air Now. 2015. AQI Calculator: AQI to Concentration. Website: http://www.airnow.gov/index.cfm?action=resources.aqi_conc_calc.	

Local Air Quality

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the plan area. Table 3.3-5 summarizes 2014 through 2016 published monitoring data, which is the most recent three-year period available. The table displays data from the Healdsburg-Municipal Airport monitoring station (located approximately 1.67 miles northwest of the plan area) and the Guerneville-Church and 1st monitoring station (located approximately 11.84 miles southwest of the plan area). The data shows that during the past few years, the plan area has exceeded the standards for PM_{10} (state). The data in the table reflects the concentration of the pollutants in the air, measured using air monitoring equipment. This differs from emissions, which are calculations of a pollutant being emitted over a certain period. No recent monitoring data for Sonoma County was available for CO and SO_2. Generally, no monitoring is conducted for pollutants that are no longer likely to exceed ambient air quality standards.

Table 3.3-5: Summary of Healdsburg Criteria Pollutants Monitoring Data

Air Pollutant	Averaging Time	Item	2014	2015	2016
Ozone[1]	1 Hour	Max 1 Hour (ppm)	0.070	0.072	0.072
		Days > State Standard (0.09 ppm)	0	0	0
	8 Hour	Max 8 Hour (ppm)	0.064	0.064	0.066
		Days > State Standard (0.07 ppm)	0	0	0
		Days > National Standard (0.075 ppm)	0	0	0
Carbon monoxide (CO)[2]	8 Hour	Max 8 Hour (ppm)	ND	ND	ND
		Days > State Standard (9.0 ppm)	ND	ND	ND
		Days > National Standard (9 ppm)	ND	ND	ND
Nitrogen dioxide (NO_2)[1]	Annual	Annual Average (ppm)	0.004	0.004	0.004
	1 Hour	Max 1 Hour (ppm)	0.040	0.040	0.040
		Days > State Standard (0.18 ppm)	0	0	0
Sulfur dioxide (SO_2)	Annual	Annual Average (ppm)	ND	ND	ND
	24 Hour	Max 24 Hour (ppm)	ND	ND	ND
		Days > State Standard (0.04 ppm)	ND	ND	ND

Table 3.3-5 (cont.): Summary of Healdsburg Criteria Pollutants Monitoring Data

Air Pollutant	Averaging Time	Item	2014	2015	2016
Inhalable coarse particles (PM_{10})[1]	Annual	Annual Average (µg/m^3)	14.8	17.3	ND
	24 hour	24 Hour (µg/m^3)	42.3	**56.7**	45.0
		Days > State Standard (50 µg/m^3)	0	**2**	0
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)[1]	Annual	Annual Average (µg/m^3)	ND	ND	4.9
	24 Hour	24 Hour (µg/m^3)	26.2	29.9	18.7
		Days > National Standard (35 µg/m^3)	0	0	0

Notes:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
Bold = exceedance
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[1] Healdsburg-Municipal Airport
[2] Guerneville-Church
[3] Sebastopol-103 Morris Street
Source: California Air Resources Board (ARB). 2017a. Top 4 Summary: Healdsburg-Municipal and Guerneville-Church. Website: https://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed June 13, 2018.

California Air Resources Board (ARB). 2017a. Trends Summary: Healdsburg-Municipal and Guerneville-Church and 1st. Website: https://www.arb.ca.gov/adam/trends/trends1.php. Accessed June 13, 2018.

Based on the AQI scale for the 8-hour ozone standard (Table 3.3-4), the plan area experienced no days in the most recent 3-year reporting period that would be categorized as very unhealthy (AQI 201-300) or unhealthy (AQI 151-200). The highest reading was 66 parts per billion (ppb) in 2016, which would fall in the range for moderate (AQI 51-100).

Sensitive Receptors

Air pollution does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others are. Land uses such as residences, schools, day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality, because the population groups associated with these uses have increased susceptibility to respiratory distress or, as in the case of residential receptors, their exposure time is greater than that for other land uses. Therefore, these groups are referred to as sensitive receptors. Exposure assessment guidance typically assumes that residences would be exposed to air pollution 24 hours per day, 350 days per year, for 70 years. Bay Area Air Quality Management District (BAAQMD) defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, day care centers, hospitals, and senior-care facilities.

Plan Area Vicinity

The closest sensitive receptors to the plan area include residences located to the southeast and east of Healdsburg Ave. Exhibit 3.3-1 shows the nearby existing sensitive receptors.

Plan Area

There are no existing sensitive receptors within the plan area.

Existing Emission Sources

Plan Area Vicinity

The primary sources of air pollutants in the plan area vicinity are vehicle emissions from U.S. 101 and Healdsburg Avenue. Land uses surrounding near the plan area include residential units, industrial/manufacturing (winery), and open space/agricultural uses.

Plan Area

The plan area does not currently support developed land uses. As such, no criteria air pollutant and TAC emissions are generated from this property. However, U.S. 101 is an existing major transportation thoroughfare located adjacent to the plan area.

3.3.3 - Regulatory Framework

Federal

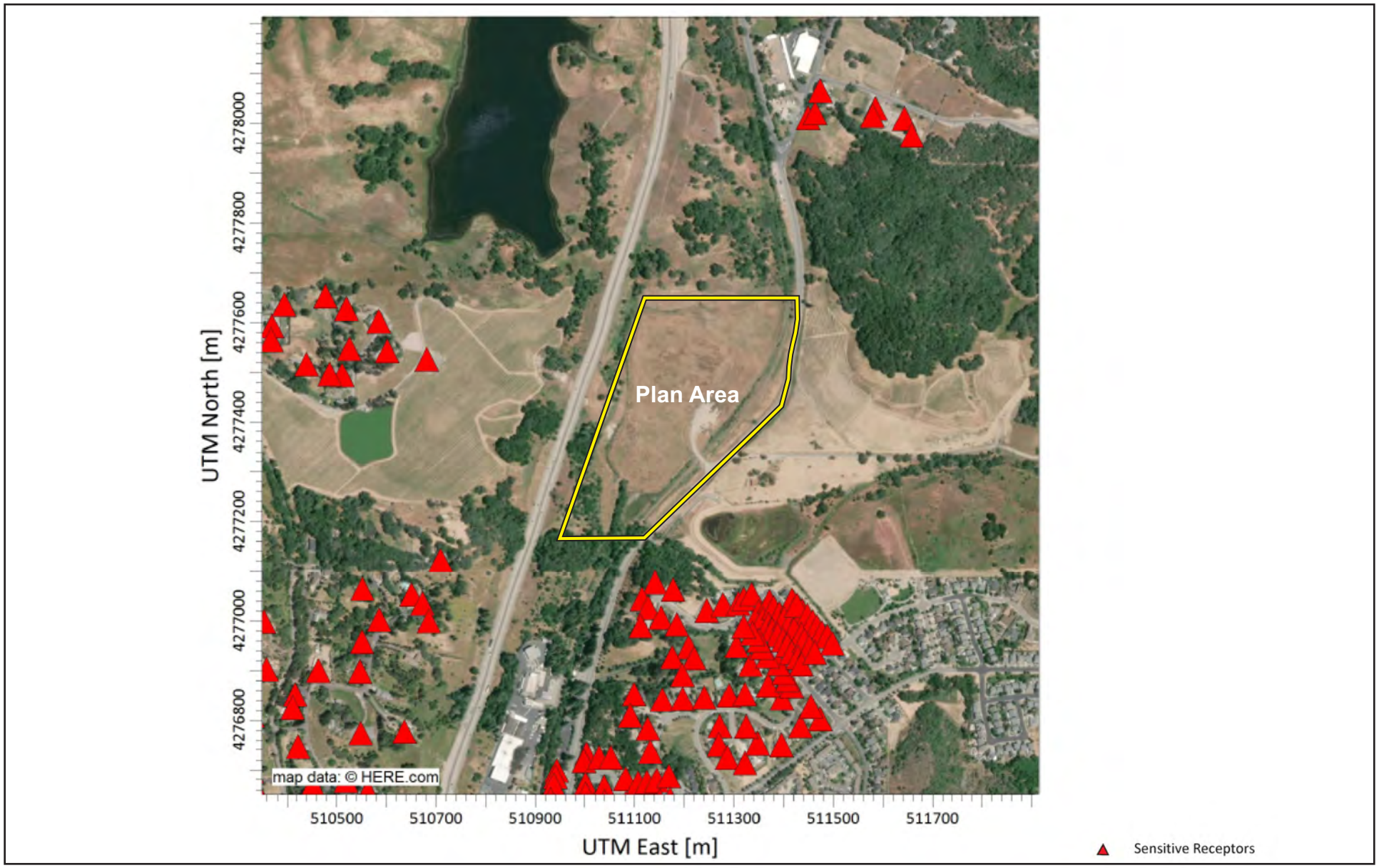
Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970 and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA. These are particulate matter, ground-level ozone, CO, sulfur oxides, nitrogen oxides, and lead. The EPA calls these pollutants criteria air pollutants, because it regulates them by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health are called primary standards. Another set of limits intended to prevent environmental and property damage are called secondary standards.[1] The federal standards are called NAAQS. The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards. The criteria pollutants are:

- Ozone
- Nitrogen dioxide (NO_2)
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the EPA is tasked with updating the standards as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[1] U.S. Environmental Protection Agency (EPA). 2014. Clean Air Act Requirements and History. Website: https://www.epa.gov/clean-air-act-overview/clean-air-act-requirements-and-history. Accessed April 25, 2016.



FIRSTCARBON SOLUTIONS™

Exhibit 3.3-1
Surrounding Sensitive Receptors

THIS PAGE INTENTIONALLY LEFT BLANK

The Clean Air Act also requires each state to prepare an air quality control plan referred to as a state implementation plan. The federal Clean Air Act Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The State of California periodically modifies its implementation plan to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies.

EPA Emission Standards for New Off-Road Equipment

Before 1994, there were no standards to limit the amount of emissions from off-road equipment. In 1994, EPA established emission standards for hydrocarbons, NO_X, CO, and PM to regulate new pieces of off-road equipment. These emission standards came to be known as Tier 1. Since that time, increasingly more stringent Tier 2, Tier 3, and Tier 4 (interim and final) standards were adopted by EPA, as well as by ARB. Each adopted emission standard was phased in over time. New engines built in and after 2015 across all horsepower sizes must meet Tier 4 final emission standards. In other words, new manufactured engines cannot exceed the emissions established for Tier 4 final emissions standards.

State

California Air Quality Control Plan (State Implementation Plan)

A State Implementation Plan ("SIP") is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The State Implementation Plan for the State of California is administered by the ARB, which has overall responsibility for Statewide air quality maintenance and air pollution prevention. California's State Implementation Plan incorporates individual federal attainment plans for regional air districts—an air district prepares their federal attainment plan, which is sent to ARB to be approved and incorporated into the California State Implementation Plan. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

Areas designated nonattainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional State and local regulation is required to achieve the standards.

California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were, and continue to be, some of the most severe in the nation and required additional actions beyond the federal mandates. The ARB administers CAAQS for the 10 air pollutants designated in the CCAA. The 10 State air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the

CCAA are less stringent than the federal CAA; therefore, consistency with the CAA will also demonstrate consistency with the CCAA.

Other ARB responsibilities include but are not limited to overseeing local air district compliance with California and federal laws; approving local air quality plans; submitting SIPs to EPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

California Health and Safety Code Section 39655 and California Code of Regulations Title 17 Section 93000 (Substances Identified as Toxic Air Contaminants)

ARB identifies substances as TACs as defined in Health and Safety Code Section 39655 and listed in Title 17, Section 93000 of the California Code of Regulations, "Substances Identified As Toxic Air Contaminants." A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there are thresholds set by regulatory agencies below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards. According to the California Almanac of Emissions and Air Quality, the majority of the estimated health risk from TACs for the State of California can be attributed to relatively few compounds, the most important of which is diesel particulate matter (DPM) from diesel-fueled engines.

California Low-Emission Vehicle Program

ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan. In 2012, ARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and greenhouse gas (GHG) emissions for new passenger vehicles (ARB 2013).[2]

California On-Road Heavy-Duty Vehicle Program

ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling

[2] California Air Resources Board (ARB). 2013. Clean Car Standards—Pavley, Assembly Bill 1493. Website: http://www.arb.ca.gov/cc/ccms/ccms.htm. Accessed February 14, 2017.

Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others (ARB 2013b).[3]

California In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, ARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. The ARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in violation. Performance requirements of the rule are based on a fleet's average NO_X emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501-5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately- and federally-owned diesel fueled trucks and buses and to privately- and publicly-owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015b).[4]

California Airborne Toxics Control Measure for Asbestos

ARB has adopted Airborne Toxics Control Measures for sources that emit a particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology to minimize emissions.

In July 2001, the ARB approved an Air Toxic Control Measure for construction, grading, quarrying and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of best management practices (BMPs) to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and

[3] California Air Resources Board (ARB). 2013b. The California Almanac of Air Quality and Emissions—2013 Edition. Website: http://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm. Accessed February 14, 2017.

[4] California Air Resources Board (ARB). 2015b. On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation. Website: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed September 22, 2017.

engineering controls at work sites larger than one acre in size. These projects require the submittal of a "Dust Mitigation Plan" and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. Buildings often include materials containing asbestos; however, no demolition is proposed as part of the proposed plan. Asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

ARB has an Air Toxics Control Measure for construction, grading, quarrying, and surface mining operations, requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. The measure applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity.

Verified Diesel Emission Control Strategies

EPA's and ARB's tiered off-road emission standards only apply to new engines and off-road equipment can last several years. ARB has developed Verified Diesel Emission Control Strategies (VDECS), which are devices, systems, or strategies used to achieve the highest level of pollution control from existing off-road vehicles, to help reduce emissions from existing engines. VDECS are designed primarily for the reduction of diesel PM emissions and have been verified by ARB. There are three levels of VDECS, the most effective of which is the Level 3 VDECS. Tier 4 engines are not required to install VDECS because they already meet the emissions standards for lower tiered equipment with installed controls.

California Diesel Risk Reduction Plan

ARB's Diesel Risk Reduction Plan has led to the adoption of new state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020 (ARB 2000).[5]

[5] California Air Resources Board (ARB). 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles. Website: http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf. Accessed September 22, 2017.

Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Assembly Bill 2588), also known as the Hot Spots Act. To date, ARB has identified more than 21 TACs, and has adopted EPA's list of HAPs as TACs.

Carl Moyer Memorial Air Quality Standards Attainment Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program), a partnership between ARB and local air districts, issues grants to replace or retrofit older engines and equipment with engines and equipment that exceed current regulatory requirements to reduce air pollution. Money collected through the Carl Moyer Program complements California's regulatory program by providing incentives to effect early or extra emission reductions, especially from emission sources in environmental justice communities and areas disproportionately affected by air pollution. The program has established guidelines and criteria for the funding of emissions reduction projects. Within the North Coast Air Basin, NSCAPCD administers the Carl Moyer Program. The program establishes cost-effectiveness criteria for funding emission reductions projects, which under the final 2017 Carl Moyer Program Guidelines are $30,000 per weighted ton of NO_X, ROG, and PM (ARB 2017).[6]

Regional

BAAQMD California Environmental Quality Act Air Quality Guidelines

The NSCAPCD regulates air emissions in the norther Sonoma County portion of the North Coast Air Basin. However, the NSCAPCD relies on the BAAQMD's California Environmental Quality Act (CEQA) Air Quality Guidelines to assess air quality emissions from land use projects. BAAQMD has published CEQA Air Quality Guidelines ("BAAQMD CEQA Guidelines") that are used in this assessment to evaluate air quality impacts of projects and plans.

BAAQMD developed quantitative thresholds of significance for its CEQA guidelines in 2010, which were also included in its updated 2011 guidelines (BAAQMD, 2010, 2011). BAAQMD's adoption of the 2010 thresholds of significance was later challenged in court. In an opinion issued on December 17, 2015, related to the BAAQMD CEQA Guidelines, the California Supreme Court held that CEQA does not generally require an analysis of the impacts of locating development in areas subject to environmental hazards unless the project would exacerbate existing environmental hazards. The California Supreme Court also found that CEQA requires the analysis of exposing people to environmental hazards in specific circumstances, including the location of development near airports, schools near sources of toxic contamination, and certain exemptions for infill and workforce housing. The California Supreme Court also held that public agencies remain free to voluntarily conduct this analysis not required by CEQA for their own public projects (CBIA v. BAAQMD [2016] 2 Cal.App.5th 1067, 1083).

In view of the California Supreme Court's opinion, BAAQMD published a new version of its CEQA guidelines in May 2017. The BAAQMD CEQA Guidelines state that local agencies may rely on thresholds designed to reflect the impact of locating development near areas of toxic air

[6] California Air Resources Board (ARB). 2017. 2017 Carl Moyer Program Guidelines. Website: https://www.arb.ca.gov/msprog/moyer/guidelines/current.htm. Accessed June 2, 2018.

contamination where such an analysis is required by CEQA or where the agency has determined that such an analysis would assist in making a decision about the project. However, the thresholds are not mandatory and agencies should apply them only after determining that they reflect an appropriate measure of a project's impacts. BAAQMD's guidelines for implementation of the thresholds are for informational purposes only, to assist local agencies.

NSCAPCD Rule 420 (Particulate Matter)

The purpose of this rule is to limit the discharge of particulate matter into the atmosphere from combustion and non-combustion sources.

NSCAPCD Rule 430 (Fugitive Dust Emissions)

The purpose of this rule is to prevent unnecessary amounts of particulate matter from becoming airborne.

NSCAPCD Rule 485 (Architectural Coatings)

The purpose of this rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within NSCAPCD.

Local

Healdsburg 2030 General Plan

The Healdsburg 2030 General Plan establishes the following goals and policies that are relevant to air quality:

NR-F: Protection and improvement of air quality in the Healdsburg area.

- **NR-F-1:** The City will encourage the use of transit systems and other alternatives to automobile use.
- **NR-F-2:** The City will promote land use patterns that support the use of transit systems and pedestrian and bicycle facilities.
- **NR-F-3:** The City will seek to minimize particulate matter emissions from wood burning fireplaces and stoves, and construction activities.
- **NR-27:** Enforce the requirements of the NSCAPCD to ensure that installation of all new or replacement wood burning fireplaces or stoves meet the District's regulations.
- **NR-28:** Require the use of BMPs, such as those promulgated by the Bay Area Air Quality Management District, during construction to minimize emissions.

In accordance with Policy NR-28, the City requires standard conditions of approval applicable to all development projects. During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the following best management practices recommended by BAAQMD and listed below is required and would reduce dust and exhaust impacts associated with grading and construction to a less than significant level.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose off-site material shall be covered.
3. All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All construction vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

3.3.4 - Impacts and Mitigation Measures

Specific Thresholds of Significance

The City of Healdsburg CEQA Implementation Procedures establishes that a significant impact related to air quality would occur if the proposed plan:

- Conflicts with or obstructs implementation of an applicable air quality plan.
- Violates an applicable federal or State ambient air quality standard.
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Contributes substantially to an existing or projected air quality violation.
- Exposes sensitive receptors to substantial pollutant concentrations.
- Creates objectionable odors affecting a substantial number of people.

As discussed in the Initial Study for the proposed NEAP, NSAPCD is not required to prepare or implement an air quality plan. Therefore, no impact would occur with regard to potential conflict with an applicable air quality plan, and this topic will not be further evaluated in this section. In addition, the Initial Study determined that the proposed plan would not create objectionable odors affecting a substantial number of people. Therefore, this topic will not be further evaluated in this section.

Approach to Analysis

Ambient Air Quality

The NSCAPCD has not adopted standards of significance and instead suggests the use of the BAAQMD thresholds and mitigation measures. In June 2010, BAAQMD adopted thresholds of significance to assist lead agencies in the review of projects and plans under CEQA. These thresholds (see Table 3.3-6) were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's current CEQA Guidelines (updated May 2017).[7] The significance thresholds identified by BAAQMD are summarized in Table 3.3-6. Although the specific land uses could ultimately vary during final design, the emission estimates were developed consistent with the land uses and construction schedule in Chapter 2, Project Description.

While the final determination of whether or not a project or plan is significant is within the purview of the lead agency pursuant to CEQA Guidelines Section 15064(b), BAAQMD recommends that its quantitative and qualitative air pollution thresholds be used to determine the significance of project- or plan-related emissions.

Table 3.3-6: BAAQMD CEQA Thresholds of Significance

Pollutant	Construction Thresholds Average Daily Emissions	Operational Thresholds	
		Average Daily Emissions	Annual Average Emissions
Criteria Air Pollutants			
ROG	54 pounds/day	54 pounds/day	10 tons/year
NO_X	54 pounds/day	54 pounds/day	10 tons/year
PM_{10}	82 pounds/day	82 pounds/day	15 tons/year
$PM_{2.5}$	54 pounds/day	54 pounds/day	10 tons/year
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	

[7] Bay Area Air Quality Management District (BAQMD). California Environmental Quality Act Air Quality Guidelines. (May, 2017). Website: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed September 22, 2017.

Table 3.3-6 (cont.): BAAQMD CEQA Thresholds of Significance

Pollutant	Construction Thresholds Average Daily Emissions	Operational Thresholds	
		Average Daily Emissions	Annual Average Emissions
Health Risks and Hazards for New Sources			
Excess Cancer Risk	10 per one million	10 per one million	
Chronic or Acute Hazard Index	1.0	1.0	
Incremental annual average $PM_{2.5}$	0.3 µg/m^3	0.3 µg/m^3	
Health Risks and Hazards for Sensitive Receptors (Cumulative from All Sources within 1,000-Foot Zone of Influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	100 per 1 million		
Chronic Hazard Index	10.0		
Annual Average $PM_{2.5}$	0.8 µg/m^3		

Notes:
ROG = reactive organic gases
NO_X = nitrogen oxides
PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 µm or less
$PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5 µm or less
Source: Bay Area Air Quality Management District (BAAQMD). 2017. California Environmental Quality Act Air Quality Guidelines. May. Website: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may 2017-pdf.pdf?la=en. Accessed September 22, 2017.

Air Quality-related Health Risk

The air quality-related health risk significance thresholds utilized for this assessment were derived from the BAAQMD significance thresholds. These thresholds are:

- Cancer Risk: 10 in one million
- Non-cancer Hazard Index: 1.0
- Annual $PM_{2.5}$: 0.3 µg/m^3

Air Pollutant Modeling

Emission factors represent the emission rate of a pollutant over a given time or activity; for example, grams of NO_X per vehicle mile traveled (VMT) or grams of NO_X per horsepower hour of equipment operation. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. Activity levels are a measure of how active a piece of equipment is and can be represented as the amount of material processed, elapsed time that a piece of equipment is in operation, horsepower of a piece of equipment used, or VMT per day. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

CalEEMod version 2016.3.2 was developed in collaboration with air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant emissions associated with construction and operation from a variety of land uses.

As previously discussed, the NSCAPCD has not adopted standards of significance for operational activities and instead suggests the use of the BAAQMD CEQA thresholds and mitigation measures. The modeling follows BAAQMD guidance where applicable from its BAAQMD CEQA Guidelines. The models used in this analysis are summarized as follows:

- Construction criteria pollutant and precursor emissions: CalEEMod, version 2016.3.2
- Operational criteria pollutant and precursor emissions: CalEEMod, version 2016.3.2
- Construction TAC emission air dispersion assessment: EPA AERMOD dispersion model, version 9.6.1

The following criteria air pollutants and precursors are assessed in this analysis:

- Reactive organic gases (ROG)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Sulfur dioxide (SO_2)
- Particulate matter less than 10 microns in diameter (PM_{10})
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)

Note that the proposed plan would emit ozone precursors ROG and NO_X. However, the proposed plan would not directly emit ozone, since it is formed in the atmosphere during the photochemical reactions of ozone precursors.

The proposed plan area does not contain or propose sources that would produce substantial quantities of SO_2 emissions during construction or operation, and no further analysis of SO_2 is required.

Construction-related Criteria Pollutants

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from both on-site and off-site activities. On-site emissions consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Off-site emissions result from motor vehicle exhaust from delivery vehicles, worker traffic and road dust (PM_{10} and $PM_{2.5}$).

Schedule

The proposed plan was assumed to be constructed in two phases and over a period of two years starting in mid-2019 and ending in June 2021. Phase 1 was assumed to last 6 months and include the construction of internal circulation and access and utility infrastructure extensions and

connections as well as site preparation within the 18-acre developable portion of the plan area. Site grading is expected to be minimal as the North Village site was graded in conjunction with previous environmental remediation activities in 2005. The public, at-grade, quiet railroad crossing at the plan area's primary street entrance immediately west of Healdsburg Avenue will be completed in late 2018.

Phase 2 was assumed to last 24 months and include the construction of 290 multi-family units, a 130-room (130,000-square-foot) hotel, 40,000 square feet of office uses, and 30,000 square feet of retail uses. It is anticipated that construction staging would occur within the developable portion of the plan area. For purposes of this analysis, Phase 2 was assumed to start construction in January 2020 and become operational in 2021. There would be an overlap of construction and operational activity within the developable portion of the plan area for a period of approximately 6 months in 2021. The timing is ultimately dependent on market conditions and construction scheduling.

Construction was assumed to take place 5 days per week and 8 hours per day. The conceptual construction schedule is shown in Table 3.3-7.

Table 3.3-7: Conceptual Construction Schedule

Construction Phase	Assumed Construction Schedule		Working Days
	Start Date	End Date	
Phase 1			
Site Preparation	7/1/2019	9/30/2019	66
Paving	10/1/2019	12/31/2019	66
Phase 2			
Building Construction	1/1/2020	10/8/2021	463
Paving	10/9/2021	11/7/2021	20
Architectural Coating	11/8/2021	12/31/2021	40
Source: FCS and CalEEMod.			

Equipment Tiers and Emission Factors

Equipment tiers refer to a generation of emission standards established by the EPA and ARB that apply to diesel engines in off-road equipment. The "tier" of an engine depends on the model year and horsepower rating; generally, the newer a piece of equipment is, the greater the tier it is likely to have. Excluding engines greater than 750 horsepower, Tier 1 engines were manufactured generally between 1996 and 2003. Tier 2 engines were manufactured between 2001 and 2007. Tier 3 engines were manufactured between 2006 and 2011. Tier 4 engines are the newest and some incorporate hybrid electric technology; they were manufactured after 2007.

Construction emissions are generally calculated as the product of an activity factor and an emission factor. The activity factor for construction equipment is a measure of how active a piece of equipment is and can be represented as the amount of material processed, elapsed time that a piece of equipment is in operation, horsepower of a piece of equipment used, or the amount of fuel

consumed in a given amount of time. The emission factor relates the process activity to the amount of pollutant emitted. Examples of emission factors include grams of emissions per miles traveled and grams of emissions per horsepower-hour. The operation of a piece of equipment is tempered by its load factor which is the average power of a given piece of equipment while in operation compared with its maximum rated horsepower. A load factor of 1.0 indicates that a piece of equipment continually operates at its maximum operating capacity. This analysis uses the CalEEMod default load factors for off-road equipment.

On-site Off-road Equipment

The CalEEMod contains built-in inventories of construction equipment for a variety of land use construction projects that incorporate estimates of the number of equipment, their age, their horsepower, and emission control equipment tier mix from which rates of emissions are developed. These inventories were developed based on construction surveys for several land use projects. Table 3.3-8 presents the construction equipment used on the proposed plan as derived from CalEEMod. The CalEEMod default emission control equipment tier mix was used in this analysis for the estimation of unmitigated emissions from on-site construction equipment.

Table 3.3-8: Proposed Plan Construction Equipment Assumptions for all Phases of Construction

Phase Name	Equipment	Number	Hours per Day	Horsepower	Load Factor
Phase 1					
Site Preparation	Rubber Tired Dozers	3	8	247	0.40
	Tractors/Loaders/Backhoes	4	8	97	0.37
	Trenchers	1	8	78	0.50
Paving	Pavers	2	8	130	0.42
	Paving Equipment	2	8	132	0.36
	Rollers	2	8	80	0.38
Phase 2					
Building Construction	Cranes	1	7	231	0.29
	Forklifts	3	8	89	0.2
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	97	0.37
	Welders	1	8	46	0.45
Paving	Pavers	2	8	130	0.42
	Paving Equipment	2	8	132	0.36
	Rollers	2	8	80	0.38
Architectural Coating	Air Compressors	1	6	78	0.48
Source: CalEEMod and FirstCarbon Solutions, see Appendix C.					

Site Preparation

During earthmoving activities, fugitive dust can be generated from the movement of dirt on the proposed plan. CalEEMod estimates dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading dirt into haul trucks. Each activity is calculated differently in CalEEMod, based on the number of acres traversed by the grading equipment.

Only some pieces of equipment are assumed to generate fugitive dust in CalEEMod. The CalEEMod model manual identifies various equipment and the acreage disturbed in an 8-hour day for each piece of equipment:

- Crawler tractors, graders, and rubber-tired dozers: 0.5 acre per 8-hour day
- Scrapers: 1 acre per 8-hour day

Therefore, the following acres are the total quantities disturbed per day, per phase, according to the acreage disturbed quantities listed above:

- Site preparation = 3.5 acres per day

As previously discussed, the plan area has been previously graded. Considering this information, it was assumed that soil would be balanced on-site, and, therefore, there would be no material imported or exported from the plan area.

Off-site On-road Vehicle Trips

Worker vehicle trips are accounted for the construction phases based on 1.25 worker trips per piece of construction equipment. The CalEEMod model defaults for vendor trips, trip length, and vehicle fleet (all heavy-heavy duty trucks) were used. The CalEEMod model run used the default worker trip length of 10.8 miles, vendor trip length of 7.3, and the hauling trip length of 20 miles. A summary of the construction-related trips is shown in Table 3.3-9.

Table 3.3-9: Construction Off-site Trips

Activity	Construction Trips per Day		Total Construction Trips
	Worker	Vendor	Haul
Phase 1			
Site Preparation	20	0	0
Paving	15	0	0
Phase 2			
Building Construction	286	64	0
Paving	15	0	0
Architectural Coating	57	0	0
Source: FirstCarbon Solutions and CalEEMod, see Appendix C.			

Off-Gassing Materials

Asphalt paving and architectural coating materials used during construction would generate off-gas emissions of ROGs. CalEEMod was used to estimate these off-gas ROG emissions. The data collection process determined the acres of asphalt paving required, which CalEEMod uses to determine associated ROG emissions. CalEEMod contains assumptions for application of architectural coatings that are based on the land use type and square footage of the buildings to be constructed and were used to quantify emissions.

Operation-related Criteria Pollutants

For the purpose of this analysis, operations were analyzed assuming full-buildout in 2021. Operational emissions are those emissions that occur when the proposed plan commences operations.

On-road Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the plan area. The emissions were estimated using CalEEMod. The average daily trip generation rates for operations were obtained from the traffic analysis performed consistent with Institute of Transportation Engineers (ITE) Manual, 10th Edition. Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. Pass-by trips are not diverted from another roadway. The CalEEMod defaults pass-by trips were used for this analysis. The CalEEMod default round trip lengths for an urban setting for the North Coast Air Basin portion of Sonoma County were used in this analysis. The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the proposed plan. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The CalEEMod default vehicle fleet mix was used for the North Coast Air Basin portion of Sonoma County was used for this analysis.

Architectural Coatings

Paints release ROG emissions during application and drying. The buildings in the proposed plan would be repainted on occasion. The proposed plan is required to comply with the NSCAPD Regulation 1, Rule 485—Architectural Coatings. This rule governs the manufacture, distribution, and sale of architectural coatings and limits the reactive organic gases content in paints and paint solvents.

Consumer Products

Consumer products are various solvents used in non-industrial applications, which emit ROG emissions during their product use. "Consumer Product" means a chemically formulated product used by household and institutional consumers, including but not limited to: detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. It does not

include other paint products, furniture coatings, or architectural coatings.[8] The default emission factor developed for CalEEMod was used.

Residential Wood Burning

The CalEEMod model was adjusted to reflect compliance with NSCAPCD Rule 400, which requires that new wood-fired appliances meet United States Environmental Protection Agency or NSCAPCD standards.

Landscape Equipment

CalEEMod estimated the landscaping equipment using the default assumptions in the model.

Electricity

Electricity used by the proposed plan (for lighting, etc.) would result in emissions from the power plants that would generate electricity distributed on the electrical power grid. Electricity emissions estimates are used only in the GHG analysis. CalEEMod was used to estimate these emissions from the proposed plan.

CalEEMod has three categories for electricity consumption: electricity that is impacted by Title 24 regulations, non-Title 24 electricity, and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title 24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances and electronics. Total electricity consumption in CalEEMod is divided into the three categories. The percentage for each category is determined by using percentages derived from the CalEEMod default electricity intensity factors. The percentages are then applied to the electricity consumption to result in the values used in the analysis.

Natural Gas

The proposed plan would generate emissions from the combustion of natural gas for water heaters, heat, etc. CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. CalEEMod defaults were used.

Construction- and Operation-related Toxic Air Contaminants

TACs are air pollutants in miniscule amounts in the air that, if a person is exposed to them, could increase the chances of experiencing health problems. Exposures to TAC emissions can have both chronic long-term (over a year or longer) and acute short-term (over a period of hours) health impacts. Construction-period TAC emissions could contribute to increased health risks to nearby residents or sensitive receptors.

An assessment was made of the potential health impacts to surrounding sensitive receptors resulting from TAC emissions during proposed plan construction. The TACs of greatest concern are those that cause serious health problems or affect many people. Health problems can include

[8] California Air Resources Board (ARB). 2011. Regulation for Reducing Emissions from Consumer Products. Website: www.arb.ca.gov /consprod/regs/fro%20consumer%20products%20regulation.pdf. Accessed May 1, 2017.

cancer, respiratory irritation, nervous system problems, and birth defects. Some health problems occur soon after a person inhales TACs. These immediate effects may be minor, such as watery eyes; or they may be serious, such as life-threatening lung damage. Other health problems may not appear until many months or years after a person's first exposure to the TAC. Cancer is one example of a delayed health problem.

Fine particle pollution or $PM_{2.5}$ describes particulate matter that is 2.5 micrometers in diameter and smaller—one-thirtieth the diameter of a human hair. Fine particle pollution can be emitted directly or formed secondarily in the atmosphere. $PM_{2.5}$ health impacts are important, because their size can be deposited deeply in the lungs causing respiratory effects.

For purposes of this analysis, exhaust emissions of DPM, are represented as exhaust emissions of $PM_{2.5}$. Studies indicate that DPM poses the greatest health risk among airborne TACs. A 10-year research program conducted by the ARB demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic long-term health risk. DPM differs from other TACs in that it is not a single substance but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Impact Evaluation

Potential for Air Quality Standard Violation

Impact AIR-1:	**The proposed plan would not violate an applicable federal or State ambient air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact Analysis

Currently, there are no violations of federal or State air quality standards in the NSAPCD's portion of the North Coast Air Basin. The potential for new violations is evaluated by comparing the emissions of criteria pollutants and comparing those emissions to the appropriate emission thresholds. Potential localized impacts would consist of exceedances of State or federal standards for $PM_{2.5}$, PM_{10}, and nitrogen dioxide (NO_2). Particulate matter emissions (both PM_{10} and $PM_{2.5}$) are of concern during project construction because of the potential to emit fugitive dust during earth-disturbing activities. NO_X emissions are of concern from the potential health impacts of NO_2, and because NO_2 particulates in the production of ozone and particulate nitrate aerosols. In addition, emissions of ROG are important because of their participation in the formation of ozone; ROG emissions result from motor vehicles and hydrocarbon evaporation associated with solvent use and painting. Construction and operational emissions are discussed separately below.

Construction

Construction-related emissions would result from on-site and off-site activities. On-site emissions consist principally of exhaust emissions from the heavy-duty off-road construction equipment, on-site motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Off-site emissions

are caused by motor vehicle exhaust associated with delivery and haul truck vehicles, construction worker traffic, and road dust.

Construction Fugitive Dust

Proposed plan construction would require general site preparation/earthwork activities. Emissions from construction activities are generally short-term in duration, but they may still cause adverse air quality impacts. The proposed plan would generate emissions from construction equipment exhaust, worker travel, and fugitive dust as PM_{10} and $PM_{2.5}$. PM_{10} is of concern during construction because of the potential to emit fugitive dust during earth-disturbing activities (construction fugitive dust). During construction, fugitive dust (PM_{10}) would be generated from earth-moving activities. The majority of this fugitive dust would remain localized and would be deposited near the plan area.

BAAQMD does not have a quantitative significance threshold for fugitive dust. The BAAQMD CEQA Guidelines recommend that projects determine the significance for fugitive dust through application of BMPs. As noted earlier, under Healdsburg 2030 General Plan Policy NR-28, individual projects are required to use specified best management practices during construction to minimize emissions. Therefore, impacts related to construction activities would be less than significant.

Construction Emissions: ROG, NO_X, PM_{10}, $PM_{2.5}$

Development under the proposed plan was assumed to be constructed in two phases with Phase 1 construction beginning in July 2019. Due to improvements in technology and more stringent regulatory requirements, construction emissions would likely decrease if the construction schedule moves to later years. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as required by the CEQA Guidelines. The construction emissions modeling parameters and assumptions are summarized above (see Approach to Analysis). Supporting information and modeling outputs are provided in Appendix C.

Table 3.3-10 summarizes the unmitigated construction-generated emissions in annual tons. Table 3.3-11 provides the unmitigated average daily emissions rate for construction of the proposed plan.

Table 3.3-10: Construction Criteria Air Pollutants Emissions (Annual Tons)

Construction Phase	Tons/Year			
	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
2019				
Phase 1 Site Preparation	0.16	1.64	0.09	0.08
Phase 1 Paving	0.05	0.51	0.03	0.03
2019 Total Emissions	*0.22*	*2.14*	*0.12*	*0.11*
2020				
Phase 2 Building Construction—2020	0.49	3.65	0.15	0.14
2020 Total Emissions	*0.49*	*3.65*	*0.15*	*0.14*
2021				
Phase 2 Building Construction—2021	0.34	2.54	0.10	0.09

Table 3.3-10 (cont.): Construction Criteria Air Pollutants Emissions (Annual Tons)

Construction Phase	Tons/Year			
	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Phase 2 Paving	0.01	0.13	0.01	0.01
Phase 2 Architectural Coating	9.13	0.03	0.00	0.00
Phase 2 Total Emissions	*9.97*	*6.35*	*0.26*	*0.25*
Total Construction Emissions	**10.19**	**8.49**	**0.38**	**0.35**

Notes:
ROG = reactive organic gases
NO_X = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter
$PM_{2.5}$ = particulate matter 2.5 microns in diameter
Calculations use unrounded numbers.
Source: CalEEMod Output (see Appendix C).

Table 3.3-11: Unmitigated Construction Criteria Air Pollutants Emissions (Average Daily Rate)

Parameter	Air Pollutants			
	ROG	NO_x	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Total Emissions (tons/year)	10.19	8.49	0.38	0.35
Total Emissions (lbs/year)	20,377	16,990	757	707
Average Daily Emissions (lbs/day)[2]	31.11	25.94	1.16	1.08
Significance Threshold (lbs/day)	**54**	**54**	**82**	**54**
Exceeds Significance Threshold?	No	No	No	No

Notes:
[1] Average daily emission were calculated by dividing the total number of pounds by the total 655 working days of construction for the duration of construction (7/1/2019-12/21/2021).
Calculations use unrounded totals.
lbs = pounds ROG = reactive organic gases NO_x = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter
$PM_{2.5}$ = particulate matter 2.5 microns in diameter
Source of thresholds: BAAQMD 2017
Source of emissions: CalEEMod Output (see Appendix C).

As shown in Table 3.3-11, unmitigated emissions associated with construction of both phases of the proposed plan are below the BAAQMD's thresholds of significance; therefore, construction of the proposed plan would have a less than significant impact in regards to emissions of ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$.

Operation

Operational Emissions: ROG, NO_X, PM_{10}, PM 2.5

As previously discussed, the pollutants of concern include ROG, NO_X, PM_{10}, and $PM_{2.5}$. Operational emissions from the proposed plan were estimated using CalEEMod version 2016.3.2. The trip generation rates are from the plan-specific traffic modeling (included in Appendix B). As discussed above under Approach to Analysis, the year 2021 was used as the operational year for all portions of the proposed plan. Complete assumptions and parameters used to estimate emissions are provided in Appendix C. The operational emissions were modeled for summer and winter seasons. The highest results for each pollutant are presented in Table 3.3-12. The unmitigated daily operational emissions would be less than significant.

Table 3.3-12: Unmitigated Daily Operational Criteria Air Pollutants Emissions (Maximum Daily Rate)

Emissions Source	Pounds per Day			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area	19.71	2.92	0.35	0.35
Energy	0.28	2.49	0.19	0.19
Mobile	10.62	48.28	25.52	7.06
Total Operational Emissions	***30.60***	***53.69***	***26.05***	***7.60***
Thresholds of Significance	**54**	**54**	**82**	**54**
Exceeds Significance Threshold?	No	No	No	No

Notes:
ROG = reactive organic gases; NO_X = nitrous oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
The highest emissions occur during the summer modeling run for ROG. The highest emissions occur during the winter modeling run for NO_X, PM_{10}, and $PM_{2.5}$.
Calculations use unrounded totals.
Source: CalEEMod Output (see Appendix C).
Source of Thresholds: BAAQMD 2017.

As shown in Table 3.3-13, the annual operational emissions are below the BAAQMD's thresholds of significance. The impact resulting from unmitigated annual operational emissions would be less than significant.

Table 3.3-13: Unmitigated Annual Operational Criteria Air Pollutants (Annual Rate)

Emissions Source	Tons per Year			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area	3.49	0.13	0.02	0.02
Energy	0.05	0.45	0.04	0.04

Table 3.3-13 (cont.): Unmitigated Annual Operational Criteria Air Pollutants (Annual Rate)

Emissions Source	Tons per Year			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Mobile	1.59	7.88	4.06	1.13
Total Operational Emissions	***5.12***	***8.47***	***4.11***	***1.18***
Thresholds of Significance	**10**	**10**	**15**	**10**
Exceeds Significance Threshold?	No	No	No	No

Notes:
ROG = reactive organic gases; NO_X = nitrous oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
Source of Emissions: CalEEMod Output (see Appendix C).
Source of Thresholds: BAAQMD 2017.

As indicated in Table 3.3-12 and Table 3.3-13, total emissions from operation of the proposed plan would not exceed BAAQMD thresholds. Therefore, emissions associated with operations of the proposed plan would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.

Level of Significance

Less than significant

Cumulative Criteria Pollutant Emissions Impacts

Impact AIR-2: **The proposed plan would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).**

Impact Analysis

This impact is related to regional criteria pollutant emissions and associated cumulative impacts. The portion of the North Coast Air Basin under the NSCAPCD's jurisdiction is an attainment area for all federal standards and State standards for criteria pollutants. The determination of cumulative air quality impacts for construction and operational emissions is based on whether a project or plan would result in regional emissions that exceed BAAQMD regional thresholds of significance for construction and operations on a project level. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project or plan's individual emissions would be cumulatively considerable. If a project or plan exceeds the identified regional significance thresholds, its emissions would be cumulatively considerable and result in significant adverse air quality impacts to the region's existing air quality conditions.

As stated in the BAAQMD CEQA Guidelines, "By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. If a project's contribution to cumulative impact is considerable, then the project's impact on air quality would be considerable."[9]

The BAAQMD CEQA Guidelines go on to state that "In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance threshold, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the regions existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary."[10]

Therefore, the results of criteria pollutant emissions presented in Impact AIR-1 are also used to discuss the analysis of the cumulative impacts, and additional analysis to assess cumulative impacts is unnecessary.[11] Proposed plan construction and operational impacts are assessed separately below.

Construction

Emissions from construction-related activities are generally short-term in duration but may still cause adverse air quality impacts. The proposed plan would generate emissions from construction equipment exhaust, worker travel, and fugitive dust. These construction emissions include criteria air pollutants and precursors from the operation of heavy construction equipment. Therefore, the proposed plan has the potential to result in significant impact with regard to construction fugitive dust.

BAAQMD does not have a quantitative significance threshold for fugitive dust. The BAAQMD CEQA Guidelines recommend that projects or plans determine the significance for fugitive dust through application of BMPs.

As discussed in Impact AIR-1 above, the proposed plan's construction emissions would not exceed any quantitative significance thresholds related to criteria pollutants. Table 3.3-10 shows that unmitigated emissions associated with construction of both phases of the proposed plan are below the BAAQMD's thresholds of significance. As discussed under Impact AIR-1, future development under the proposed plan would implement required BMPs per Healdsburg 2030 General Plan Policy NR-28 in order to reduce construction-related fugitive dust emissions. Therefore, the construction cumulative impact related to criteria pollutants and ambient air quality would be less than significant with mitigation.

Operation

Operational pollutants of concern include ROG, NO_X, CO, and particulate matter (PM_{10} and $PM_{2.5}$). The determination of cumulative air quality impacts for operational emissions is based on whether the proposed plan would result in regional emissions that exceed BAAQMD regional thresholds of

[9] BAAQMD. 2017 CEQA Air Quality Guidelines, at page 2-1. Website: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed October 25, 2018.
[10] Ibid.
[11] Ibid.

significance for operations. As discussed in Impact AIR-1 and as shown in Table 3.3-12 and Table 3.3-13, the proposed plan's operational emissions would not exceed significance thresholds related to criteria pollutants and would be considered consistent with regional air quality planning efforts. Therefore, the operational cumulative impact related to criteria pollutants and ambient air quality would be less than significant.

Level of Significance

Less than significant

Sensitive Receptors

Impact AIR-3: The proposed plan could expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis

This impact addresses whether the project would expose sensitive receptors to asbestos, construction-generated fugitive dust (PM_{10} and $PM_{2.5}$), construction-generated DPM, operational-related TACs, or operational CO hotspots. The modeling assumptions and methodology for the Health Risk Assessment are provided in Appendix C.

BAAQMD considers a sensitive receptor to be any facility or land use that includes members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. If a project is likely to be a place where people live, play, or convalesce, it should be considered a receptor. It should also be considered a receptor if sensitive individuals are likely to spend a significant amount of time there. Examples of receptors include residences, schools and schoolyards, parks and play grounds, daycare centers, nursing homes, and medical facilities. As the proposed plan contains residences, the plan area itself includes sensitive receptors. The closest non-project sensitive receptors include residences located southeast of the plan area and east of Healdsburg Avenue.

Potential air quality impacts arise when sources of air pollutants and sensitive receptors are located near one another. Localized impacts to sensitive receptors generally occur in one of two ways:

1. A (new) source of air pollutants is located close to existing sensitive receptors;
2. A (new) sensitive receptor is located near an existing source of air pollutants.

To address this impact, the quantitative thresholds provided in the BAAQMD CEQA Guidelines have been utilized for this assessment. Currently, it is assumed that the contemplated land uses would not include installing any stationary sources on-site. Thus, the health risks analysis does not include analysis of on-site stationary sources. If, in the future, a use is proposed that includes a new stationary source of air pollution, additional environmental review would be necessary.

Construction

Localized Fugitive Dust

Activities associated with site preparation and construction would generate short-term emissions of fugitive dust resulting in increased dust fall and locally elevated levels of PM_{10} and $PM_{2.5}$ downwind

of construction activity. Construction dust has the potential for creating a nuisance at nearby properties. As described in Impact AIR-1, current BMPs would be implemented to reduce fugitive dust emissions from construction activities to less than significant. This would ensure that impacts related to localized fugitive dust would remain less than significant.

Estimation of Plan-Level Construction DPM Emissions

The DPM construction emissions (as $PM_{2.5}$ exhaust emissions) were estimated using CalEEMod version 2016.3.2. The on-site DPM emissions were generated by off-road construction equipment. The off-site DPM emissions were generated by haul truck and worker vehicle traffic along Healdsburg Avenue. Table 3.3-14 summarizes the unmitigated annual DPM construction emissions (as $PM_{2.5}$ exhaust emissions).

Table 3.3-14: Project Unmitigated DPM (as $PM_{2.5}$ Exhaust) Construction Emissions

Construction Year	On-site DPM (grams/m^2-sec)	Off-site DPM North on Healdsburg Avenue to U.S. 101 (grams/sec)	Off-site DPM South on Healdsburg Avenue to U.S. 101 (grams/sec)
2019 (Phase 1)	1.769E-07	6.987E-07	5.250E-07
2020 (Phase 2)	1.150E-07	4.921E-05	3.697E-05
2021 (Phase 2)	8.285E-08	2.113E-05	1.588E-05
Source: FCS and CalEEMod (see Appendix C).			

Air Dispersion Modeling

An air dispersion model is a mathematical formulation used to estimate the air quality impacts at specific locations (receptors) surrounding a source of emissions given the rate of emissions and prevailing meteorological conditions. The air dispersion model applied in this assessment was the EPA AERMOD (version 9.6.1) air dispersion model that is approved by the BAAQMD for air dispersion assessments. Specifically, the AERMOD model was used to estimate levels of air emissions at sensitive receptor locations from the project's construction $PM_{2.5}$ exhaust emissions. The use of the AERMOD model provides a refined methodology for estimating construction impacts by utilizing long-term, measured representative meteorological data for the plan area and a representative construction schedule.

The urban dispersion option was used to describe the air dispersion in the local vicinity of the plan area. The air dispersion model assessment used meteorological data from Sonoma County Airport, which is 10.2 miles southeast of the plan area. The working schedule was assumed to be 8 hours per day and 5 days per week.

Receptor locations within the AERMOD model were placed at locations of existing residences surrounding the plan area. To evaluate the project's localized construction impacts, sensitive receptor height should be taken into account at the point of maximum impact. The BAAQMD does not provide the recommended receptor height. However, the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments

recommends selecting a receptor height from 0 to 1.8 meters, which will result in the highest predicted downwind concentration. A receptor height of 1.8 meters was used in the assessment.

The emissions from the on-site construction exhaust source were assumed to be emitted at a height of 5 meters above ground to account for the top of the equipment exhaust stack where the emissions are released to the atmosphere and the increase in the height of the emissions due to its heated exhaust. The off-site construction vehicle emissions were also included in the assessment and were represented in the AERMOD model as a line volume source with a release height of 3.1 meters for the DPM truck vehicles. It was assumed that all the construction vehicles travel from U.S. 101 via Healdsburg Avenue, either from the north or the south, to the plan area. It was assumed that 50 percent of traffic would travel from either direction.

One area emission source was used to represent the proposed plan's construction emissions. The construction area source represented the generation of on-site construction DPM emissions from the on-site construction equipment. Existing off-site residences were considered in this analysis.

Estimation of Cancer Risks

The BAAQMD has developed a set of guidelines for estimating cancer risks that provide adjustment factors that emphasize the increased sensitivities and susceptibility of young children to exposures to TACs.[12] These adjustment factors include age-sensitivity weighting factors, age-specific daily breathing rates, and age-specific time-at-home factors. The recommended method for the estimation of cancer risk for off-site sensitive receptors is shown in the equations below with the cancer risk adjustment factors provided in Table 3.3-15 for various sensitive/residential receptors (infant, child, and adult) over the construction period. A lifetime exposure is assumed over the time period from the 3rd trimester of pregnancy to the duration of the construction. For purposes of estimating cancer risks for the adult receptors within the proposed plan, the factors shown in Table 3.3-15 for sensitive receptor-adults were used to estimate cancer risks.

$$\text{Cancer Risk} = C_{DPM} \times \text{Inhalation Exposure Factor}$$

Where:

Cancer Risk = Total individual excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular source for specified exposure durations; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population; cancer risk is expressed in terms of risk per million exposed individuals.

C_{DPM} = Period average DPM air concentration calculated from the air dispersion model in $\mu g/m^3$

Inhalation is the most important exposure pathway to impact human health from DPM and the inhalation exposure factor is defined as follows:

[12] BAAQMD. Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines (2016). Website: http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en.

Inhalation Exposure Factor = CPF x EF x ED AAF/AT

Where:

CPF = Inhalation cancer potency factor for the TAC: 1.1 $(mg/kg\text{-}day)^{-1}$ for DPM
EF = Exposure frequency (days/year)
ED = Exposure duration (years of construction)
AAF = set of age-specific adjustment factors that include age sensitivity factors (ASF), daily breathing rates (DBR), and time at home factors (TAH)—see Table 3.3-15
AT = Averaging time period over which exposure is averaged (days)

The OEHHA-recommended values for the various cancer risk parameters shown in the equation above are provided in Table 3.3-15.

Table 3.3-15: BAAQMD Exposure Assumptions for Cancer Risk during Construction

Receptor Type	Exposure Frequency		Exposure Duration (years)	Age Sensitivity Factors	Time at Home Factor (%)	Daily Breathing Rate[(1)] (l/kg-day)
	Hours/day	Days/year				
Sensitive/Residential—Infant						
3rd Trimester	24	350	0.25	10	85	361
0–2 years	24	350	2	10	85	1,090
2 to < 3 years	24	350	0.25	3	72	572
Sensitive Receptor—Child						
3–16 years	24	350	2	3	72	572
Sensitive Receptor—Adult						
> 16 to 30 years	24	350	2	1	73	261

Notes:
(1) The daily breathing rates recommended by the BAAQMD for sensitive/residential receptors assume the 95th percentile breathing rates for all individuals less than 2 years of age and 80th percentile breathing rates for all older individuals.
(l/kg-day) = liters per kilogram body weight per day
Source: BAAQMD 2016.

Estimation of Non-Cancer Hazards

An evaluation of the potential non-cancer effects of chronic chemical exposures was also conducted. Adverse health effects are evaluated by comparing the annual receptor concentration of each chemical compound with the appropriate reference exposure level (REL). Available RELs promulgated by the OEHHA were considered in the assessment.

Risk characterization for non-cancer health hazards from TACs is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of the proposed plan's emissions to a concentration considered acceptable to public health professionals, termed the REL.

To quantify non-carcinogenic impacts, the hazard index approach was used.

$$HI = C_{ann}/REL \qquad \text{(EQ-3)}$$

Where:

HI = chronic hazard index
C_{ann} = annual average concentration of TAC as derived from the air dispersion model ($\mu g/m^3$)
REL = reference exposure level above which a significant impact is assumed to occur ($\mu g/m^3$)

The hazard index assumes that chronic exposures to TACs adversely affect a specific organ or organ system (toxicological endpoint) of the body. For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity REL. For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds 1, a health hazard is presumed to exist. For purposes of this assessment, the TAC of concern is DPM, for which the OEHHA has defined a REL for DPM of 5 $\mu g/m^3$. The principal toxicological endpoint assumed in this assessment was through inhalation.

Estimation of $PM_{2.5}$ Hazards

The BAAQMD has included significance thresholds for $PM_{2.5}$ from recent studies that show health impacts from exposure to this pollutant. The construction emissions of $PM_{2.5}$ incorporated into this assessment included both DPM and $PM_{2.5}$ fugitive dust. As discussed in Impact AIR-1, BMPs would be required to reduce fugitive dust emissions during construction. Annual $PM_{2.5}$ emissions shown in Table 3.3-16 were estimated assuming implementation of such BMPs.

Estimates of Health Risks and Hazards from Plan Construction

The maximum impacted off-site sensitive receptor (MIR) was found at an existing residence located southeast of the plan area and east of Healdsburg Avenue. Table 3.3-16 presents a summary of the proposed plan's construction cancer risk, chronic non-cancer hazard, and $PM_{2.5}$ concentration impacts at the MIR prior to the application of any equipment mitigation.

Table 3.3-16: Estimated Health Risks and Hazards during Construction—Unmitigated

Health Impact Metric	Cancer Risk[(2)] (risk per million)	Chronic Non-Cancer Hazard Index[(3)]	Annual Total $PM_{2.5}$ Concentration ($\mu g/m^3$)
Risks and Hazards at the Maximum Impacted Off-site Sensitive Receptor (MIR)			
Risks and Hazards at the MIR: Infant[1]	4.83	0.01	0.06
Risks and Hazards at the MIR: Child[1]	0.66	0.01	0.06
Risks and Hazards at the MIR: Adult[1]	0.10	0.01	0.06
BAAQMD Thresholds of Significance	**10**	**1**	**0.30**
Exceeds Individual Source Threshold?	No	No	No

Table 3.3-16 (cont.): Estimated Health Risks and Hazards during Construction—Unmitigated

Health Impact Metric	Cancer Risk[(2)] (risk per million)	Chronic Non-Cancer Hazard Index[(3)]	Annual Total $PM_{2.5}$ Concentration ($\mu g/m^3$)

Notes:
[1] The maximum impacted off-site sensitive receptor is a residence located approximately 300 feet southeast of the plan area on Spur Ridge Court.
[2] The cancer risk at the MIR is estimated using construction emissions from both phases of construction, and the exposure duration is 2 years.
[3] Chronic non-cancer hazard index was estimated by dividing the annual DPM concentration (as $PM_{2.5}$ exhaust) by the REL of 5 $\mu g/m^3$.
Source: CalEEMod and FirstCarbon Solutions (see Appendix C).

As shown in Table 3.3-16, the cancer risks, non-cancer hazard index, and $PM_{2.5}$ impacts for infants, children, and adults at the off-site MIR would not exceed the BAAQMD's recommended thresholds of significance. Therefore, the proposed plan's construction emissions would not result in significant health impacts to off-site sensitive receptors.

At this time, the exact locations of future buildings and exact timing of occupancy for specific portions of the proposed plan are unknown. Because the proposed plan includes the development of several land use types on approximately 18 developable acres, the possibility for the proposed plan to locate sensitive receptors near on-going construction exists. Since it would be speculative to assess risks without knowing the locations of the various components within the plan area, construction of future development under the proposed plan could result in a potentially significant impact. Therefore, MM AIR-3 is required.

Asbestos

Structures to be demolished sometimes contain asbestos-containing materials (ACM); however, no demolition is proposed at part of the proposed plan.

The Department of Conservation, Division of Mines and Geology (DMG) published a guide for generally identifying areas that are likely to contain naturally occurring asbestos (NOA). The associated DMG map indicates that there are several locations within Sonoma County that are likely to contain NOA.[13]

As discussed in Section 8, Hazards and Hazardous Materials, of the Initial Study prepared for the proposed plan, the plan area geotechnical report indicated that the upper elevations in the northeast corner of the plan area and ridgeline adjacent to the northern plan area boundary are mapped as underlain by serpentinite, an ultramafic rock where naturally occurring asbestos is likely to be encountered. The geotechnical report identified highly weathered serpentinite in an isolated

[13] Department of Conservation, Division of Mines and Geology. A General Location Guide for Ultramafic Rocks in California—Areas More likely to Contain Naturally Occurring Asbestos (August 2002). Website: http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos. Accessed August 25, 2018.

area along the west property line with little to no asbestos from minerals visually noticeable; however, it is likely some asbestos would exist in this type of rock.

Mass earthwork grading is not anticipated given the plan area previously underwent site grading and drainage improvements. Furthermore, the majority of the plan area is underlain with siltstone and sandstone and the majority of the developable portion of the plan area is covered with engineered fill that was placed during remedial grading operations in 2004. As previously discussed, future earth-disturbance activities will be minimal, and consist mainly of relatively minor cuts and fills necessary to create road improvements, parking areas, and building pads as well as additional site drainage. As determined in the Initial Study prepared for the proposed plan, MM HAZ-1 (see on page 51 of Initial Study in Appendix A) would be required to reduce the proposed plan's impact related to creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. MM HAZ-1 includes the requirement for the applicant to prepare and implement an asbestos dust mitigation plan, which would also reduce the asbestos-related impacts to sensitive receptors to less than significant. Therefore, with the incorporation of MM HAZ-1, the proposed plan would not expose sensitive receptors to substantial concentrations of asbestos.

Estimates of Health Risks and Hazards from Plan Operation

The proposed plan would generate 4,930 new daily trips, as provided by the plan-specific traffic modeling (included in Appendix B). Trips are generated for hotel, residential, specialty retail, and general office uses. The majority of these trips would consist of residents, visitors, and employees traveling to and from the plan area in passenger vehicles. Because most passenger vehicles are gasoline-combusted, the proposed plan would not generate significant amount of DPM emissions during operation. Therefore, the proposed plan would not result in significant health impacts on sensitive receptors during operation.

Operational

Operational CO Hotspot

Localized high levels of CO (CO hotspot) are associated with traffic congestion and idling or slow-moving vehicles. BAAQMD recommends a screening analysis to determine if a proposed plan's operation has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is not necessary. The proposed plan would result in a less than significant impact to air quality for local CO if at least one of following screening criteria are met:

- **Screening Criterion 1**: The proposed plan is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; or
- **Screening Criterion 2:** The proposed plan traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; or
- **Screening Criterion 3:** The proposed plan traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is

substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Screening Criterion 1

The Sonoma County Transportation Authority (SCTA) is the agency that provides planning, project management, finance, grant administration, and other important functions related to the transportation network in Sonoma County. In 1997, SCTA relinquished its position as the County Congestion Management Agency under new State legislation that made this function optional. Thus, there is currently no adopted regional congestion management program that is applicable in Sonoma County. As discussed in Section 3.2, Transportation/Traffic, the proposed plan would not conflict with an applicable congestion management program; accordingly, screening criterion 1 is not applicable to the proposed plan.

Screening Criteria 2 and 3

The plan-specific traffic modeling (included in Appendix B) identified peak-hour traffic volumes for seven intersections affected by the proposed plan. The maximum peak-hour intersection volume would occur at the Dry Creek Road/Grove Street intersection in the "Future Plus Project" scenario during the PM peak hour. The estimated cumulative traffic volume at the Dry Creek Road/Grove Street intersection is 2,843 PM peak-hour trips. This level of peak-hour trips is substantially less than BAAQMD's second and third screening criteria of 44,000 vehicles per hour and 24,000 vehicles per hour respectively. The proposed plan would not result in an increase of traffic volumes at affected intersections to more than 44,000 vehicles per hour and would not increase traffic volumes at affected intersections to more than 24,000 where vertical or horizontal mixing is substantially limited; accordingly, the proposed plan is consistent with screening criteria 2 and 3.

Since the proposed plan would meet the aforementioned screening criteria, the proposed plan's impact related to air quality for local CO emissions would be less than significant.

Proposed Plan Inhabitants as Sensitive Receptors

The proposed plan would locate new sensitive receptors (residents) that could be subject to existing sources of TACs at the plan area. However, the California Supreme Court in *California Building Industry Association v. BAAQMD* concluded that agencies generally subject to CEQA are not required to analyze the impact of existing environmental conditions on a proposed plan's future users or residents. Therefore, impacts from existing sources of TAC emissions on sensitive receptors on the plan area are not subject to CEQA and no further discussion is necessary.

Level of Significance Before Mitigation

Potentially significant impacts requiring mitigation include:

- Sensitive receptors exposed to air pollutant concentrations from construction activities.

Mitigation Measures

Implement MM HAZ-1[14] and the following:

MM AIR-3 Prepare Construction Health Risk Assessment

Prior to occupancy of any residential components of the proposed plan that would occur while construction within or near the plan area is still underway, the applicant shall retain a qualified air quality consultant to prepare a construction health risk assessment (HRA) in accordance with the ARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of plan area residents to TACs. The HRA shall be submitted to the Planning Division for review and approval. If the HRA concludes that the air quality risks from ongoing or future construction activities would result in health risks for on-site receptors that are above BAAQMD recommended thresholds and in place at the time of the analysis (see Section.3 of the 2017 BAAQMD CEQA Guidelines), then additional measures, such as the requirement for construction equipment to meet certain tier engine standards for off-road equipment, shall be required for all subsequent phases of construction. Alternatively, this mitigation measure can be satisfied by delaying occupancy of any on-site residential components until construction of the entirety of the plan area is complete.

Level of Significance After Mitigation

Less than significant with mitigation

3.3.5 - Cumulative Impacts

Criteria Pollutants

The geographic scope of the cumulative criteria pollutants analysis is the North Coast Air Basin, since the air basin generally has similar meteorological and geographic conditions throughout it. As discussed in further detail under Impact AIR-2, there would be a less than significant with mitigation cumulative impact related to criteria pollutant emissions.

Toxic Air Contaminants

The geographic scope of the cumulative TACs analysis is the 1,000 feet within the plan area boundaries, since TACs disperse beyond this distance. At this time, the exact locations of future buildings and exact timing of occupancy for specific portions of the proposed plan are unknown. Because the proposed plan includes the development of several land use types on approximately 18 developable acres, the possibility for the proposed plan to locate sensitive receptors near on-going construction exists. Since construction could overlap with occupancy of receptors on the plan site, this represents a potentially significant cumulative impact related to emissions of TACs. In addition, since it would be speculative to assess risks without knowing the locations of the various components within the plan area, MM AIR-3 requiring preparation of an HRA specific to proposed building locations and phasing would be implemented. However, construction activities could be completed before occupancy of residential

[14] See full text of MM HAZ-1 on page 51 of the Initial Study, which is included in Appendix A.

components, and, if such is the case, sensitive receptors would not be located within or near the plan area that coincide with a potential for exposure to cumulative projects' construction-related TAC emissions and preparation of a construction HRA would not be required. As discussed in MM AIR-3, the completion of construction activities across the entirety of the plan area precludes the possibility of exposing residents to substantial pollutant concentrations. Therefore, there would be a less than significant with mitigation cumulative impact related to TAC emissions.

Overall

Overall, cumulative air quality impacts would be less than significant with mitigation, since the cumulative criteria pollutant and TAC emissions impacts would be less than significant with implementation of identified mitigations.

Level of Cumulative Significance Before Mitigation

Potentially significant

Cumulative Mitigation Measures

Implement MM AIR-3 and MM HAZ-1

Level of Cumulative Significance After Mitigation

Less than significant with mitigation

THIS PAGE INTENTIONALLY LEFT BLANK

Section 3.4 - Greenhouse Gas Emissions and Energy

3.4.1 - Introduction

This section describes existing greenhouse gas (GHG) emissions conditions globally and locally as well as the relevant regulatory framework. This section also evaluates the possible impacts related to GHG emissions that could result from implementation on the proposed plan. Information includes in this section is based on plan-specific GHG emissions modeling results utilizing CalEEMod version 2016.3.2 (complete modeling output in Appendix C). No comments were received during the EIR scoping period related to GHG emissions.

3.4.2 - Environmental Setting

Greenhouse Effect, Global Warming, and Climate Change

Most of the energy that affects the Earth's climate comes from the sun. Some solar radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected by the atmosphere back toward space. As the Earth absorbs high-frequency solar radiation, its surface gains heat and then re-radiates lower frequency infrared radiation back into the atmosphere.[1]

Most solar radiation passes through gases in the atmosphere classified as GHGs; however, infrared radiation is selectively absorbed by GHGs. GHGs in the atmosphere play a critical role in maintaining the balance between the Earth's absorbed and radiated energy, the Earth's radiation budget,[2] by trapping some of the infrared radiation emitted from the Earth's surface that otherwise would have escaped to space (Figure 3.4-1). Radiative forcing is the difference between the incoming energy and outgoing energy.[3] Specifically, GHGs affect the radiative forcing of the atmosphere,[4] which in turn affects the Earth's average surface temperature. This phenomenon, the *greenhouse effect*, keeps the Earth's atmosphere near the surface warmer than it would be otherwise and allows successful habitation by humans and other forms of life.

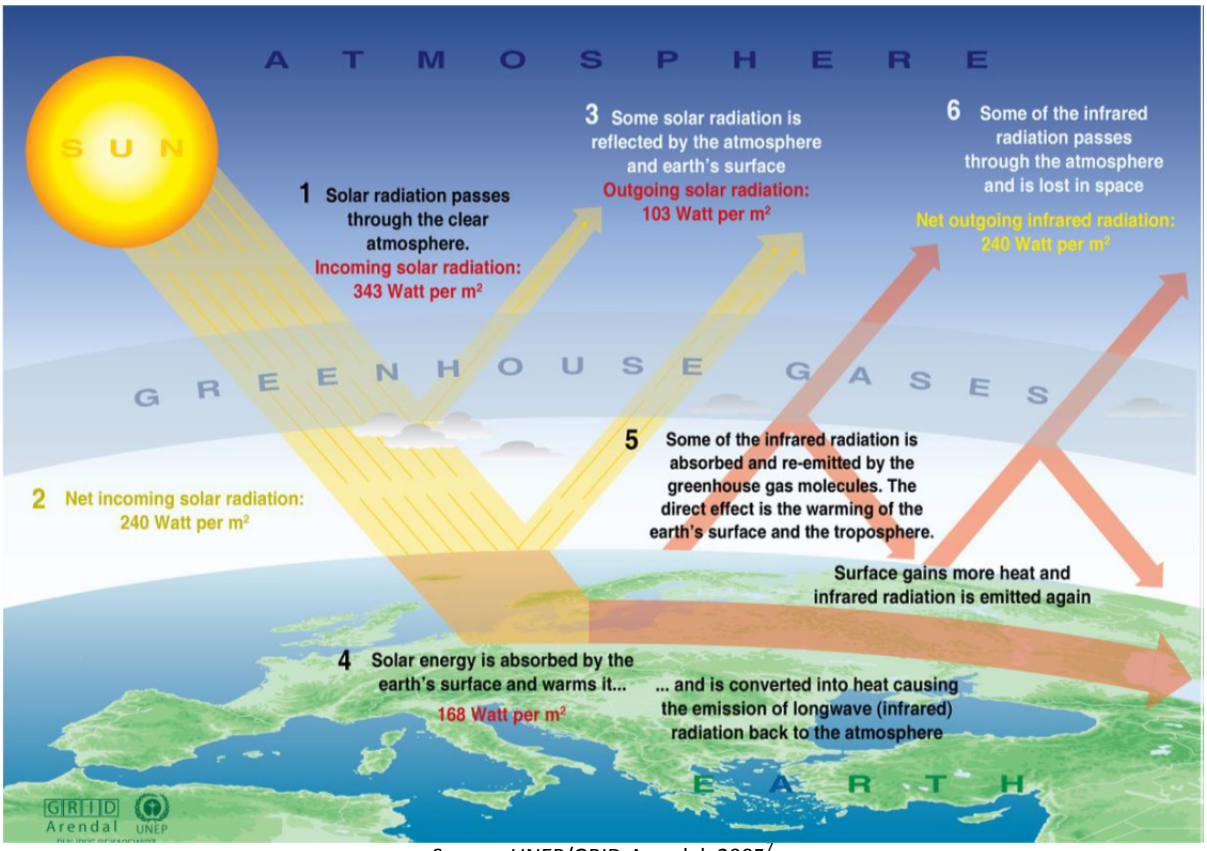
Combustion of fossil fuels and deforestation release carbon into the atmosphere that historically has been stored underground in sediments or in surface vegetation, thus exchanging carbon from the geosphere and biosphere to the atmosphere in the carbon cycle. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHGs in the atmosphere have increased exponentially. Such emissions of GHGs in excess of natural ambient concentrations contribute to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect has contributed to *global warming*, an increased rate of warming of the Earth's average surface temperature.[5] Specifically, increases in GHGs lead to

[1] Frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun and emits radiation at a lower frequency (longer wavelength) than the high-frequency (short-wavelength) solar radiation emitted by the sun.
[2] This includes all gains of incoming energy and all losses of outgoing energy; the planet is always striving to be in equilibrium.
[3] Positive forcing tends to warm the surface while negative forcing tends to cool it.
[4] This is the change in net irradiance at the tropopause after allowing stratospheric temperatures to readjust to radiative equilibrium, but with surface and tropospheric temperatures and state held fixed at the unperturbed values.
[5] This condition results when the earth has to work harder to maintain its radiation budget, because when more GHGs are present in the atmosphere, the earth must force emissions of additional infrared radiation out into the atmosphere.

increased absorption of infrared radiation by the Earth's atmosphere and warm the lower atmosphere further, thereby increasing temperatures and evaporation rates near the surface.

Variations in natural phenomena such as volcanoes and solar activity produced most of the global temperature increase that occurred during preindustrial times; more recently, however, increasing atmospheric GHG concentrations resulting from human activity have been responsible for most of the observed global temperature increase.[6]

Figure 3.4-1: The Greenhouse Effect



Source: UNEP/GRID-Arendal, 2005[7]

Global warming affects global atmospheric circulation and temperatures; oceanic circulation and temperatures; wind and weather patterns; average sea level; ocean acidification; chemical reaction rates; precipitation rates, timing, and form; snowmelt timing and runoff flow; water supply; wildfire risks; and other phenomena, in a manner commonly referred to as *climate change*. Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically

[6] These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

[7] United Nations Environmental Program/GRID-Arendal (UNEP/GRID-Arendal). 2005. GRID-Arendal Annual Report. Website: https://cld.bz/bookdata/tRoONat/basic-html/page-1.html. Accessed June 2, 2018.

focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

Temperature Predictions by the Intergovernmental Panel on Climate Change

The United Nations Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios[8]. The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." Warming of the climate system is now considered to be unequivocal, [9] with the global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. The IPCC predicts increases in global average temperature of between 2° and 11°F over the next 100 years, depending on the scenario.[10]

Greenhouse Gases and Global Emission Sources

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Prominent GHGs that naturally occur in the Earth's atmosphere are water vapor, carbon dioxide (CO_2), methane (CH_4), oxides of nitrogen (NO_X), and ozone. Anthropogenic (human-caused) GHG emissions include releases of these GHGs plus release of human-made gases with high global warming potential (GWP) (ozone-depleting substances such as chlorofluorocarbons [CFCs][11] and aerosols, hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride (SF_6). The GHGs listed by the IPCC (CO_2, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride) are discussed below, in order of abundance in the atmosphere. Water vapor, despite being the most abundant GHG, is not discussed below because natural concentrations and fluctuations far outweigh anthropogenic influences, making it impossible to predict. Ozone is not included because it does not directly affect radiative forcing. Ozone-depleting substances, which include chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, and hydrochlorofluorocarbons, are not included because they have been primarily replaced by HFCs and PFCs.

[8] Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller [eds.]). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Website: www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html. Accessed June 15, 2017.

[9] Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller [eds.]). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Website: www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html. Accessed June 15, 2017.

[10] Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller [eds.]). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Website: www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html. Accessed June 15, 2017.

[11] CFCs destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited CFCs production in 1987.

The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying potential for contributing to global warming. For example, methane is 25 times as potent as CO_2, while SF_6 is 22,200 times more potent than CO_2 on a molecule-per-molecule basis. To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method for comparing GHG emissions is the GWP methodology defined in the IPCC reference documents (IPCC, 2001a). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalents (CO_2e), which compares the gas in question to that of the same mass of CO_2 (by definition, CO_2 has a GWP of 1). The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. Thus, to describe how much global warming a given type and amount of GHG may cause, the CO_2e is used. A CO_2e is the mass emissions of an individual GHG multiplied by its global warming potential. As such, a high GWP represents high absorption of infrared radiation and a long atmospheric lifetime compared to CO_2. One must also select a time horizon to convert GHG emissions to equivalent CO_2 emissions to account for chemical reactivity and lifetime differences among various GHG species. The standard time horizon for climate change analysis is 100 years. Generally, GHG emissions are quantified in terms of metric tons (MT) of CO_2e (MT CO_2e) emitted per year.

The atmospheric residence time of a gas is equal to the total atmospheric abundance of the gas divided by its rate of removal.[12] The atmospheric residence time of a gas is, in effect, a half-life measurement of the length of time a gas is expected to persist in the atmosphere when accounting for removal mechanisms such as chemical transformation and deposition.

Table 3.4-1 lists the GWP of each GHG and its lifetime. Units commonly used to describe the concentration of GHGs in the atmosphere are parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt), referring to the number of molecules of the GHG in a sampling of 1 million, 1 billion, or 1 trillion molecules of air. Collectively, HFCs, PFCs, and SF_6 are referred to as high-GWP gases. CO_2 is by far the largest component of worldwide CO_2e emissions, followed by methane, nitrous oxide, and high-GWP gases, in order of decreasing contribution to CO_2e.

The primary human processes that release GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high-GWP gases. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth's capacity to remove CO_2 from the air and altering the Earth's albedo or surface reflectance, thus allowing more solar radiation to be absorbed. Specifically, CO_2 emissions associated with fossil fuel combustion are the primary contributors to human-induced climate change. Emissions associated with human activities are the next largest contributors to climate change.

[12] Seinfeld, J.H. and Pandis, S.N. 2006. Atmospheric Chemistry and Physics: From Air Pollution to Climate Change, 2nd Edition. New York. John Wiley & Sons.

GHG emissions of California concern are defined by California Assembly Bill (AB) 32 (see the Regulatory Environment subsection below for a description) and include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. A seventh GHG, nitrogen trifluoride (NF_3), was also added under the California Health and Safety Code section 38505(g)(7) as a GHG of concern. These GHGs are described in terms of their physical description and properties, global warming potential, atmospheric residence lifetime, sources, and atmospheric concentration in 2005 in Table 3.4-1.

Table 3.4-1: Description of Greenhouse Gases of California Concern

Greenhouse Gas	Physical Description and Properties	Global Warming Potential (100 years)	Atmospheric Residence Lifetime (years)	Sources
Carbon dioxide (CO_2)	Odorless, colorless, natural gas.	1	50-200	burning coal, oil, natural gas, and wood; decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; oceanic evaporation; volcanic outgassing; cement production; land use changes
Methane (CH_4)	Flammable gas and is the main component of natural gas.	25	12	geological deposits (natural gas fields) extraction; landfills; fermentation of manure; and decay of organic matter
Nitrous oxide (N_2O)	Nitrous oxide (laughing gas) is a colorless GHG.	298	114	microbial processes in soil and water; fuel combustion; industrial processes
Chloro-fluoro-carbons (CFCs)	Nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (level of air at the Earth's surface); formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms.	3,800-8,100	45-640	refrigerants aerosol propellants; cleaning solvents.
Hydro-fluoro-carbons (HFCs)	Synthetic human-made chemicals used as a substitute for CFCs and contain carbon, chlorine, and at least one hydrogen atom.	140 to 11,700	1-50,000	automobile air conditioners; refrigerants

Table 3.4-1 (cont.): Description of Greenhouse Gases of California Concern

Greenhouse Gas	Physical Description and Properties	Global Warming Potential (100 years)	Atmospheric Residence Lifetime (years)	Sources
Per-fluoro-carbons (PFCs)	Stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface.	6,500 to 9,200	10,000-50,000	primary aluminum production; semiconductor manufacturing
Sulfur hexafluoride (SF_6)	Human-made, inorganic, odorless, colorless, and nontoxic, nonflammable gas.	22,800	3,200	electrical power transmission equipment insulation; magnesium industry, semiconductor manufacturing; a tracer gas
Nitrogen trifluoride (NF_3)	Inorganic, is used as a replacement for PFCs, and is a powerful oxidizing agent.	17,200	740	electronics manufacture for semiconductors and liquid crystal displays.

Sources:
Intergovernmental Panel on Climate Change (IPCC). 2007a. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller [eds.]). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, Website: www.ipcc.ch /publications_and_data/ar4/wg1/en/contents.html. Accessed June 5, 2018.

Intergovernmental Panel on Climate Change (IPCC). 2007b. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Core Writing Team, Pachauri, R.K. and Reisinger, A. [eds.]). IPCC, Geneva, Switzerland. Website: www.ipcc.ch /publications_and_data/ar4/syr/en/contents.html. Accessed June 5, 2018.

The State has begun the process of addressing pollutants referred to as short-lived climate pollutants. Senate Bill 605, approved by the Governor on September 14, 2014 required the California Air Resources Board (ARB) to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. The ARB released the Proposed Short-Lived Climate Pollutant Reduction Strategy in April 2016. The ARB has completed an emission inventory of these pollutants, identified research needs, identified existing and potential new control measures that offer co-benefits, and coordinated with other state agencies and districts to develop measures.

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 3.4-1 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, the ARB will include it in its comprehensive strategy.[13]

[13] California Air Resources Board (ARB). 2015c. Short-Lived Climate Pollutant Reduction Strategy, Concept Paper. May. Website:

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by the ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources.[14] Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions, volatile organic compounds (VOC) and oxides of nitrogen (NO_X) on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy.[15]

Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other GHGs, such that the warming brought about by increased carbon dioxide allows more water vapor to enter the atmosphere.[16]

Global Climate Change Issue

Climate change is a global problem because GHGs are global pollutants, unlike criteria air pollutants and hazardous air pollutants (also called toxic air contaminants), which are pollutants of regional and local concern. Pollutants with localized air quality effects have relatively short atmospheric lifetimes, approximately 1 day; by contrast, GHGs have long atmospheric lifetimes, several years to several thousand years. GHGs persist in the atmosphere for a long enough time to be dispersed around the globe.

http://www.arb.ca.gov/cc/shortlived/concept_paper.pdf. Accessed June 3, 2017.

[14] California Air Resources Board (ARB). 2015c. Short-Lived Climate Pollutant Reduction Strategy, Concept Paper. May. Website: http://www.arb.ca.gov/cc/shortlived/concept_paper.pdf. Accessed June 3, 2017.

[15] California Air Resources Board (ARB). 2015c. Short-Lived Climate Pollutant Reduction Strategy, Concept Paper. May. Website: http://www.arb.ca.gov/cc/shortlived/concept_paper.pdf. Accessed June 3, 2017.

[16] National Aeronautics and Space Administration (NASA). 2015. NASA—Global Climate Change, Vital Signs of a Planet. Website: http://climate.nasa.gov/causes/. Accessed August 21, 2016.

Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, more CO_2 is currently emitted into the atmosphere than is sequestered. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through photosynthesis and dissolution, respectively. These are two of the most common processes of CO_2 sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, Northern Hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions is stored in the atmosphere.[17]

Similarly, effects of GHGs are borne globally, as opposed to the localized air quality effects of criteria air pollutants and hazardous air pollutants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known and cannot be quantified, and no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global or local climates or microclimate.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Although the international, national, State, and regional communities are beginning to address GHGs and the potential effects of climate change, worldwide GHG emissions will likely continue to rise over the next decades.

Climate and Topography

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place. For a detailed discussion of existing regional and plan area climate and topography, see Section 3.3, Air Quality.

Existing GHG Emissions

U.S. GHG Inventory

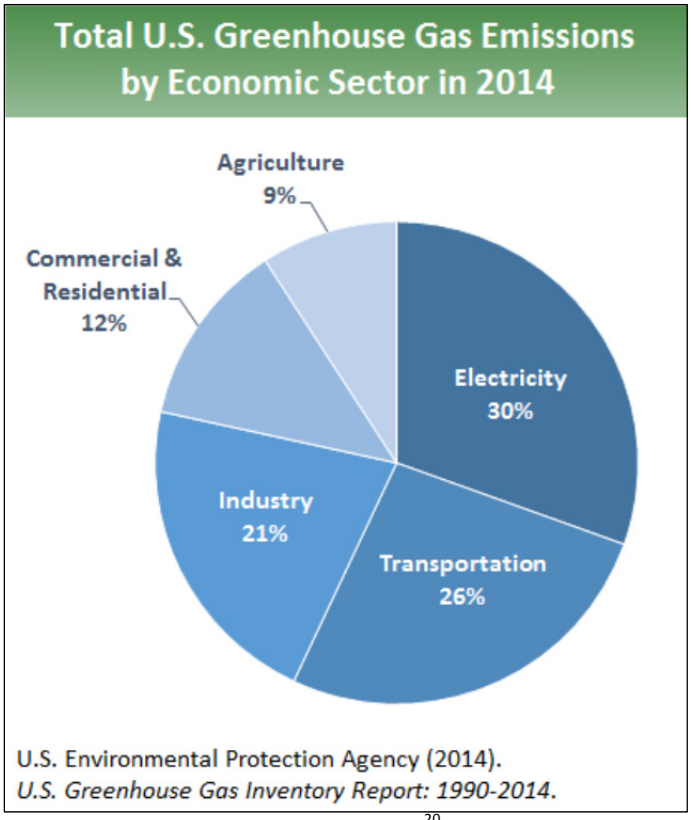
Total U.S. GHG emissions were approximately 1 percent higher in 2014 than in 2013.[18] Figure 3.4-2 presents 2014 U.S. GHG emissions by economic sector. Total U.S. GHG emissions increased by 7.4 percent from 1990 to 2014 (from 6,233.2 million metric tons [MMT] CO_2e in 1990 to 6,870.5 MMT CO_2e in 2014). Since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent. In 2014, cool winter conditions led to an increase in CO_2e emissions associated with fuels used for heating in the residential and commercial sectors. Transportation emissions also increased because of a small increase in vehicle miles traveled. There was also an increase in industrial production across multiple sectors, resulting in slight increases in industrial-sector emissions.[19]

[17] Seinfeld, J. H. and Pandis, S. N. 1998. Atmospheric Chemistry and Physics from Air Pollution to Climate Change. New York. John Wiley & Sons.

[18] U.S. Environmental Protection Agency (EPA). 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. EPA 430-R-16-002. Website: https://www.epa.gov/sites/production/files/2017-04/documents/us-ghg-inventory-2016-main-text.pdf. Accessed June 2, 2018.

[19] U.S. Environmental Protection Agency (EPA). 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. EPA 430-R-16-002. Website: https://www.epa.gov/sites/production/files/2017-04/documents/us-ghg-inventory-2016-main-text.pdf. Accessed June 2, 2018.

Figure 3.4-2: 2014 U.S. Greenhouse Gas Emissions by Gas



Source: EPA, 2016[20]

Note: Emissions shown do not include carbon sinks such as change in land uses and forestry.

California GHG Inventory

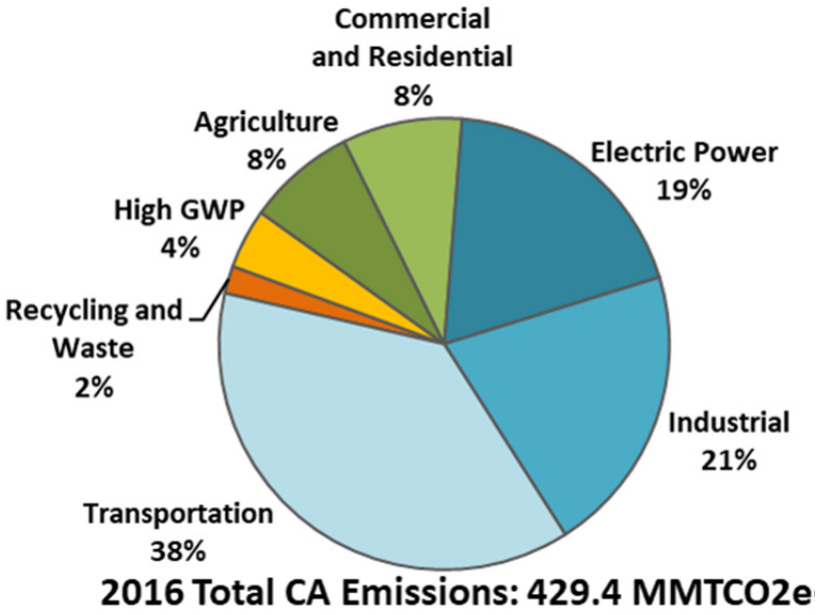
As the second largest emitter of GHGs in the U.S. and the 12th to 16th largest GHG emitter in the world, California contributes a large quantity of GHGs to the atmosphere.[21] Emissions of CO_2 are byproducts of fossil-fuel combustion and are attributable in large part to human activities associated with transportation, industry/manufacturing, electricity and natural gas consumption, and agriculture. In California, the transportation sector is the largest emitter of GHGs, followed by industry/manufacturing (Figure 3.4-3).[22]

[20] U.S. Environmental Protection Agency (EPA). 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. EPA 430-R-16-002. Website: https://www.epa.gov/sites/production/files/2017-04/documents/us-ghg-inventory-2016-main-text.pdf. Accessed June 2, 2018.

[21] California Climate Change Center. (CCCC). 2006. Our Changing Climate, Assessing the Risks to California: A Summary Report from the California Climate Change Center. July 2006. CEC-500-2006-077. Website: www.scc.ca.gov/webmaster/ftp/pdf/climate_change/assessing_risks.pdf. Accessed June 2, 2018.

[22] California Air Resources Board (ARB). 2018. California Greenhouse Inventory-Graphs. Website: https://www.arb.ca.gov/cc/inventory/data/graph/graph.htm. Accessed August 27, 2018.

Figure 3.4-3: 2016 California Greenhouse Gas Emissions by Sector



Sources: ARB 2018[23]

Northern Sonoma County Air Pollution Control District GHG Inventory

NSCAPCD has not developed a GHG emissions inventory. However, as discussed below, a GHG emissions inventory was developed for Sonoma County by the Regional Climate Protection Authority (RCPA), including representatives from the Sonoma County Board of Supervisors and Council Members from each of the nine cities in the County.

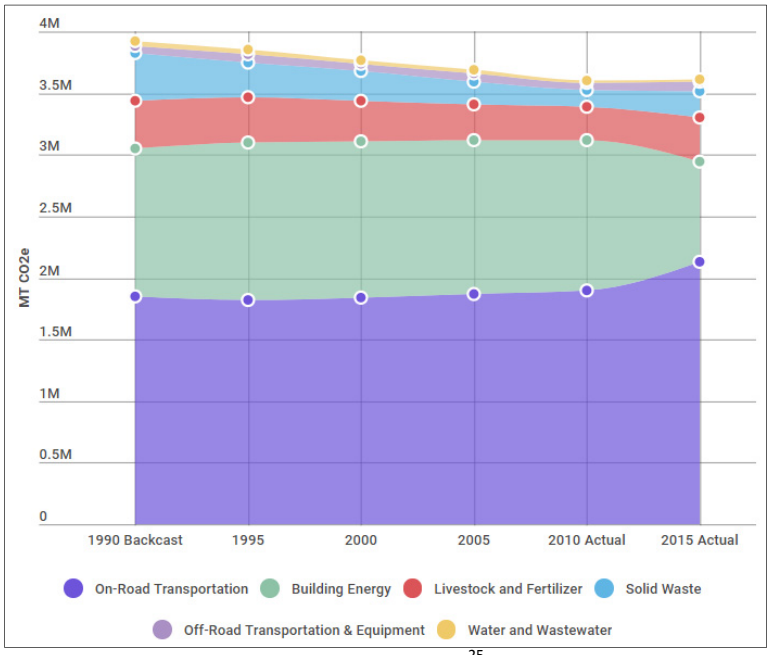
Sonoma County

In July 2018, the RCPA updated the community-wide GHG inventory for Sonoma County. The RCPA established a baseline communitywide GHG inventory for calendar year 2010 and a backcast inventory for 1990 as part of the *Climate Action 2020 and Beyond* development process. The RCPA completed a 2015 inventory update to help track progress towards achieving the short and long-term emissions reduction goals established in *Climate Action 2020 and Beyond*.[24] As shown in Figure 3.4-4, Countywide emissions have decreased overall primarily due to a decrease in GHG emissions due to building energy usage. Compared with 2010, GHG emissions due to building energy use were approximately 34 percent lower. On-road transportation is the largest GHG emissions section in Sonoma County, followed by building energy use, and livestock and fertilizer.

[23] California Air Resources Board (ARB). 2018. California Greenhouse Inventory-Graphs. Website: https://www.arb.ca.gov/cc/inventory/data/graph/graph.htm. Accessed June 5, 2018.

[24] Regional Climate Protection Authority (RCPA). 2018. 2015 Greenhouse Gas Inventory Update. April 19. Website: http://rcpa.ca.gov/projects/climate-action-2020/. Accessed June 6, 2018.

Figure 3.4-4: Sonoma County Emissions Trend



Source: RCPA 2018[25]

City of Healdsburg

GHG inventories for individual jurisdictions were included in the overall Sonoma County inventory. Total GHG emissions in Healdsburg increased from 109,000 MT CO_2e in 2010 to 117,000 MT CO_2e in 2015.[26] Communitywide emissions in 2010 were 16 percent above 1990 levels, and this percentage increased to 25 percent above 1990 levels in 2015.[27]

Plan Area

The plan area is currently undeveloped and, thus, does not contain land uses that generate GHG emissions.

Climate Change Trends and Effects

CO_2 accounts for more than 75 percent of all anthropogenic GHG emissions, the atmospheric residence time of CO_2 is decades to centuries, and global atmospheric concentrations of CO_2 continue to increase at a faster rate than ever previously recorded. Thus, the warming impacts of CO_2 will persist for hundreds of years after mitigation is implemented to reduce GHG concentrations.

California

The following is a summary of climate change factors and predicted trends specific to California.

[25] Regional Climate Protection Authority (RCPA). 2018. 2015 Greenhouse Gas Inventory Update. April 19. Website: http://rcpa.ca.gov/projects/climate-action-2020/. Accessed June 6, 2018.
[26] Ibid.
[27] Ibid.

In California, climate change may result in consequences such as the following.[28,29]

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

[28] California Climate Change Center. (CCCC). 2006. Our Changing Climate, Assessing the Risks to California: A Summary Report from the California Climate Change Center. July 2006. CEC-500-2006-077. Website: www.scc.ca.gov/webmaster/ftp/pdf/climate_change /assessing_risks.pdf. Accessed August 17, 2015.

[29] Moser et al. 2009. Moser, Susie, Guido Franco, Sarah Pittiglio, Wendy Chou, Dan Cayan. 2009. The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California. California Energy Commission, PIER Energy-Related Environmental Research Program. CEC-500-2008-071. Website: www.energy.ca.gov/2008publications/CEC-500-2008-071/CEC-500-2008-071.PDF. Accessed May 7, 2013.

Bay Area

The following is a summary of climate change factors and predicted trends specific to the Bay Area,[30] using the latest information available as of 2014.

Temperature/Heat/Wildfire and Drought Events

Specific predictions related to temperature/heat are summarized below.

- The annual average temperature in the Bay Area has been increasing over the last several decades.
- The Bay Area is expected to see an increase in average annual temperature of 2.7°F by 2050, and 3.5°F to 11°F by 2100. Projections show a greater warming trend during the summer season. The coastal parts of the Bay Area will experience the most moderate warming trends.[31]
- Extreme heat events are expected to increase in duration, frequency, and severity by 2050. Extreme freeze events are expected to decrease in frequency and severity by 2100, but occasional colder-than-historical events may occur by 2050.[32]

Precipitation/Rainfall/Flooding Events

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- The Bay Area has not experienced substantial changes in rainfall depth or intensities over the past 30 years.
- The Bay Area will continue to experience a Mediterranean climate, with little change in annual precipitation projected by 2050, although a high degree of variability may persist.
- An annual drying trend is projected to occur by 2100. The greatest decline in precipitation is expected to occur during the spring months, while minimal change is expected during the winter months.
- Increases in drought duration and frequency coupled with higher temperatures, as experienced in 2012, 2013, and 2014, will increase the likelihood of wildfires.
- California is expected to see increases in the magnitude of extreme events, including increased precipitation delivered from atmospheric river events, which would bring high levels of rainfall during short time periods and increase the chance of flash floods. The Bay Area is also expected to see an increase in precipitation intensities, but possibly through less frequent events.[33]

[30] The San Francisco Bay Area (or the Bay Area) is a populous region surrounding the San Francisco, San Pablo and Suisun estuaries in the northern part of California. The Bay Area is generally accepted to include the nine counties that border these estuaries: Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano, Sonoma, and San Francisco.

[31] Cal-Adapt. 2014. Climate Tools. Website: http://cal-adapt.org/tools/. Accessed 2014.

[32] Cal-Adapt. 2014. Climate Tools. Website: http://cal-adapt.org/tools/. Accessed 2014.

[33] California Climate Change Center (CCCC). 2009. Climate Change Scenarios and Sea Level Rise Estimates for the California 2009 Climate Change Scenarios Assessment. Final Paper. CEC-500-2009-014-F. Website: http://www.energy.ca.gov/2009publications /CEC-500-2009-014/CEC-500-2009-014-F.PDF. Accessed June 5, 2018.

Vectors/Disease Events

Climate change will likely increase the vectors of insects and, in turn, may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.

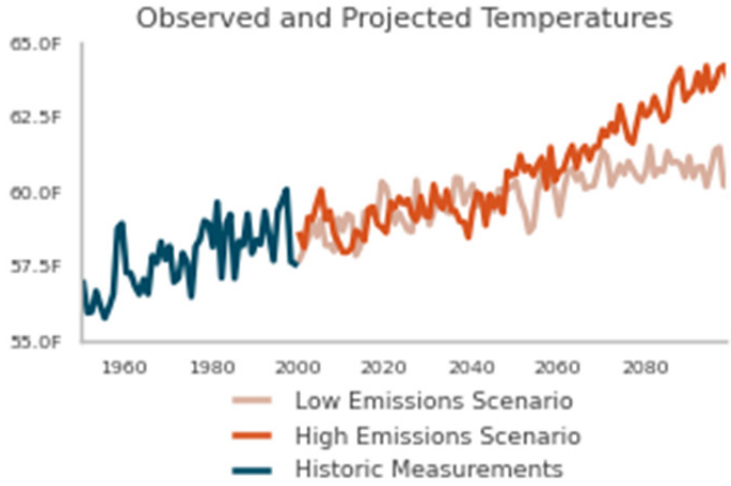
Air Quality/Pollution Events

Respiratory disorders will be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution[34]. Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), CO_2, CH_4, SF_6, and some CFCs can cause suffocation as the gases can displace oxygen.[35,36]

Healdsburg Area

Figure 3.4-5 displays a chart of measured historical and projected annual average temperatures in the Healdsburg area. As shown in the figure, temperatures are expected to rise in the low and high GHG emissions scenarios. The results indicate that temperatures are predicted to increase by 3.0 degrees Fahrenheit (°F) under the low emission scenario and 5.2°F under the high emissions scenario[37].

Figure 3.4-5: Observed and Projected Temperatures for Climate Change in Healdsburg Area



Source: CalAdapt 2018 [38]

[34] U.S. Environmental Protection Agency (EPA). 2009a. Ozone and your Health. EPA-456/F-09-001. Website: http://www.epa.gov/airnow/ozone-c.pdf. Accessed August 21, 2016.

[35] Centers for Disease Control and Prevention (CDC). 2010. Department of Health and Human Services, the National Institute for Occupational Safety and Health. Carbon Dioxide. Website: www.cdc.gov/niosh/npg/npgd0103.html. Accessed February 14, 2017.

[36] Occupational Safety and Health Administration (OSHA). 2003. United States Department of Labor. Safety and Health Topics: Methane. Website: www.osha.gov/dts/chemicalsampling/data/CH_250700.html. Accessed August 21, 2016.

[37] CalAdapt. 2017. Local Climate Snapshots. Website: http://v1.cal-adapt.org/tools/factsheet/. Accessed September 22, 2017.

[38] CalAdapt. 2017. Local Climate Snapshots. Website: http://v1.cal-adapt.org/tools/factsheet/. Accessed July 12, 2018.

Plan Area

The plan area currently contains and is proximate to wildland areas. The plan area also contains drainage swales and a water detention basin that receive precipitation runoff directly from the plan area.

Energy

Electricity

City of Healdsburg

Since 1899, the City of Healdsburg has owned and operated its own electric utility. The City owns generation plants throughout northern California and maintains over 60 miles of high voltage distribution lines. Approximately 50 percent of the energy supplied in 2015 within Healdsburg was carbon free with approximately 41 percent from eligible renewable sources.

Plan Area

As the plan area is located in Healdsburg, electricity is provided by the Healdsburg Electric Utility. Currently, consumption of electricity does not occur within the plan area.

Natural Gas

City of Healdsburg

Pacific Gas & Electric (PG&E) provides natural gas to all or part of 39 counties in California, comprising most of the northern and central portions of the State. In 2015 (year of most recent data), PG&E delivered approximately 1,689.89 million therms of natural gas throughout its service area in California.[39]Of this total, Sonoma County received 101.144 million therms, which is approximately two percent of the total deliveries within the PG&E service area.[40]

Plan Area

As the plan area is located in Healdsburg, natural gas is provided by PG&E. Currently, consumption of natural gas does not occur within the plan area.

3.4.3 - Regulatory Framework

Federal

Massachusetts et al. v. EPA (U.S. Supreme Court GHG Endangerment Ruling)

Massachusetts et al. v. EPA (Supreme Court Case 05-1120) was argued before the United States (U.S.) Supreme Court on November 29, 2006, in which it was petitioned that the Environmental Protection Agency (EPA) regulate four GHGs, including CO_2, under Section 202(a)(1) of the Clean Air Act (CAA). A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the CAA. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too

[39] CEC. 2017. Gas Consumption by Entity. Website: http://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed April 6, 2017.
[40] CEC. 2017. Gas Consumption by County. Website: http://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed April 6, 2017.

uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations; and
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed under "Clean Vehicles" below. After a lengthy legal challenge, the U.S. Supreme Court declined to review an Appeals Court ruling upholding that upheld the EPA Administrator findings.

Consolidated Appropriations Act (Mandatory GHG Reporting)

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011.

Clean Air Act Permitting Programs (New GHG Source Review)

The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of

Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

EPA GHG Performance Standards for New Stationary Sources

As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO_2 for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25-megawatt would be required to meet an output-based standard of 1,000 pounds of CO_2 per megawatt-hour, based on the performance of widely used natural gas combined cycle technology.

Energy Independence and Security Act

The Energy Policy Act of 2005 created the Renewable Fuel Standard program. The Energy Independence and Security Act of 2007 expanded this program by:

- Expanding the Renewable Fuel Standard program to include diesel in addition to gasoline;
- Increasing the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- Establishing new categories of renewable fuel, and setting separate volume requirements for each one; and
- Requiring EPA to apply life-cycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

This expanded Renewable Fuel Standard program lays the foundation for achieving substantial reductions of GHG emissions from the use of renewable fuels, reducing the use of imported petroleum, and encouraging the development and expansion of the nation's renewable-fuels sector.

EPA and National Highway Traffic Safety Administration Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards Final Rule

Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile,

equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

EPA and the NHTSA issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012[41]. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

EPA and NHTSA issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

The State of California has received a waiver from EPA to have separate, stricter corporate average fuel economy standards.

State

California AB 1493: Pavley Regulations and Fuel Efficiency Standards

California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.[42]

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards were estimated to result in an approximately 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards were estimated to result in about a 30-percent reduction. Several technologies stood out as providing significant reductions in emissions at favorable costs. These included discrete variable valve lift or camless

[41] U.S. Environmental Protection Agency (EPA). 2012. EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks. Website: http://www.epa.gov/otaq/climate/documents/420f12051.pdf. Accessed August 21, 2016.

[42] California Air Resources Board (ARB). 2013d. Clean Car Standards—Pavley, Assembly Bill 1493. Website: http://www.arb.ca.gov/cc/ccms/ccms.htm. Accessed February 14, 2017.

valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.[43]

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle (LEV) Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.[44]

California SB 1078—Renewable Electricity Standards

On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

California Executive Order S-3-05

Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

[43] California Air Resources Board (ARB). 2013e. Facts About the Clean Cars Program. Website: http://www.arb.ca.gov/msprog/zevprog/factsheets/advanced_clean_cars_eng.pdf. Accessed February 14, 2017.

[44] California Air Resources Board (ARB). 2011c. Status of Scoping Plan Recommended Measures. Website: www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf. Accessed February 14, 2017.

California AB 32: Global Warming Solutions Act and Scoping Plan

The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the State agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 million metric tons of carbon dioxide equivalents (MMT CO_2e) on December 6, 2007[45]. Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 MMT CO_2e. Emissions in 2020 in a Business as Usual (BAU) scenario were estimated to be 596 MMT CO_2e, which do not account for reductions from AB 32 regulations[46]. At that rate, a 28 percent reduction was required to achieve the 427 MMT CO_2e 1990 inventory. In October 2010, the ARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 MMT CO_2e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels.[47]

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by the ARB for 2000 through 2012 to show progress achieved to date.[48] The State has also achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce GHG emissions back to 1990 levels.

- 1990: 427 million MT CO_2e (AB 32 2020 Target)
- 2000: 463 million MT CO_2e (an average 8-percent reduction needed to achieve 1990 base)

[45] California Air Resources Board (ARB). 2007. Staff Report. California 1990 Greenhouse Gas Level and 2020 Emissions Limit. November 16, 2007. Website: www.arb.ca.gov/cc/inventory/pubs/reports/staff_report_1990_level.pdf. Accessed February 14, 2017.

[46] California Air Resources Board (ARB). 2008. (includes edits made in 2009) Climate Change Scoping Plan, a framework for change. Website: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed February 14, 2017.

[47] California Air Resources Board (ARB). 2010a. 2020 Greenhouse Gas Emissions Projection and BAU Scenario Emissions Estimate. Website: http://www.arb.ca.gov/cc/inventory/archive/captrade_2010_projection.pdf. Accessed February 14, 2017.

[48] California Air Resources Board (ARB). 2014a. California Greenhouse Gas Emissions for 2000 to 2012—Trends of Emissions and Other Indicators. Website: http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_00-12_report.pdf. Accessed April 25, 2016.

- 2010: 450 million MT CO_2e (an average 5-percent reduction needed to achieve 1990 base)
- 2020: 545 million MT CO_2e BAU (an average 21.7-percent reduction from BAU needed to achieve 1990 base)

The ARB Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32[49]. The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions.[50]

ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions

[49] California Air Resources Board (ARB). 2008. (includes edits made in 2009) Climate Change Scoping Plan, a framework for change. Website: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed February 14, 2017.

[50] California Air Resources Board (ARB). 2008. (includes edits made in 2009) Climate Change Scoping Plan, a framework for change. Website: http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed February 14, 2017.

beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050.

AB 32 does not give the ARB a legislative mandate to set a target beyond the 2020 target from AB 32 or to adopt additional regulations to achieve a post-2020 target. The Update estimates that reductions averaging 5.2 percent per year would be required after 2020 to achieve the 2050 goal. With no estimate of future reduction commitments from the State, identifying a feasible strategy including plans and measures to be adopted by local agencies is not currently possible.[51]

California Executive Order B-30-15

On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and it directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMCO_2e$. The executive order also requires the State's climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable against local governments and the private sector.

Senate Bill 32

The Governor signed SB 32 in September of 2016, giving the ARB the statutory responsibility to include the 2030 target previously contained in Executive Order B-30-15 in the 2017 Scoping Plan Update. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." The 2017 Climate Change Scoping Plan Update addressing the SB 32 targets was adopted on December 14, 2017. The major elements of the framework proposed to achieve the 2030 target are as follows:

1. SB 350
   - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
   - Doubling of energy efficiency savings by 2030.
2. Low Carbon Fuel Standard (LCFS)
   - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).

[51] California Air Resources Board (ARB). 2014b. First Update to the Climate Change Scoping Plan. Website: http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm. Accessed February 14, 2017.

3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
   - Maintaining existing GHG standards for light- and heavy-duty vehicles.
   - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
   - Increase ZEV buses, delivery and other trucks.
4. Sustainable Freight Action Plan
   - Improve freight system efficiency.
   - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
   - Deploy over 100,000 zero-emission trucks and equipment by 2030.
5. Short-Lived Climate Pollutant (SLCP) Reduction Strategy
   - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
   - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
6. SB 375 Sustainable Communities Strategies
   - Increased stringency of 2035 targets.
7. Post-2020 Cap-and-Trade Program
   - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
   - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
8. 20 percent reduction in GHG emissions from the refinery sector.
9. By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

California SB 375: Sustainable Communities and Climate Protection Act

Senate Bill (SB) 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by a project on global warming or the regional transportation network if a project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
3. Incorporates the mitigation measures required by an applicable prior environmental document.

California SB 1368: Emission Performance Standards

In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour (MWh).

California Executive Order S-01-07—Low Carbon Fuel Standard

The Governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was subject to legal challenge in 2011. Ultimately, on August 8, 2013, the Fifth District Court of Appeal (California) ruled that the ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially published opinion, the Court of Appeal directed that Resolution 09-31 and two executive orders of the ARB approving LCFS regulations promulgated to reduce GHG emissions be set aside. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, the ARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The second public hearing for the new LCFS regulation was held on September 24, 2015 and September 25, 2015, where the LCFS Regulation was adopted. The Final Rulemaking Package adopting the regulation was filed with the Office of Administrative Law (OAL) on October 2, 2015. The OAL approved the regulation on November 16, 2015.[52]

California Executive Order S-13-08

Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

California SBX 7-7: Water Conservation Act

This 2009 legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020 and reduce energy and related GHG emissions associated with water transport.

California SB 350: Clean Energy and Pollution Reduction Act

In 2015, the State legislature approved and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill due to opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission, the California Energy Commission, and local publicly owned utilities.

[52] California Air Resources Board (ARB). 2015e. Low Carbon Fuel Standard Regulation. Website: http://www.arb.ca.gov/regact/2015/lcfs2015/lcfs2015.htm. Accessed September 22, 2017.

- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.[53]

California SB 100: The 100 percent Clean Energy Act of 2018

On September 10, 2018, Governor Edmund G. Brown signed a senate bill that established a 100 percent clean electricity goal for California. The bill, which supersedes SB 350 shown above, advances the existing California Renewable Portfolio Standard Program by increasing the goal of how much electricity should be sourced from renewable energy sources to 50 percent by 2026 and 60 percent by 2030. Furthermore, the bill sets a target for California to be 100 percent carbon-free electricity by 2045. To ensure that California remains on track to achieve carbon neutrality by 2045, Governor Brown also issued Executive Order B-55-18.[54]

California Executive Order B-55-18

In conjunction with the adoption of SB 100 on September 10, 2018, Governor Edmund G. Brown also issued Executive Order B-55-18, which directs the State to achieve carbon neutrality by 2045 and to generate net negative GHG emissions in subsequent years. The Executive Order stipulates that State agencies shall work together to ensure that future measures implemented through plans such as the Scoping Plan, shall identify and recommend measures to ensure this goal of carbon neutrality is achieved.[55]

California Code of Regulations Title 20: Appliance Efficiency Regulations

California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the State and those designed and sold exclusively for use in recreational vehicles or other mobile equipment.[56]

California Code of Regulations Title 24: Energy Efficiency Standards

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel

[53] California Legislative Information (California Leginfo). 2015. Senate Bill 350 Clean Energy and Pollution Reduction Act of 2015. Website: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350. Accessed September 28, 2017.

[54] California Legislative Information (California Leginfo). 2018. SB-100 California Renewables Portfolio Standard Program. Emission of greenhouse gases. Website: https://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill_id=201720180SB100. Accessed October 10, 2018.

[55] Executive Department State of California. Executive Order B-55-18 To Achieve Carbon Neutrality. Website: https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf. Accessed October 10, 2018.

[56] California Energy Commission (CEC). 2012. 2013 Title 24 Building Energy Efficiency Standards Adoption Hearing Presentation. Website: http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/final_rulemaking_documents/31_2013_Adoption_Hearing_Presentation_5-31.pdf. Accessed October 19, 2015.

consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards went into effect on January 1, 2017.[57]

California Code of Regulations Title 24: California Green Building Standards Code

California Code of Regulations Title 24, Part 11, is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The code is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and it defers to them as the ruling guidance if they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

The California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) requires:

- **Short-term bicycle parking**. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking**. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- **Designated parking**. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- **Recycling by Occupants**. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (5.410.1).
- **Construction waste**. A minimum 65-percent diversion of construction and demolition waste from landfills. (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- **Wastewater reduction**. Each building shall reduce the generation of wastewater by one of the following methods:
    1. The installation of water-conserving fixtures or
    2. Using nonpotable water systems (5.303.4).

[57] California Energy Commission (CEC). 2016. 2016 Building Energy Efficiency Standards Frequently Asked Questions. Website: http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf. Accessed December 1, 2016.

- **Water use savings**. 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35 and 40-percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- **Water meters**. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- **Irrigation efficiency**. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- **Materials pollution control**. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particleboard (5.404).
- **Building commissioning**. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2).

California Model Water Efficient Landscape Ordinance

The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881 Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected for Ordinance. Reductions in water use would, in turn, reduce energy use and related GHG emissions associated with the transport of water. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015, which became effective on December 15, 2015. New development projects that include landscaped areas of 500 square feet or more are subject to the Ordinance.

California SB 97 and the CEQA Guidelines Update

Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)."

Section 21097 was also added to the Public Resources Code, which provided an exemption until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA. The Natural Resources Agency completed the approval process and the Amendments became effective on March 18, 2010.

The 2010 CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of GHG emissions:

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The CEQA Guidelines amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. Instead, they call for a "good-faith effort, based on available information, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project." The amendments encourage lead agencies to consider many factors in performing a CEQA analysis and preserve lead agencies' discretion to make their own determinations based upon substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable; however, it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include GHG questions.

CEQA emphasizes that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis (see CEQA Guidelines Section 15130(f)).

Center for Biological Diversity (CBD) v. CDFW (California Supreme Court GHG Ruling)

In a November 30, 2015 ruling, the California Supreme Court in *Center for Biological Diversity (CBD) v. California Department of Fish and Wildlife* (CDFW) on the Newhall Ranch project concluded that whether the project was consistent with meeting statewide emission reduction goals is a legally permissible criterion of significance, but the significance finding for the project was not supported by a reasoned explanation based on substantial evidence. The Court offered potential solutions on pages 25–27 of the ruling to address this issue summarized below:

Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25).
- **Compliance with Regulatory Programs or Performance Based Standards**. A lead agency "might assess consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.'].)" To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions']) (p. 26).
- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis (p. 26).
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts (p. 27).

Regional

Sonoma County Regional Climate Action Plan

In November 2008, the Healdsburg City Council approved the City's participation in the development of a Regional Climate Protection Coordination Plan (RCPCP) with the purpose of organizing and focusing all county-wide efforts to reach the community emission reduction goal of 25 percent below 1990 levels by the year 2015, adopted by all the cities in Sonoma County, including Healdsburg, and Sonoma County. This effort is led by the Sonoma County Transportation Authority/Regional Climate Protection Authority (RCPA). The adopted Mission Statement, Goals, and Objectives for the RCPA include 13 programs for reducing GHG emissions in four areas: Transportation and Land Use, Energy Efficiency and Renewable Power, Green Economy, and Natural Resource Management.[58]

In July 2016, the RCPA adopted the Sonoma County Regional Climate Action Plan, also known as Climate Action 2020 and Beyond, which applied to the County, including the City of Healdsburg. However, the EIR for the Climate Action Plan was invalidated in 2017, eliminating the enforceability and usefulness as a plan as a CEQA compliance tool.[59]

Local

Green City Program

In 2005, the Healdsburg City Council adopted Resolution 136-2005 supporting green building practices and providing for expedited permit review and acknowledgment for those developments choosing to incorporate green components into their building design and construction. In November 2008, the City created the Green City Program to serve as a framework for the implementation of projects and activities designed to promote environmentally sound practices, develop green and sustainable alternatives, and reduce GHG emissions. Components of the program include the Green building Ordinance, education and outreach, greening existing housing stock, and creation of a green business certification program (City Resolution 143-2008).[60]

In 2009, the Healdsburg City Council adopted Resolution 42-2009 establishing the Green City Committee to advise the City Council on matters relating to policies and programs, which would serve to further the Green City Program.

Healdsburg Electric Utility

Unlike other communities in Sonoma County, most of the City of Healdsburg is not served by PG&E for its electricity needs. The Healdsburg Electric Utility owns and operates its own electric distribution, purchasing a majority of its electricity through the Northern California Power Agency (NCPA). NCPA is a joint powers agency that represents and provides support to 16 communities and districts in Northern and Central California. NCPA was founded in 1968 as a forum through which community-owned utilities could make investments to ensure an affordable, reliable, and clean future energy supply for the members served.

[58] City of Healdsburg. 2013. Central Healdsburg Avenue Plan Draft EIR. Accessed October 12, 2018.
[59] Regional Climate Protection Authority (RCPA). 2017. Climate Action 2020 Blog. How the RCPA is Moving Forward on Climate Action. Website: http://rcpa.ca.gov/projects/climate-action-2020/blog/. Accessed January 2, 2018.
[60] City of Healdsburg. 2013. Central Healdsburg Avenue Plan Draft EIR. Accessed October 12, 2018.

In 2011, 41 percent of the City's electrical power qualified as California Certified Renewable. The resource mix includes geothermal, hydroelectric, solar, and natural gas facilities.

For customers wishing to promote the development and use of renewable energy, Healdsburg Electric Utility also offers a Green Rate. Under the Green Rate, the City procures, on the customer's behalf, Renewable Energy Credits (RECs) to match the customer's monthly energy consumption. Customers choosing the Green Rate incur additional charges for every kWh (kilowatt-hour) consumed during the billing period and are provided with a 100 percent renewable energy source.[61]

City of Healdsburg Resolution

On March 5, 2018, the Healdsburg City Council adopted a Resolution that reaffirmed the City's intent to reduce GHG emissions as part of a coordinated effort with Sonoma County's RCPA and to approve local implementation measures identified in Climate Action 2020 and Beyond. Through this Resolution, the Council has agreed to the following items related to GHG reduction efforts:

1. Agree to support the efforts of the State and RCPA in reducing GHGs.
2. Adopts the following focus areas to reduce GHG emissions and intends to implement local measures identified in the Climate Action 2020 and Beyond Plan.
   a) Low-carbon/No-carbon transportation
   b) Increased renewable energy
   c) Lowering of water-related GHG emissions
   d) City planning and land use
3. Plans to work toward increasing the health and resilience of social, natural, and built resources to withstand the impacts of climate change.
4. Supports the goals of the Climate Action Plan through positive action of the City and through collaboration with other local agencies and the RCPA.[62]

City of Healdsburg 2030 General Plan

The City of Healdsburg adopted its Healdsburg 2030 General Plan in July of 2009, with the currently adopted version containing amendments through January 2015. The City's goals, policies, and implementation measures relating to reducing GHG emissions are contained within the Healdsburg 2030 General Plan Natural Resources Element and listed below.

Natural Resources

GOAL NR-E. Reduce greenhouse gas emissions and increase energy efficiency communitywide.

- **Policy NR-E-1.** The City will reduce greenhouse gas emissions produced communitywide.
- **Policy NR-E-2.** The City will reduce greenhouse gas emissions produced by internal municipal operations.
- **Policy NR-E-4.** The City will support sustainable development and building practices and lead by example in municipal projects.

[61] City of Healdsburg. 2013. Central Healdsburg Avenue Plan Draft EIR. Accessed October 12, 2018.
[62] City of Healdsburg. 2018. City Council. City Council/Redevelopment Successor Agency Regular Meeting Agenda. Website: https://www.ci.healdsburg.ca.us/AgendaCenter/ViewFile/Agenda/_03052018-863. Accessed October 12, 2018.

- **Policy NR-E-5.** The City will encourage the use of large-scale trees in new development to lessen heat build-up from solar radiation.
- **Policy NR-E-6.** The City will comply with state climate protection goals and programs to the maximum extent allowed by the City's jurisdictional authority.
- **Implementation Measure NR-14**. Promote the conservation of energy and natural resources by:
  - Allowing the use of alternative materials, designs and methods of construction not specifically prescribed by the Uniform Building Code to conserve energy and/or natural resources, if they have been approved and their use authorized by the City Building Official.
  - Waiving design review approval for most solar installations for existing buildings.
  - Granting rebates for such items as energy-efficient residential and commercial lighting, appliances, heat pumps, air conditioning, weatherization and photovoltaic systems.
  - Adopting and implementing a green building program.
- **Implementation Measure NR-15**. Employ "green" building design and practices in the construction and renovation of city facilities whenever feasible.
- **Implementation Measure NR-16**. Implement greenhouse gas emissions reduction measures adopted by the City Council.
- **Implementation Measure NR-17.** The City will:
  - Develop a community greenhouse gases reduction plan, consistent with the State's reduction goals. The plan shall be reviewed and updated at least once per year to identify progress and incorporate new information, regulatory standards, and technologies.
  - Acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible.
  - Pursue renewable energy supplies and non-greenhouse gas-emitting energy resources and clean fossil resources.
  - Provide education for its customers on ways that they can reduce their greenhouse gas emissions and provide assistance where feasible.
  - Implement Action Plan B of the City of Healdsburg Greenhouse Gas Emissions Reduction Action Plan Analysis to reduce greenhouse gas emissions related to municipal operations.
- **Implementation Measure NR-18**. Update the Bicycle and Pedestrian Master Plan as necessary to reflect changed conditions and policies.
- **Implementation Measure NR-19**. Complete gaps in the city's pedestrian and bicycle systems.
- **Implementation Measure NR-20**. Maintain the city's pedestrian and bicycle systems in good condition.
- **Implementation Measure NR-21**. Require bicycle parking at multi-family, commercial and employment sites.
- **Implementation Measure NR-22**. Bicycle racks shall continue to be placed as requested by property owners and demand grows at public destinations.
- **Implementation Measure NR-23**. Implement the Foss Creek Pathway Plan, as funding allows.
- **Implementation Measure NR-24**. Work closely with the Sonoma County Transit Authority and other transit service providers to develop and maintain public transportation facilities in the community, including park-and-ride lots and the Intermodal Transportation Center.

- **Implementation Measure NR-25**. Encourage the planting of large shade trees where adequate space can be provided for the trees' ultimate size, such as in open space areas, parks, large lots and wide parkway strips.
- **Implementation Measure NR-26**. Evaluate the existing transportation network to identify areas suitable for improvements as they relate to efficient vehicle movements, including: installation of dedicated left and right turn lanes, construction of roundabouts, development of Intelligent Transportation systems such as synchronized signal timing, and adaptive traffic control systems, removal of unwarranted stop signs and construction of new and improved freeway on- and off-ramps. Implement identified measures as feasible.

3.4.4 - Impacts and Mitigation Measures

Specific Thresholds of Significance

The City of Healdsburg CEQA Implementation Procedures establishes that a significant impact related to GHG emissions would occur if the proposed plan:

- Conflicts with applicable measures of the Scoping Plan adopted by the State of California to reduce GHG emissions to 1990 levels by 2020.
- Conflicts with any other applicable plan, policy, or regulation adopted by the City for the purpose of reducing the emissions of GHGs.

Approach to Analysis

GHG Emissions

GHG emissions and global climate change represent cumulative impacts. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the GHG emissions from past, present, and future projects and activities have contributed and will contribute to global climate change and its associated environmental impacts.

As discussed above, the City of Healdsburg CEQA Implementation Procedures establish that a significant impact related to GHG emissions would occur if the proposed plan would conflict with applicable measures of the Scoping Plan adopted by the State of California to reduce GHG emissions to 1990 levels by 2020. To determine whether the proposed plan would conflict with the Scoping Plan, this analysis considers whether the proposed plan would (1) be consistent with specific measures listed in the Scoping Plan and Scoping Plan Update, and (2) exceed quantitative thresholds used to determine whether a project will meet the overall state goals to reduce GHG emissions. It should be noted that the methodologies used and considerations taken into account in evaluating the proposed plan's impacts under the two thresholds above incorporate the methodologies and considerations discussed above under Regulatory Framework regarding SB 97 and CEQA Guidelines Update as well as the CBD v. CDFW case.

The proposed plan is evaluated qualitatively with the measures in the ARB Scoping Plan. ARB's adopted AB 32 Scoping Plan (Scoping Plan) states, "The 2020 goal was established to be an aggressive, but achievable, mid-term target, and the 2050 GHG emissions reduction goal represents

the level scientists believe is necessary to reach levels that would stabilize climate."[63] The year 2020 GHG emissions reduction goal of AB 32 corresponds with the mid-term target established by Executive Order S-3-05, which aims to reduce California's fair-share contribution of GHGs in 2050 to levels that would stabilize the climate. The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target.

In addition, the proposed plan is evaluated quantitatively with recommended thresholds of significance for GHG emissions. The NSCAPCD has not adopted standards of significance for construction and operational GHG emissions and instead, suggests the use of the BAAQMD's thresholds and mitigation measures. BAAQMD does not presently provide a construction-related GHG generation threshold, but it does recommend that construction-generated GHGs be quantified and disclosed. BAAQMD also recommends that lead agencies make a determination of the level of significance of construction-generated GHG emissions in relation to meeting AB 32 GHG reduction goals.

BAAQMD recommends an efficiency threshold based on emission levels required to be met in order to achieve AB 32 goals. GHG efficiency metrics can be utilized as thresholds of significance to assess the GHG efficiency for a project- or plan-level analysis on a per capita basis (residential-only projects) or on a "service population" basis (the sum of the number of jobs and the number of residents provided by a project) such that a project or plan will demonstrate consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020). This approach is appropriate, because the threshold can be applied evenly to all land uses contemplated under a project or plan to assess the significance of GHG emissions that result from development pursuant to that project or plan.

Therefore, BAAQMD's project- and plan-level significance threshold for operational GHG generation was deemed appropriate to use when determining the proposed plan's potential GHG impacts. For the purposes of evaluating GHG emissions impacts associated with development under the proposed plan, and in accordance with BAAQMD CEQA Guidelines for specific plans, the estimated annual operational emissions are compared to the 4.6 MT CO2e per service population (employees plus residents) per year threshold to determine significance.

GHG Emissions Reduction Plan Consistency

In determining whether a project or plan conflicts with any applicable plan, policy, or regulation adopted by the City for the purpose of reducing GHG emissions, the California Resources Agency has stated that in order to be used for the purpose of determining significance, an applicable plan, policy, or regulation must contain specific requirements that result in reductions of GHG emissions to a less than significance level.

The Healdsburg 2030 General Plan contains goals, policies, and implementation measures for the City to implement to reduce GHG emissions. However, the Healdsburg 2030 General Plan does not meet the CEQA Guidelines 15064.4(b)(3) requirements for an applicable plan to reduce GHG

[63] ARB 2008. Initial AB32 Climate Change Scoping Plan Document. Website: https://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

emissions, because the Healdsburg 2030 General Plan EIR found that buildout under the Healdsburg 2030 General Plan would result in significant and unavoidable cumulative global climate change impacts and that there were no feasible mitigation measures that would reduce cumulative GHG emissions impacts related to a less than significant level.

In July 2016, the Regional Climate Protection Agency adopted the Sonoma County Regional Climate Action Plan, also known as Climate Action 2020 and Beyond, which applied to the County, including the City of Healdsburg. However, the EIR for the Climate Action Plan was invalidated in 2017, and the Climate Action Plan would not be considered a qualified GHG reduction plan for the purposes of CEQA.

Although the Climate Action Plan no longer serves as a CEQA tool, the document does still serve to advise and coordinate Countywide climate protection efforts. The ideas contained in the Climate Action Plan to advance smart land use and resource efficiency are still valid and aligned with the climate action strategies stated in the Scoping Plan to reach the State's overall GHG reduction goals. As a result, the City of Healdsburg adopted a resolution in March 2018 to address GHG emissions consistent with the Climate Action Plan. Therefore, in order to comprehensively evaluate the GHG emissions implications of the proposed plan, the plan is assessed for its consistency with the GHG emission reduction measures included in the Sonoma County Regional Climate Action Plan that were adopted by the City of Healdsburg in March 2018.

GHG Emissions Modeling

Although the specific land uses could ultimately vary during final design, the emission estimates were developed consistent with the land uses and construction schedule in Chapter 2, Project Description. The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was used to estimate the proposed plan's construction and operation-related GHG emissions. CalEEMod was developed in cooperation with air districts throughout the State and is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential GHG emissions associated with construction and operation from a variety of land uses.

This analysis is restricted to GHGs identified by AB 32, which include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. The proposed plan would primarily generate CO_2, CH_4, and N_2O resulting from fossil fuel combustion. HFCs are typically used for refrigerants. The use of refrigerants in the non-industrial mix of land uses proposed as part of the proposed plan is expected to be minor; therefore, refrigerants were not estimated.

Certain GHGs defined by AB 32 would not be emitted by development contemplated by the proposed plan. PFCs and SF_6 are typically used in industrial applications, none of which would be used by the proposed plan. Therefore, it is not anticipated that the proposed plan would emit PFCs and SF_6.

Construction

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site GHG emissions principally consist of exhaust emissions from

heavy-duty construction equipment. Off-site GHG emissions would occur from motor vehicle exhaust from material delivery vehicles and construction worker traffic.

The construction parameters used to estimate the proposed plan's construction-related GHG emissions were based on applicant-provided data and CalEEMod default-provided assumptions. Full assumptions are detailed in the CalEEMod output contained in Appendix C.

Operation

Operational GHG emissions are those GHG emissions that occur during operation of the proposed plan. The major sources are summarized below.

Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the plan area. The emissions were estimated using CalEEMod. The average daily trip generation rates for land uses contemplated under the proposed plan were obtained from the plan-specific traffic analysis performed by W-Trans[64] and are consistent with Institute of Transportation Engineers (ITE) Manual, 10th Edition.[65]

Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the plan area on an adjacent street or roadway that offers direct access to the generator. Pass-by trips are not diverted from another roadway. The CalEEMod defaults pass-by trips were used for this analysis.

The CalEEMod default round trip lengths for an urban setting for the North Coast Air Basin portion of Sonoma County were used in this analysis. The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the proposed plan. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The CalEEMod default vehicle fleet mix was used for the North Coast Air Basin portion of Sonoma County was used for this analysis.

Landscape Equipment

The landscaping equipment (leaf blowers, chain saws, mowers) would generate GHG emissions as a result of fuel combustion based on assumptions in the CalEEMod model.

Electricity

The City of Healdsburg is served by the Healdsburg Electric Utility and Pacific Gas & Electric (PG&E). For the purpose of estimating GHG emissions for this analysis, emission factors from PG&E were used. PG&E provides estimates of its emission factor per megawatt hour of electricity delivered to its customers. PG&E emissions factor for 2020 for CO_2 is provided below. The rates for methane and nitrous oxide are based on compliance with the Renewable Portfolio Standard. The factors listed below were applied in estimating emissions for the year 2021.

- Carbon dioxide: 491.65 lb/MWh

[64] W-Trans. (August 2018) Memorandum of Assumptions for Analysis of Proposed North Entry Area Plan.
[65] Institute of Transportation Engineers (ITE). 2017. Trip Generation Manual 10th Edition.

- Methane: 0.022 lb/MWh
- Nitrous oxide: 0.005 lb/MWh

CalEEMod has three categories for electricity consumption: electricity that is impacted by Title 24 regulations; non-Title 24 electricity; and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title 24. Since lighting is not part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances and electronics. To properly divide the total electricity consumption into the three categories, the percentage for each category is determined by using percentages derived from the CalEEMod default electricity intensity. The percentages are applied to the electricity consumption to obtain the values used in the analysis.

Natural Gas

There would be emissions from the combustion of natural gas used by development under the proposed plan (water heaters, heat, etc.). CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. For purposes of this analysis, CalEEMod defaults were used.

Water and Wastewater

There would be emissions from the combustion of natural gas used by development under the proposed plan (water heaters, heat, etc.). CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. CalEEMod defaults were used. Development under the proposed plan will include water conservation features required by the Green Building Code Standards the City of Healdsburg Water Efficient Land Use Ordinance that are not accounted for in CalEEMod default values. A twenty-percent reduction in water usage was applied to reflect proposed plan emissions after compliance with these mandatory regulations.

Solid Waste

Greenhouse gas emissions would be generated from the decomposition of solid waste generated by development under the proposed plan. CalEEMod was used to estimate the GHG emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture—6 percent;
- Landfill capture gas flare—94 percent;
- Landfill capture gas energy recovery—0 percent.

Vegetation

There is currently carbon sequestration occurring on-site from existing vegetation. The proposed plan would require new development to plant trees and integrate landscaping into the proposed plan design, which would provide carbon sequestration. However, the number of trees to be planted is unknown and data are insufficient to accurately determine the impact that existing plants have on carbon sequestration. For purposes of this analysis, it was assumed that the loss and addition of carbon sequestration that are due to the proposed plan would be balanced; therefore, emissions due to carbon sequestration were not included.

Energy

Per CEQA Guidelines Appendix F, in order to assure that energy implications are considered in project or plan decisions, an EIR must include a discussion of potential energy impacts. Therefore, the proposed plan is assessed in terms of potential for inefficient, wasteful, or unnecessary use of energy during construction and operation. The proposed plan is also assessed in terms of compliance with existing energy performance standards.

Impact Evaluation

GHG Emissions Generation

Impact GHG-1: **Implementation of the proposed plan could conflict with applicable measures of the Scoping Plan adopted by the State of California to reduce GHG emissions to 1990 levels by 2020.**

Impact Analysis

Scoping Plan Measures

ARB Scoping Plan per AB 32

The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As shown in Table 3.4-2, many of the measures are not applicable to the proposed plan, while the proposed plan is consistent with strategies that are applicable.

Table 3.4-2: ARB Scoping Plan GHG Reduction Measures Consistency Analysis

Scoping Plan GHG Reduction Measure	Proposed Plan Consistency
California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions.	**Not applicable.** Although the cap-and-trade system is ongoing, the proposed plan is not one targeted by the cap-and-trade system regulations, and, therefore, this measure does not apply to the proposed plan.
California Light-Duty Vehicle GHG Standards. Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. However, vehicles accessing businesses and residences in the plan area would be subject to the standards.
Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	**Consistent.** This is a measure for the State to increase its energy efficiency standards in new buildings. Development within the plan area would be required to build to the latest standards and would increase its energy efficiency through compliance.
Renewable Portfolio Standard. Achieve 33 percent renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. Healdsburg Electric Utilities and PG&E are required to increase their percent of power supply from renewable sources to 33 percent by the year 2020 pursuant to the Renewable Portfolio Standard.

Table 3.4-2 (cont.): ARB Scoping Plan GHG Reduction Measures Consistency Analysis

Scoping Plan GHG Reduction Measure	Proposed Plan Consistency
Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. All fuel consumption associated with the proposed plan's construction and operational activities would use fuel that meets these standards.
Regional Transportation-Related GHG Targets. Develop regional GHG emissions reduction targets for passenger vehicles. This measure refers to SB 375.	**Not applicable.** The proposed plan is not related to developing GHG emission reduction targets.
Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. All vehicles associated with the proposed plan's construction and operational activities would comply with vehicle efficiency measures.
Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	**Not applicable.** The proposed plan does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
Million Solar Roofs Program. Install 3,000 Megawatts of solar-electric capacity under California's existing solar programs.	**Consistent.** The proposed plan would comply with Title 24 at the place of construction, which requires new and non-residential buildings to be "solar ready" and requires new low-rise residential buildings to install a photovoltaic (PV) system beginning January 1, 2020. The proposed plan would not preclude the implementation of this strategy.
Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. The standards phase in over model years 2014 through 2018 and would be applicable to the vehicles that access the plan area.
Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce GHG emissions and provide other pollution reduction co-benefits. .	**Not applicable.** This measure would apply to the direct GHG emissions at major industrial facilities emitting more than 500,000 $MTCO_2e$ per year.
High Speed Rail. Support implementation of a high-speed rail system.	**Not applicable.** This is a statewide measure that cannot be implemented by an applicant or lead agency. The proposed plan would not preclude the implementation of this strategy.
Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Consistent.** The proposed plan would comply with the California Energy Code, and thus incorporate applicable energy efficiency features designed to reduce proposed plan energy consumption.

Table 3.4-2 (cont.): ARB Scoping Plan GHG Reduction Measures Consistency Analysis

Scoping Plan GHG Reduction Measure	Proposed Plan Consistency
High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	**Not applicable.** This measure is applicable to the high global warming potential gases that would be used by the proposed plan (such as in air conditioning and refrigerators). The proposed plan will comply with applicable ARB regulations on these gases.
Recycling and Waste. Reduce CH_4 emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero waste.	**Consistent**. The proposed plan would not contain a landfill. The proposed plan would reduce waste with implementation of State mandated recycling and reuse requirements.
Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	**Not applicable.** The plan area is not forested; therefore, no preservation is possible.
Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	**Consistent.** This is a measure for State and local agencies. The proposed plan would comply with the California Green Building Standards Code and the California Updated Model Landscape Ordinance. With adherence to these regulations, development under the proposed plan will consume energy and water in an efficient manner.
Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	**Not applicable.** The plan area is not designated or in use for agriculture purposes. No grazing, feedlot, or other agricultural activities that generate manure occur on-site or are proposed to be implemented by the proposed plan.
Source of ARB Scoping Plan Reduction Measures: ARB, 2008	

As shown in Table 3.4-2 the proposed plan is consistent with the ARB Scoping Plan's applicable GHG emissions reduction strategies and, thus, would not conflict with the recommendations of AB 32 in achieving a statewide reduction in GHG emissions. Considering this information, the proposed plan would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or conflict with implementation of the Scoping Plan.

ARB Scoping Plan Update per SB 32

The ARB 2017 Climate Change Scoping Plan Update addressing the SB 32 targets was adopted on December 14, 2017 and is the second update to the Scoping Plan. Table 3.4-3 provides an analysis of the proposed plan's consistency with the 2017 Scoping Plan Update GHG emissions reduction measures. As shown in Table 3.4-3, many of the measures are not applicable to the proposed plan, and the proposed plan is consistent with strategies that are applicable.

Table 3.4-3: ARB Scoping Plan Update GHG Reduction Measures Consistency Analysis

2017 Scoping Plan Update GHG Reduction Measure	Proposed Plan Consistency
SB 350 50 percent Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33 percent in 2020 to 50 percent in 2030.	**Not applicable.** This measure would apply to utilities and not to individual development projects. The proposed plan would purchase electricity from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels.	**Not applicable**. This measure applies to existing buildings. New structures are required to comply with Title 24 Energy Efficiency Standards that are expected to increase in stringency over time. The proposed plan would comply with the applicable Title 24 Energy Efficiency Standards in effect at the time building permits are issued.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 18 percent reduction in carbon content by 2030.	**Not applicable.** This is a statewide measure that cannot be implemented by a project applicant or lead agency. However, vehicles accessing businesses and residences in the plan area would be benefit from the standards.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario). Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Not applicable.** This measure is not applicable to the proposed plan; however, vehicles accessing businesses and residences in the plan area would be benefit from the increased availability of cleaner technology and fuels. The 2016 CALGreen Code requires electrical service in new single-family housing to be EV charger-ready.
Sustainable Freight Action Plan The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	**Not applicable.** This measure applies to owners and operators of trucks and freight operations. None of the proposed land uses would be compatible with typical operations that support truck and freight operations. It is anticipated that future residents and business would have deliveries made by third-party vendors. It is expected that deliveries throughout the State would be made with an increasing number of ZEV delivery trucks.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Not applicable.** This is a statewide strategy that is not implemented by an applicant. As described in the Air Quality section of this EIR, the residential component of the proposed plan will include only natural gas hearths. Natural gas hearths produce very little black carbon compared to wood-burning fireplace; therefore, future development under the proposed plan would not include major sources of black carbon.
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled.	**Not applicable.** The proposed plan does not include the development of a Regional Transportation Plan. Furthermore, the proposed plan is not within an SCS priority area.

Table 3.4-3 (cont.): ARB Scoping Plan Update GHG Reduction Measures Consistency Analysis

2017 Scoping Plan Update GHG Reduction Measure	Proposed Plan Consistency
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Not applicable.** The proposed plan is not one targeted by the cap-and-trade system regulations, and, therefore, this measure does not apply to the proposed plan. However, the post-2020 Cap-and-Trade Program indirectly affects people and entities who use the products and services produced by the regulated industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers.
Natural and Working Lands Action Plan. The ARB is working in coordination with several other agencies to develop measures as outlined in the Scoping Plan Update and the governor's Executive Order B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The proposed plan allows for mixed used development, and the plan area would not be considered natural or working lands. The overall development footprint would allow for retention of approximately 12 acres of open and undeveloped land primarily located on the hillsides of the North Village project site.
Source of ARB 2017 Scoping Plan Update Reduction Measures: ARB, 2017	

As shown in Table 3.4-3, the proposed plan is consistent with the ARB Scoping Plan Update's applicable GHG emissions reduction strategies and, thus, would not conflict with the recommendations of SB 32 in achieving statewide GHG emissions reduction targets. Considering this information, the proposed plan would not significantly hinder or delay the State's ability to meet the reduction targets contained in SB 32 or conflict with implementation of the Scoping Plan Update.

In summary, the proposed plan would not conflict with the GHG reduction measures included in the ARB Scoping Plan or Scoping Plan Update.

Plan-Level GHG Emissions

The BAAQMD Air Quality CEQA Guidelines state that if annual emissions of GHG emissions exceed the threshold of significance identified above under Approach to Analysis, the proposed plan would result in a cumulatively significant impact to global climate change. Per BAAQMD CEQA Guidelines for specific plans, the estimated annual operational emissions are compared specifically to the 4.6 MT CO2e per service population per year significance threshold to determine significance.

Construction

The proposed plan would emit GHG emissions during construction from the off-road equipment, worker vehicles, and any hauling that may occur. Total GHG emissions generated during both phases of construction were combined and are presented in Table 3.4-4. In order to account for the construction emissions in assessing the proposed plan's GHG impacts, the total emissions generated during construction were amortized based on the life of the development (mixed use—30 years) and added to the operational emissions. As shown in Table 3.4-4, construction of the proposed plan is

estimated to generate approximately 1,627 MT CO_2e over the two-year construction duration. The amortized emissions from construction of 54.2 MT CO_2e per year were added to the operational emissions to determine the total emissions of the proposed plan.

Table 3.4-4: Unmitigated Construction GHG Emissions

Construction Phases	Total GHG Emissions (MT CO_2e/year)
2019	
Phase 1 Site Preparation	128.7
Phase 1 Paving	71.8
2019 Total Emissions	*200.4*
2020	
Phase 2 Building Construction	792.6
2020 Total Emissions	*792.6*
2021	
Phase 2 Building Construction	599.3
Phase 2 Paving	21.2
Phase 2 Architectural Coating	13.1
2021 Total Emissions	*633.6*
Total Construction Emissions	**1,626.7**
Construction Emissions Amortized Over the Life of the Proposed Plan (30 years)	**54.2**
Note: Calculations use unrounded numbers. Source: CalEEMod Output (see Appendix C)	

Operation

Operational or long-term emissions occur over the life of the proposed plan. Sources for operational emissions are described above in the Approach to Analysis. Unmitigated annual emissions from long-term operations of the proposed plan are shown by source in Table 3.4-5. Total annual operational emissions were estimated at approximately 6,259 MT CO_2e assuming full buildout in the year 2021. As previously indicated, the analysis includes construction emissions amortized over the life of the plan. The plan is estimated to accommodate 742 residents and support 287 employees, for a total service population of 1,029 residents and employees.[66, 67] The plan would generate approximately 6,313 MT CO_2e per year with the addition of amortized construction emissions.

[66] City of Healdsburg. 2015. Healdsburg Housing Element 2015-2023. Website: https://www.ci.healdsburg.ca.us/DocumentCenter/View/5437/Adopted-Housing-Element. Accessed October 12, 2018.
[67] Southern California Association of Governments. 2001. Employment Density Study. Accessed August 26, 2018.

Table 3.4-5: Unmitigated Operational GHG Emissions (2021)

GHG Emission Source	MT CO_2e per year
Area	130.0
Energy	1,242.7
Mobile (Vehicles)	4,687.9
Waste	122.3
Water	76.2
Total Operational	6,259.1
Construction Emissions (Amortized over 30 Years)	54.2
Total Emissions	6,313.3
Service Population (Employees and Residents)	1,029
Emissions Per Service Population	**6.1**
BAAQMD Threshold	**4.6**
Does project exceed threshold?	**Yes**
Notes: MT CO_2e = metric tons of carbon dioxide equivalent. Source of Emissions: CalEEMod Output (see Appendix C)	

As shown in Table 3.4-5 the proposed plan's long-term operational emissions would exceed the BAAQMD's threshold of significance and would have a significant generation of GHGs without the inclusion of additional mitigation to further reduce proposed plan emissions. Based on a service population of 1,029 people, emissions must total 4,733.4 MT CO_2e per year or lower to meet the threshold. This would require additional reductions totaling 1,579.9 MT CO_2e per year beyond that achieved by compliance with regulations. Therefore, implementation of Mitigation Measure (MM) GHG-1 would be required.

Table 3.4-6 shows the total proposed plan operational GHG emissions with the use of renewable electricity and implementation of a ride-sharing program. As shown in Table 3.4-6, the GHG operational emissions during operation can be reduced to meet the BAAQMD's threshold of significance with implementation of measures identified in MM GHG-1.

Table 3.4-6: Mitigated Operational GHG Emissions (2021)

GHG Emission Source	Mitigated Proposed Plan Emissions (Total MT CO_2e per year)	Total MT CO_2e per year Reduced Compared to the Unmitigated Scenario (Error! Reference source not found.)
Area	130.0	0.0
Energy	507.0	735.8
Mobile (Vehicles)	4,539.2	148.7
Waste	122.3	0.0
Water	76.2	0.0
Construction Emissions (Amortized over 30 Years)	54.2	0.0
Total Project Operational Emissions	5,428.9	884.5
Additional Off-Model Mitigation Through the Implementation of GHG Emissions Reduction Measures (MM GHG-1)	(695.5)	695.5
Total Project Operational Emissions With the Implementation of GHG Emissions Reduction Measures	4,733.4	1,579.9
Service Population (Employees and Residents)	1,029	—
Emissions Per Service Population	**4.6**	—
BAAQMD Threshold	**4.6**	—
Does project exceed threshold?	**No**	—

Notes:
MT CO_2e = metric tons of carbon dioxide equivalent.
Unrounded results used to calculate totals.
Source of Emissions: CalEEMod Output (see Appendix B)

As shown above, the GHG operational emissions during operation would not exceed BAAQMD's threshold of significance with implementation of MM GHG-1. The impact would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially significant

Mitigation Measures

MM GHG-1 Implement GHG Emissions Reduction Measures

Prior to the final discretionary approval for each development project in the plan area, each developer shall provide documentation to the City of Healdsburg

demonstrating that the proposed development would meet the BAAQMD recommended threshold of significance for individual projects or would achieve additional GHG emissions reductions sufficient to meet the recommended threshold through a combination of one or more of the following measures and/or other comparable measures approved by the City:

- Commit to 100 percent renewable energy use through a combination of use of on-site renewable energy and Healdsburg Electric's "Green Rate" program.
- Install on-site solar panels to generate electricity for on-site electricity consumption.
- Provide documentation how a ride-sharing program or other transportation demand management program for hotel, office, and retail employees would be implemented starting no later than 60 days after operations begin. Use of electric vehicles for ride-share program would further reduce GHG emissions.
- Install electric vehicle charging stations at workplaces and multi-family residences to promote the use of electric vehicles.
- Use heat-pumps (rather than natural gas) for heating of residential and commercial spaces.
- Purchase voluntary carbon credits from a verified GHG emissions credit broker in an amount sufficient to offset operational GHG emissions that exceed the recommended significance threshold over the lifetime of the proposed development (or a reduced amount estimated based on implementation of other measures listed above). Copies of the contract(s) shall be provided to the City.

Level of Significance After Mitigation

Less than significant with mitigation

GHG Emissions Reduction Plan Consistency

Impact GHG-2:	**Implementation of the proposed plan could conflict with an applicable plan, policy, or regulation adopted by the City for the purpose of reducing GHG emissions.**

Impact Analysis

City-selected Regional CAP Measures

The Healdsburg City Council adopted a resolution in March 2018 to reaffirm its commitment to the proposed measures included in section 5.3 of the Sonoma County Regional Climate Action Plan. The Sonoma County Regional Climate Action Plan focuses on relatively short-term actions to reduce emissions by 25 percent below 1990 levels by 2020 to a degree that is beyond the current State mandate (AB 32). The individual GHG reduction measures that the City has selected and the project's consistency with those measures are shown in Table 3.4-7.

Table 3.4-7: Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
State and Regional Measures		
Measure 1-S1: Title 24 Standards for Commercial and Residential Building	The California Building Standards Commission is responsible for adopting and updating Title 24 standards, which then become the default standards for communities throughout the State.	Consistent. Development in the plan area would comply with local building codes regarding energy efficiency.
Measure 1-S2: Lighting Efficiency and Toxics Reduction Act (AB1109)	CEC is responsible for implementing this measure through the prescription of minimum efficiency lighting standards affecting all lighting sold in Sonoma County. Implementation of this measure would be gradual through 2020 as older lighting is replaced with newer, more efficient lighting.	Consistent. Development in the plan area would comply with local building codes regarding lighting efficiency.
Measure 1-S3: Industrial Boiler Efficiency	ARB is responsible for implementing this measure. This measure would be implemented gradually as industrial facilities replace boilers.	Not applicable. The plan does include the development of an industrial land use.
Measure 1-R1: Community Energy Efficiency Retrofits for Existing Buildings	This measure encompasses all existing programs to improve the energy efficiency of community buildings (including homes and businesses) through retrofits.	Not applicable. Development under the proposed plan would be a new development project.
Measure 1-R2: Expand the Community Energy Efficiency Retrofits Program	The main objective of this measure is to promote energy efficiency in existing residential buildings and commercial buildings, and remove funding barriers for energy efficiency improvements.	Not applicable. Development under the proposed plan would be a new development project.
Measure 2-S1: Renewable Portfolio Standard	The Renewable Portfolio Standard obligates investor-owned utilities, energy service providers, and community choice aggregators to procure an increasing amount of their electricity from eligible renewable sources.	Not applicable. Development under the proposed plan would be a new development project and not an investor-owned utility, an energy service provider, or a community choice aggregator.
Measure 2-S2: Solar Water Heaters	This is a voluntary measure that encourages the installation of solar water heating systems.	Consistent. This is a voluntary measure to be implemented at the discretion of future project applicants.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
Measure 5-R1: Improve and Increase Transit Service	Sonoma County Transit, Petaluma Transit, and Santa Rosa Transit would be the lead agencies to implement this measure, with assistance from Sonoma County Transportation Authority (SCTA). Each transit agency would determine funding needs and identify service gaps or high-demand routes that could be expanded as part of this measure.	Not applicable. This measure applies to local government coordination and not individual development projects.
Measure 5-R2: Supporting Transit Measures	The purpose of this measure is to increase the use of transit in the county. SCTA, Sonoma County Transit, Petaluma Transit, and Santa Rosa Transit would be the lead agencies to implement this measure. The transit agencies would need to work together to improve efficiency, transfers and service gaps, especially between transit services.	Not applicable. The proposed plan would allow for new development and transit connections, but the lead agency is not a transit provider.
Measure 5-R3: Sonoma-Marin Area Rail Transit	This measure is applicable to projects project in proximity to a SMART station or connecting pedestrian and bicycle facilities. A project would be considered consistent with this measure if it is it consistent with any adopted requirements supportive of SMART, including policies and requirements in General Plans, Area Plans, Specific Plans, Station Area Plans, zoning codes, and infrastructure plans.	Consistent. As discussed in Section 3.2-Transportation and Traffic, the closest transit stops are approximately one-half mile away, a distance that is generally considered too far for convenient transit access. To achieve adequate transit access, per implementation of MM TRANS-4a, bus stops are required to be installed on both sides of Healdsburg Avenue near the proposed access point to the plan area.
Measure 5-R4: Trip Reduction Ordinance	SCTA will develop and local jurisdictions will adopt and both will implement a Trip Reduction Ordinance (TRO) requiring employers with 50+ employees to offer one of the following: pre-tax transit expenses, transit or vanpool subsidy, free or low-cost shuttle, or an alternate benefit. The TRO may also consider more ambitious recommendations such as specific transportation demand management	Consistent. Future development within the plan area would be required to comply with any adopted local ordinance requiring trip reduction.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
	(TDM) programs offered to all employees, annual monitoring and reporting requirements, or specific trip reduction or mode share target rates. The TRO will also provide a non-trip reduction alternative in the form of purchase of an equivalent amount of GHG offsets for employer.	
Measure 5-R5: Supporting Measures for the Transportation Demand Management Program	This measure requires regional and local effort. SCTA staff would develop a TDM program for employers. It is voluntary for individual development projects to include TDM measures.	Consistent. This is a voluntary measure to be implemented at the discretion of the project applicant.
Measure 5-R6: Reduced Transit Passes	Sonoma County Transit, Petaluma Transit, and Santa Rosa Transit would be responsible for rolling out and publicizing reduced transit passes. Agencies would encourage employers and new developments to provide reduced-cost monthly transit passes.	Consistent. This is a voluntary measure to be implemented at the discretion of the project applicant.
Measure 5-R7: Alternative Travel Marketing & Optimize Online Service	SCTA would be the lead agency to implement this measure and would find funding for or subsidize communication channels to provide information on alternate travel means. Local communities would work with SCTA to ensure that consistency in service and information is maintained throughout the county.	Consistent. This is a voluntary measure to be implemented at the discretion of the project applicant.
Measure 5-R8: Safe Routes to School	One objective of this measure is to create safe routes to school programs for communities where they currently do not exist and actively seek funding to implement programs in all communities. Implementation of this measure would increase the use of school buses or school pools in the county, thus reducing personal vehicle use for home-school trips. SCTA, working with local school districts, would be the lead agency to implement this measure and find funding for or subsidize safe routes to school programs.	Not applicable. This measure applies to local government coordination.
Measure 5-R9: Car-sharing Program	RCPA/SCTA would be the lead agency to implement this measure, and would work with the Sonoma County Air Resources Team and find funding for or subsidize mobile device infrastructure needed to	Consistent. This is a voluntary measure to be implemented at the discretion of the project applicant.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
	implement a car sharing program. RCPA/SCTA could consider partnering with commercial car sharing service providers to identify locations or markets to roll out the service.	
Measure 5-R10: Bike Sharing Program	SCTA would be the lead agency to implement the development of a bike sharing program. SCTA and each community would need to coordinate to find funding sources to implement a bike-share program and to identify the most appropriate service areas.	Not applicable. This is a regional measure that is not applicable to individual development projects; however, implementation of the project would not preclude the development or expansion of a bike sharing program.
Measure 6-S1: Pavley Emissions Standards for Passenger Vehicles and the Low Carbon Fuel Standard	ARB is responsible for implementing this measure.	Not applicable. The Pavley Emissions Standards measure applies to all new vehicles starting with model year 2012. The project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California.
Measure 6-S2: Advanced Clean Cars	ARB is responsible for implementing this measure.	Not applicable. This measure is related passenger vehicles purchased in California and would be implemented by ARB.
Measure 6-S3: Assembly Bill 32 Vehicle Efficiency Measures	ARB will work with the vehicle industry to implement these measures.	Not applicable. Future development within the plan area would not involve the manufacturing of vehicles.
Measure 7-S1: Low Carbon Fuel Standard: Off-Road	ARB is responsible for implementing this measure.	Not applicable. This measure would not be applicable to project proponents, future building owners, or future tenants.
Measure 7-R1: Shift Sonoma County (Electric Vehicles)	This measure requires regional and local coordination. RCPA/SCTA will design the program, identify funding sources, and	Not applicable. This measure applies to local government coordination

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
	serve as a focal point for implementation in cooperation with SCP.	and not individual development projects.
Measure 7-R2: Alternative Fuel for Transit Vehicles.	This is a voluntary measure that promotes the use of alternatively fueled vehicles. This measure is specifically geared towards the replacement of diesel and gasoline buses with alternatively fueled buses.	Not applicable. This measure applies to local government coordination and transit providers.
Measure 9-R1: Waste Diversion Goal	The SCWMA would be the lead agency for implementing this measure.	Consistent. Future development within the plan area would not conflict with implementation of this measure. Future development would be required to achieve the recycling mandates via compliance with the CALGreen code.
Measure 10-R1: Increase Landfill Methane Capture and Use for Energy	As the agency responsible for waste management in the county, SCWMA would be responsible for implementing this measure.	Not applicable. Future development within the plan area would not include a landfill.
Measure 11-R1: Countywide Water Conservation Support and Incentives	The SCWA is responsible for implementing this measure in cooperation with the local communities. SCWA would identify areas where additional conservation would be most effective and develop conservation goals. The local communities would work with SCWA to identify conservation opportunities, and to develop new ordinances or general plan policies pertaining to water conservation.	Consistent. Future development within the plan area would comply with all local or regionally adopted water conservation measures.
Measure 12-R1: Recycled Water	This is a voluntary measure that encourages the use of recycled water, where available.	Consistent. This is a voluntary measure to be implemented at the discretion of the project applicant.
Measure 13-R1: Infrastructure and Water Supply Improvement	RCPA and communities would work with SCWA and other water providers to identify funding sources for capital improvements for the necessary water conveyance equipment upgrades. SCWA and other water providers would be responsible for installing and maintaining the new or upgraded equipment.	Not applicable. This measure applies to local government coordination and not individual development projects.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
Measure 13-R2: Wastewater Treatment Equipment Efficiency	RCPA and communities would work with wastewater treatment providers to encourage increased efficiency in wastewater treatment operations.	Consistent. Buildings built within the plan area would support this measure by complying with the California Green Building Standards Code.
Local Measures		
Measure 1-L2: Outdoor Lighting	Implementation mechanisms will be chosen by each jurisdiction and may include developing a new ordinance requiring LED outdoor lighting for new development and/or providing incentives for bulb replacement in existing fixtures.	Consistent. Future development within the plan area would be required to comply with local LED outdoor lighting requirements.
Measure 1-L3: Shade Tree Planting	The objective of this measure is to expand on current urban tree planting policies and programs to establish a shade tree planting goal for each community to help reduce building energy use.	Consistent. Future development within the plan area would be required to comply with local shade tree planning requirements.
Measure 2-L1: Solar in New Residential Development	The objective of this measure is to implement a requirement to install solar energy systems on new residential buildings to increase local renewable energy generation. Each participating jurisdiction will define which new development must provide rooftop solar photovoltaic by defining qualifying criteria and the amount of solar required.	Consistent. Future development within the plan area would be required to comply with local requirement(s) regarding mandatory installation of solar energy systems for new residential development.
Measure 2-L2: Solar in Existing Residential Building	The objective of this measure is to incentivize solar energy installation on existing residential buildings to increase renewable energy generation.	Not applicable. The proposed plan does not involve the remodel or alteration of an existing residential development.
Measure 2-L3: Solar in New Non-Residential Developments	The objective of this measure is to implement a requirement to install solar energy systems on new non-residential development to increase local renewable energy generation. Under this measure, the communities will encourage or require solar installations on as many new non-residential developments as feasible.	Consistent. Future development within the plan area would be required to comply with local requirement(s) for rooftop solar photovoltaic on new non-residential development.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
Measure 2-L4: Solar in Existing Non-Residential of Existing Non-Residential Buildings	The objective of this measure is to incentivize solar energy installation for existing nonresidential buildings to increase renewable energy generation.	Not applicable. The project does not involve the remodel or alteration of an existing non-residential development.
Measure 3-L1: Convert to Electric Water Heating	The purpose of this measure is to promote the replacement of residential natural gas space and water heating equipment with high efficiency electric systems.	Not applicable. Development under the plan would not involve the remodel or alteration of an existing residential development.
Measure 4-L1: Mixed-Use Development in City Centers and Along Transit Corridors use	The jurisdictions will identify and support mixed use development in city-centers and transit-oriented development locations through their General Plans, Area Plans, and Specific Plans and zoning codes.	Consistent. As discussed in Section 2.0-Project Description, the plan area is designated Mixed Use by the Healdsburg 2030 General Plan. The proposed plan land uses are consistent with the land use definition established in the Healdsburg 2030 General Plan for the Mixed designation.
Measure 4-L2: Increase Transit Accessibility	The objective of this measure is to encourage all new residential projects consisting of 25 units or more to be located within 0.5 mile of a transit node, shuttle service, or bus route with regularly scheduled, daily service. Consider requirements such as reduced parking, unbundled parking, subsidized public transportation passes, or ride-matching programs, based on-site specific review.	Consistent. As discussed in Section 3.2-Transportation and Traffic, MM TRANS-4a requires the installation of bus stops on both sides of Healdsburg Avenue near the proposed access point to the plan area. Therefore, the project would be consistent with this measure after the implementation of MM TRANS-4a.
Measure 4-L3: Supporting Land Use Measures	This measure would encourage new development to provide amenities to support transit and other modes of transportation, including transit stops, bicycle facilities, good pedestrian networks, car-sharing locations, and EV charging stations.	Consistent. Development under the proposed plan would be required to include the installation of amenities to support alternative modes of transportation, including bicycle facilities and

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
		pedestrian networks in accordance with City standards.
Measure 4-L4: Affordable Housing Linked to Transit	A project would be consistent with this measure if the project would comply with adopted policies and ordinances regarding location of affordable housing near transit corridors, transit hubs and downtown cores.	Consistent. Future development within the plan area would include the construction of affordable housing and linkages to transit would be provided through implementation of MM TRANS-4a.
Measure 5-L1: Local Transportation Demand Management Program	Consistency with this measure requires projects to be consistent with adopted TDM requirements for businesses with 50 or more employees.	Consistent. Future development within the plan area would be required to comply with the City of Healdsburg Trip Reduction Ordinance, which is applicable to employers within the City of Healdsburg with one hundred or more employees at an individual job site.
Measure 5-L2: Carpool-Incentives & Ride-Sharing Program	The purpose of this measure is to reduce single-occupancy vehicle travel and increase the use of carpools in the county, thus reducing VMT. Each participating community would develop a carpool incentive program attractive to employers, including managing the financial incentives for carpooling.	Not applicable. This measure applies to local government coordination and not individual development projects.
Measure 5-L4: Supporting Bicycle/Pedestrian Measures	SCTA will work with the cities and county transit agencies to coordinate the identification and implementation of cross-jurisdictional bicycle and pedestrian corridor projects. Each jurisdiction will update municipal codes and prepare or update their bike/pedestrian master plan, as needed. The bike and pedestrian master plans will outline needed improvements and the areas identified for expansion.	Consistent. The project would comply with mandatory requirements. Future development within the plan area would include the installation amenities to support alternative modes of transportation, including bicycle facilities and pedestrian networks in accordance with City standards. Amenities beyond those required by regulations are voluntary.

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
Measure 5-L5: Traffic Calming	Each community will develop a strategy to implement this measure appropriate to their community setting.	Consistent. Future development within the plan area would be required to be consistent with adopted traffic calming measures.
Measure 5-L6: Parking Policies	This measure includes the implementation of additional parking policies to promote a reduction in single-occupancy vehicle travel.	Consistent. Future development within the plan area would be required to comply with all mandatory parking policy measures.
Measure 5-L7: Supporting Parking Policy Measures	This measure includes the promotion of prioritized parking for hybrid/EV cars, carpools, vanpools at city-centered corridors, new developments, public parking areas, and municipal facilities. Participating jurisdictions may consider amending zoning code to require new parking lots to provide prioritized parking for carpools, vanpools, hybrids, and EVs, and provide charging facilities and/or incentives.	Consistent. Future development within the plan area would be required to comply with all mandatory requirements including mandatory parking policy measures.
Measure 7-L1: Electric Vehicle Charging Station Program	This is a voluntary measure. A project would be consistent with this voluntary measure if the project would include EV charging stations and/or EV-ready infrastructure.	Consistent. Future development within the plan area would comply with electrical vehicle charging requirements of the CalGreen Code.
Measure 7-L2: Electrify Construction Equipment	Participating jurisdictions would adopt an ordinance that reduces gasoline-powered landscaping equipment use and/or reduces the number and operating time of such equipment. New development would be required to provide adequate amount and location of electrical outlets to allow use of electrical landscaping equipment. New development would also be also required to prepare landscaping plans that commit to any jurisdictional targets for use of alternatively fueled or electric landscape equipment goals.	Consistent. Future development within the plan area would comply with adopted requirements for electrified landscaping equipment.
Measure 7-L3: Reduce Fossil Fuel Use in Equipment through Efficiency or Fuel Switching	Each participating jurisdiction has identified a goal for construction equipment use of alternative fuels or electricity in place of	Not applicable. There is no adopted local regulation requiring use of

Table 3.4-7 (cont.): Proposed Plan Compliance with Healdsburg-Selected GHG Measures

Measure	Measure Descriptions/Implementation Information	Project Compliance
	diesel and gasoline. Projects would be consistent with this measure if the project complies with adopted requirements for use of alternatively fueled equipment (including electrical equipment) during project construction.	alternative fueled equipment during project construction.
Measure 8-L1: Idling Ordinance	Participating jurisdictions will adopt new ordinances that limit idling for commercial vehicles to no more than 3 minutes.	Consistent. Commercial vehicles accessing the project site during construction and operations would be subject to adopted requirements for idling limits.
Measure 11-L1: Senate Bill SB X7-7-Water Conservation Act of 2009	This statute requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20 percent reduction in urban per-capita use (compared to nominal 2005 levels) by December 31, 2020 (referred to as the "20X2020 goal"). Each urban water retailer in the county subject to the law has established a 2020 per-capita urban water use target (in terms of gallons per capita per day) to meet this goal. Specific per-capita water use reduction goals vary by water agency.	Consistent. Future development within the plan area would be required to comply with all local or regionally adopted water conservations to implement the requirements of SB X7-7.
Measure 12-L1: Greywater Use	The purpose of this measure is to incentivize the use of greywater instead of potable water for residential non-potable uses.	Not applicable. This is a regional measure that is not applicable to individual development projects.
Measure 14-L1: Green Energy for Water Production and Wastewater Processing in Healdsburg and Cloverdale	This measure commits Healdsburg to the use of 100 percent renewable energy for a certain percentage of its water production and/or conveyance.	Not applicable. This is a regional measure that is not applicable to individual development projects.
Source of measures, measure descriptions, and implementation information: RCPA, 2016.		

As noted in Table 3.4-7, the project would be consistent with the measures adopted by the City of Healdsburg in the Sonoma County Regional Climate Action Plan. Future development within the plan area would be required to comply with the California Green Building Standards Code, including requirements to increase recycling, reduce waste, reduce water use, increase bicycle use, and other

measures that will reduce GHG emissions. Motor vehicle emissions associated with future development projects would be reduced through compliance with mandatory state regulations on fuel efficiency and fuel carbon content. Emissions related to project electricity consumption would be reduced as the electric utility, Healdsburg Electric Utility and PG&E, is required to comply with the Renewable Portfolio Standard, which requires utilities to increase its mix of renewable energy sources to 33 percent by 2020.

Summary

In summary, although the proposed plan would not conflict with the GHG reduction measures included in the Regional Climate Action Plan, the Climate Action Plan would not be considered a qualified GHG reduction plan for the purposes of CEQA. Therefore, since the Climate Action Plan was adopted to meet the goals of AB 32, the proposed plan is also evaluated for consistency with the State plans to determine whether it would conflict with any other applicable plan, policy, or regulation adopted by the City for the purpose of reducing GHG emissions. As discussed in Impact GHG-1, GHG emissions would exceed the BAAQMD CEQA Guidelines recommended thresholds of significance. As a result, the proposed plan could conflict with applicable plan, policy or regulation adopted by the City to reduce the emissions of GHGs. The impact would be potentially significant. However, the GHG emissions during operation would not exceed BAAQMD's threshold of significance with implementation of MM GHG-1 (see Table 3.4-6). The impact would be less than significant with mitigation incorporated.

Level of Significance

Potentially significant

Mitigation Measures

Implement MM GHG-1

Level of Significance After Mitigation

Less than significant with mitigation

Energy Use

Impact GHG-3:	**Implementation of the proposed plan would not encourage activities that result in the use of large amounts of energy or use of energy in a wasteful manner.**

Impact Analysis

A significant impact would occur if the proposed plan would result in the inefficient, wasteful, or unnecessary use of energy.

Construction

During construction, the proposed plan would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site clearing, grading, paving, and building construction. The types of equipment could include gasoline- and diesel-powered construction and transportation equipment, including trucks, bulldozers, frontend

loaders, forklifts, and cranes. Other equipment could include construction lighting, field services (office trailers), and electrically driven equipment such as pumps and other tools. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California regulations (CCR Title 13, Sections 2449(d)(3) and 2485) limit idling from both on-road and off-road diesel-powered equipment and are enforced by the ARB. Also, given the high cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction. Therefore, it is anticipated that the construction phase of the proposed plan would not result in wasteful, inefficient, and unnecessary consumption of energy. Construction-related energy impacts would be less than significant.

Operation

The operational phase of the proposed plan would consume energy for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, electronics, and commercial equipment. Operational energy would also be consumed during vehicle trips associated with the land uses contemplated under the proposed plan. Fuel consumption would be primarily related to vehicle use by residents, visitors, and employees associated with the operation of a land use.

Energy consumption associated with development pursuant to the proposed plan was estimated using CalEEMod defaults (see Appendix B). The energy consumption estimates do not take into account the likely reductions in consumption attributed to regulatory measures such as required energy performance standards for Title 24, the California Building Standards Code, and other energy efficiency measures required by the City of Healdsburg discussed below. The estimated building electricity and natural gas consumption associated with development pursuant to the proposed plan would be 1,261,150 kWh and 87,200 therms per year, respectively.

However, regulatory measures would help to reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. In addition, the policies set forth in the Healdsburg 2030 General Plan, such as Implementation Measure NR-14, would have an effect on energy conservation in the development of new structures and communities within the plan area.

The proposed plan requires outdoor lighting to be thoughtfully designed and compatible with the rural context of the surroundings. The lighting scheme internal to the plan area would be required to follow International Dark-Sky Association standards given the proximity to the rural surroundings of Healdsburg. Street lighting would be limited to the minimum necessary for public safety and security of residents, visitors, and employees in order to maintain a rural character.

The proposed plan requires internal bicycle circulation to be incorporated along roadways where motor vehicles and bicyclists share roadway space. Short-term bicycle parking would be required at bicycle parking facilities located conveniently at building entries and gathering places. Longer-term, secure parking facilities would be provided as well. Internal pedestrian circulation would be provided on sidewalks that parallel streets and/or on a pathway network that connects building clusters and open spaces. In addition, a perimeter pathway would connect buildings, parking, open spaces, and plazas in a loop around the plan area.

Therefore, the proposed plan would not result in an inefficient, wasteful, or unnecessary use of energy. Operational energy impacts would be less than significant.

Level of Significance

Less than significant

3.4.5 - Cumulative Impacts

GHG Emissions

As discussed more fully above, GHG emissions-related impacts are inherently cumulative in nature. Similar to regulated air pollutants, GHG emissions and global climate change also represent cumulative impacts. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. BAAQMD's approach to developing a *Threshold of significance* for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move us towards climate stabilization. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact and would be considered significant.[68]

Based on estimated annual operational emissions plus amortized construction emissions, the proposed plan GHG emissions would exceed the per capita annual GHG emissions threshold of 4.6 MT CO_2e/SP/yr established by BAAQMD. As such, the proposed plan, in conjunction with other existing, planned, and probable foreseeable projects, would represent a potentially significant cumulative impact related to GHG emissions generation. However, the proposed plan would be required to implement MM GHG-1, demonstrating that the proposed plan development would achieve additional GHG emission reductions through a combination of measures. Therefore, the proposed plan would result in a less than significant with mitigation cumulative impact related to GHG emissions generation.

Energy

The geographic scope of the cumulative energy analysis is the Healdsburg Electric Utility and PG&E service areas. Cumulative projects considered as part of this cumulative analysis include those assumed under buildout of the Healdsburg 2030 General Plan.

Future development of the cumulative projects would be required to comply with Title 24 minimum energy efficiency standards. The cumulative buildings would be designed in accordance with Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings as applicable. These standards include minimum energy efficiency requirements related to building envelope, mechanical systems (e.g., HVAC and water heating systems), and indoor and outdoor lighting. The incorporation of the Title 24 standards into the design of the cumulative projects, including the proposed plan, would ensure that the cumulative projects would not result in the inefficient, unnecessary, or wasteful consumption of energy. Therefore, the proposed plan, in conjunction with

[68] BAAQMD. 2017 CEQA Air Quality Guidelines. Page 2-1. Available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en>. Accessed October 25, 2018.

other existing, planned, and foreseeable future projects, would result in a less than significant cumulative impact related to energy consumption.

Overall

Overall, cumulative GHG emissions generation would be less than significant with mitigation, and cumulative energy use would be less than significant.

Level of Cumulative Significance Before Mitigation

Potentially significant

Cumulative Mitigation Measures

Implement MM GHG-1

Level of Cumulative Significance After Mitigation

Less than significant with mitigation

THIS PAGE INTENTIONALLY LEFT BLANK

Section 3.5 - Noise

3.5.1 - Introduction

This section describes existing conditions related to noise and vibration in the plan area and surrounding area as well as the regulatory framework. This section also evaluates the possible impacts related to noise and vibration that could result from implementation of the proposed plan. Information included in this section is based on the Healdsburg 2030 General Plan, North Entry Area Plan (NEAP) traffic modeling (included in Appendix B), and plan-specific noise modeling results (complete modeling output is provided in Appendix D). No comments were received during the EIR scoping period related to noise.

3.5.2 - Environmental Setting

Characteristics of Noise

Noise is generally defined as unwanted or objectionable sound. Sound becomes unwanted when it interferes with normal activities, or when it causes adverse effects on health. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in the extreme, hearing impairment. Noise effects can be caused by pitch or loudness. Pitch is the number of complete vibrations or cycles per second of a wave that result in the range of tone from high to low; higher-pitched sounds are louder to humans than lower-pitched sounds. Loudness is the intensity or amplitude of sound.

Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Only audible changes in existing ambient or background noise levels are considered potentially significant.

The human ear is not equally sensitive to all frequencies within the audible sound spectrum, so sound pressure level measurements can be weighted to better represent frequency-based sensitivity of average healthy human hearing. One such specific “filtering” of sound is called “A-weighting.” A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear. Because decibels are logarithmic units, they cannot be added or subtracted by ordinary arithmetic means. For example, if one noise source produces a noise level of 70 dB, the addition of another noise source with the same noise level would not produce 140 dB; rather, they would combine to produce a noise level of 73 dB.

Noise Descriptors

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source, as well as ground absorption, atmospheric effects (wind, temperature gradients, and humidity) and refraction, and shielding by natural and human-made features. Sound from point sources, such as an air conditioning condenser, a piece of construction equipment, or an idling truck, radiates uniformly outward as it travels away from the source in a spherical pattern.

The attenuation or sound drop-off rate is dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in noise models: soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA per each doubling of the distance (dBA/DD) is typically observed over soft ground with landscaping, as compared with a 6 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources, such as traffic noise on a roadway, a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3 dBA/DD drop-off rate for hard-site conditions. Table 3.5-1 briefly defines these measurement descriptors and other sound terminology used in this section.

Table 3.5-1: Sound Terminology

Term	Definition
Sound	A vibratory disturbance created by a vibrating object which, when transmitted by pressure waves through a medium such as air, can be detected by a receiving mechanism such as the human ear or a microphone.
Noise	Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
Ambient Noise	The composite of noise from all sources near and far in a given environment.
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which represents the squared ratio of sound-pressure amplitude to a reference sound pressure. The reference pressure is 20 micropascals, representing the threshold of human hearing (0 dB).
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level that approximates the frequency response of the human ear.
Equivalent Noise Level (L_{eq})	The average sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period.
Maximum and Minimum Noise Levels (L_{max} and L_{min})	The maximum or minimum instantaneous sound level measured during a measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Day-Night Level (DNL or L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m. (nighttime).
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.
Source: Data compiled by FCS, 2018	

Traffic Noise

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater number of trucks.

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Because of the logarithmic nature of noise levels, a doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. Based on the Federal Highway Administration (FHWA) community noise assessment criteria, this change is "barely perceptible." For reference, doubling of a perceived noise level would require an increase of approximately 10 dBA. The amount of trucks on a given roadway also has an effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

Stationary Noise

A stationary noise producer is any entity in a fixed location that emits noise. Examples of stationary noise sources include machinery, engines, energy production, and other mechanical or powered equipment, as well as activities such as loading and unloading, or public assembly that may occur at commercial, industrial, manufacturing, or institutional facilities. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the County considers the use of these vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. The emitted noise from the producer can be mitigated to acceptable levels either at the source or on the adjacent property through the use of proper planning, setbacks, block walls, acoustic-rated windows, dense landscaping, or by changing the location of the noise producer.

The effects of stationary noise depend on factors such as characteristics of the equipment and operations, distance, and pathway between the generator and receptor, as well as weather. Stationary noise sources may be regulated at the point of manufacture (e.g., equipment or engines), with limitations on the hours of operation, or with provision of intervening structures, barriers, or topography.

Construction activities are a common source of stationary noise. Construction-period noise levels are higher than background ambient noise levels but eventually cease once construction is complete. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on each construction site, and therefore, would change the noise levels as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 3.5-2 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment.

Table 3.5-2: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Impact Pile Driver	95
Auger Drill Rig	85
Vibratory Pile Driver	95

Table 3.5-2 (cont.): Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Jackhammers	85
Pneumatic Tools	85
Pumps	77
Scrapers	85
Cranes	85
Portable Generators	82
Rollers	85
Dozers	85
Tractors	84
Front-End Loaders	80
Backhoe	80
Excavators	85
Graders	85
Air Compressors	80
Dump Truck	84
Concrete Mixer Truck	85
Pickup Truck	55
Source: FHWA 2006. Highway Construction Noise Handbook, August.	

Noise from Multiple Sources

Because sound pressure levels in decibels are based on a logarithmic scale, they cannot be added or subtracted in the usual arithmetical way. Therefore, sound pressure levels in decibels are logarithmically added on an energy summation basis. In other words, adding a new noise source to an existing noise source, both producing noise at the same level, would not double the noise level. Instead, if the difference between two noise sources is 10 dBA or more, the louder noise source would dominate and the resultant noise level would be equal to the noise level of the louder source. In general, if the difference between two noise sources is 0–1 dBA, the resultant noise level would be 3 dBA higher than the louder noise source, or both sources if they are equal. If the difference between two noise sources is 2–3 dBA, the resultant noise level would be 2 dBA above the louder noise source. If the difference between two noise sources is 4–10 dBA, the resultant noise level would be 1 dBA higher than the louder noise source.

Health Effects of Environmental Noise

The United States Environmental Protection Agency (EPA) all but eliminated its noise investigation and control program in the 1970s, but European nations have continued to study noise and its health effects; therefore, the World Health Organization (WHO) is perhaps one of the best sources of current knowledge regarding health impacts of noise. According to the WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA L_{eq}, or when intermittent interior noise levels reach 45 dBA L_{max}, particularly if background noise is low.[1]

The WHO criteria suggest that when a bedroom window is slightly open (a 15-dB reduction from outside to inside noise levels), exterior continuous (ambient) nighttime noise levels in residential areas should be 45 dBA L_{eq} or below, particularly in areas with older housing stock, and that short-term events should not generate noise exceeding 60 dBA.[2,3,4] An acoustically well-insulated building with windows and doors closed can provide 30–35 dB of noise attenuation. More conventional residential construction provides 20–25 dB of noise reduction with windows closed and only about 15 dB of noise reduction when windows are open.

Other potential health effects of noise identified by the WHO include decreased performance on complex cognitive tasks, such as reading, attention, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often by workers, to high noise levels); and hearing impairment (again, generally after long-term occupational exposure, although shorter-term exposure to very high noise levels, such as concert noise at 100 dBA several times a year, can also cause hearing impairment).

Noise can also disrupt speech intelligibility at relatively low levels. For example, in a classroom setting, a noise level as low as 35 dBA can disrupt clear understanding. Finally, noise can cause annoyance and can trigger emotional reactions like anger, depression, and anxiety. The WHO reports that during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA, or moderately annoyed by noise levels below 50 dBA.[5]

Characteristics of Vibration

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of groundborne vibrations typically only cause a nuisance to people, but in extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is

[1] World Health Organization (WHO). 1999. Guidelines for Community Noise. Geneva, Switzerland. Website: http://www.who.int/docstore/peh/noise/guidelines2.html.
[2] Harris, D. A. 1997. Noise Control Manual for Residential Buildings. New York: McGraw Hill Professional.
[3] Wyle Laboratories. 1994 (September 30). Durham International Airport New Construction Acoustical Design Guide. Wyle Research Report WR 94-23. Arlington, VA. Prepared for Raleigh-Durham Airport Authority, RDU Airport, NC.
[4] California Governor's Office of Planning and Research (OPR). 2003. State of California General Plan Guidelines. 2003 edition. Sacramento, CA.
[5] World Health Organization (WHO). 1999. Guidelines for Community Noise. Geneva, Switzerland. Website: http://www.who.int/docstore/peh/noise/guidelines2.html.

produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (RMS) amplitude of the vibration velocity. Because of the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels—denoted as LV—and is based on the reference quantity of 1 micro inch per second. To distinguish vibration levels from noise levels, the unit is written as "VdB."

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing annoyance from groundborne vibration, vibration is typically expressed as RMS velocity in units of decibels of 1 micro-inch per second, with the unit written in VdB. Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. Human perception to vibration starts at levels as low as 67 VdB. Annoyance due to vibration in residential settings starts at approximately 70 VdB.

Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible groundborne noise or vibration. Construction activities, such as blasting, pile driving and operating heavy earthmoving equipment, are common sources of groundborne vibration. Construction vibration impacts on building structures are generally assessed in terms of PPV. Typical vibration source levels from construction equipment are shown in Table 3.5-3.

Table 3.5-3: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer—small	0.003	58
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82

Table 3.5-3 (cont.): Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer—Large	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (large)	0.210	94
Pile Driver (impact-typical)	0.644	104
Pile Driver (impact-upper range)	1.518	112

Note:
Source: Compilation of scientific and academic literature, generated by FTA and FHWA.

The propagation of groundborne vibration is not as simple to model as airborne noise. This is because noise in the air travels through a relatively uniform medium, while groundborne vibrations travel through the earth, which may contain significant geological differences. Factors that influence groundborne vibration include:

- Vibration source;
- Type of activity or equipment, such as impact or mobile, and depth of vibration source;
- Vibration path: Soil type, rock layers, soil layering, depth to water table, and frost depth; and
- Vibration receiver: Foundation type, building construction, and acoustical absorption.

Among these factors that influence groundborne vibration, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Vibration propagation is more efficient in stiff clay soils than in loose sandy soils. Shallow rock seems to concentrate the vibration energy close to the surface and can result in groundborne vibration problems at large distance from the source. Factors such as layering of the soil and depth to the water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils. There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-

pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests. The vibration level (PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to the receptor
n = vibration attenuation rate through ground

According to Chapter 12 of the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment manual[6], an "n" value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.

Existing Ambient Noise Levels

To understand the current ambient noise environment in the vicinity of the plan area, noise measurements were taken at the plan area and in the general surrounding vicinity. These measurements provide a baseline for any potential noise impacts that may be created by development of the proposed plan. A total of one long-term and three short-term noise measurements were taken. The results of these measurements are described below, and the noise survey sheets are provided in Appendix D of this EIR.

Short-Term Noise Measurements

Short-term noise monitoring was conducted on May 8, 2018, between 12:15 p.m. and 1:39 p.m. The noise measurements were taken during the midday hours as the midday hours typically have the highest daytime noise levels in urban environments. At the start of the noise monitoring, the sky was clear with minimal wind conditions ranging between 4 and 7 miles per hour (mph). The field survey noted that noise within the area surrounding the plan area is generally characterized by local roadway traffic, birds, and pedestrians. The short-term measurement results are summarized in Table 3.5-4. The noise measurement locations are shown in Exhibit 3.5-1.

[6] Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment. May.

Table 3.5-4: Existing Ambient Noise Levels At and Adjacent to the Plan Area

Site ID #	Description	L_{eq}	L_{min}	L_{max}
ST-1	South of the plan area, in between the single-family residential homes that are located on the northern side of the roadway junction connecting Spur Ridge Lane to Spur Ridge Court.	46.7	37.5	63.4
ST-2	Southwestern corner of the plan area, approximately 300-feet east of U.S. 101.	48.3	42.4	60.1
ST-3	Northwestern corner of the plan area, approximately 240-feet east of U.S. 101.	55.7	44.1	64.8

Note:
The Site ID corresponds to locations shown in Exhibit 3.5-1.
Source: FirstCarbon Solutions, 2018.

Long-Term Noise Measurement

A long-term ambient noise measurement was conducted from 2:01 p.m. on Tuesday, May 8, 2018, to 10:09 a.m. on Thursday, May 10, 2018. The long-term measurement was taken on the plan area's southern boundary, approximately 300 feet west of Healdsburg Avenue. The long-term noise measurement location is shown in Exhibit 3.5-1 and the long-term noise measurement data is provided in Appendix D. The results show that weekday 24-hour average day/night noise levels at this location ranged up to 58 dBA L_{dn}. The documented daytime hourly average noise level was 54.5 L_{eq} with a nighttime hourly average noise level of 50.8 L_{eq}. When the long-term noise measurement was started, the sky was clear, the temperature ranged up to 87 degrees Fahrenheit (°F), with average wind speeds of 2 miles per hour.

Existing Traffic Noise Levels

Existing traffic noise levels along selected roadway segments in the vicinity of the plan area were modeled using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that the traffic is made up of throughout the day, amongst other variables. The modeled average daily traffic (ADT) volumes were obtained by multiplying the PM peak-hour intersection traffic volumes from the plan-specific traffic study by a factor of ten. The model inputs and outputs, including the 60 dBA, 65 dBA, and 70 dBA L_{dn} traffic noise contour distances, are provided in Appendix D. A summary of the modeling results is shown in Table 3.5-5.

Table 3.5-5: Existing Traffic Noise Levels At and Adjacent to the Plan Area

Roadway Segment	ADT	Center-line to 70 L_{dn} (feet)	Center-line to 65 L_{dn} (feet)	Center-line to 60 L_{dn} (feet)	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane
Healdsburg Avenue—Passalacqua Road to Parkland Farms Boulevard	5,900	< 50	< 50	87	62.3

Table 3.5-5 (cont.): Existing Traffic Noise Levels At and Adjacent to the Plan Area

Roadway Segment	ADT	Center-line to 70 L_{dn} (feet)	Center-line to 65 L_{dn} (feet)	Center-line to 60 L_{dn} (feet)	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane
Healdsburg Avenue—Parkland Farms Boulevard to Grove Street	7,900	< 50	< 50	88	61.2
Healdsburg Avenue—south of Grove Street	7,000	< 50	< 50	81	60.7
Grove Street—north of Dry Creek Road	4,400	< 50	< 50	58	59.6
U.S. 101—south of Lytton Springs Road	34,000	137	291	624	74.3

Note:
ADT = Average Daily Traffic
Source: FirstCarbon Solutions, 2018.

The modeling results indicate that existing traffic noise levels range up to approximately 62.3 dBA L_{dn} along Healdsburg Avenue between Passalacqua Road and Parkland Farms Boulevard, which runs north-south through the plan area. Traffic noise levels from U.S. 101 west of the site range up to 74.3 dBA L_{dn} at the plan area's western boundary.

Noise-Sensitive Land Uses

Noise-sensitive land uses generally consist of those uses where exposure to noise would result in adverse effects, as well as uses for which quiet is an essential element of their intended purpose. Residential dwellings are of primary concern, because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, hotels, churches, libraries, and other uses where low noise levels are essential.

Noise sensitive land uses in the plan area vicinity include single-family residential land uses south and southeast of the plan area.

Existing Groundborne Vibration Levels

Currently, the railroad line traversing the plan area is inactive. Thus, no groundborne vibration occurs within the plan area.

3.5.3 - Regulatory Framework

Federal

Noise Control Act

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting State and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees.

Among the agencies now regulating noise are the Occupational Safety and Health Administration (OSHA), which limits noise exposure of workers to 90 dB L_{eq} or less for 8 continuous hours or 105 dB L_{eq} or less for 1 continuous hour; the Department of Transportation, which assumed a significant role in noise control through its various operating agencies; and the Federal Aviation Administration (FAA), which regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the FTA. Transit noise is regulated by the federal Urban Mass Transit Administration, while freeways that are part of the interstate highway system are regulated by the FHWA. Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway, or alternatively, that developments are planned and constructed in such a manner that minimize potential noise impacts.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by transportation sources, local jurisdictions are limited to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

Federal Transit Administration Standards and Guidelines

The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment document (FTA 2006). The FTA guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 3.5-6.

Table 3.5-6: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced-Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non-Engineered Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90
Source: Federal Transit Administration 2006. Transit Noise and Vibration Impact Assessment.		

The FTA has also identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. The thresholds for residences and buildings where people normally sleep (e.g. nearby residences) are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 80 VdB for infrequent events (less than 30 vibration events of the same source per day). Table 3.5-7 summarizes the groundborne vibration impact criteria, as provided in the Transit Noise and Vibration Impact Assessment.

Source: bing Aerial Imagery.

FIRSTCARBON SOLUTIONS™

1,000 500 0 1,000 Feet

Exhibit 3.5-1
Noise Measurement Locations

THIS PAGE INTENTIONALLY LEFT BLANK

Table 3.5-7: Federal Transit Administration Vibration Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1			
Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2			
Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3			
Institutional land used with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes:
1 "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2 "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3 "Infrequent Events" is defined as fewer than 30 events of the same kind per day. This category includes most commuter rail branch lines.
4 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.
Source: Federal Transit Administration 2006. Transit Noise and Vibration Impact Assessment.

State

California General Plan Guidelines

Established in 1973, the California Department of Health Services Office of Noise Control was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to delineate compatibility of sensitive uses with various incremental levels of noise.[7]

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise/land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. The proposed plan is also subject to review under the State of California Environmental Quality Act (CEQA). Appendix G of the CEQA Guidelines provides impact thresholds for potential noise and vibration impacts. The City of Healdsburg had developed its own CEQA thresholds, which are listed in the Thresholds of Significance section below.

7 California Department of Health, Office of Noise Control, "Land Use Compatibility for Community Noise Environments Matrix," 1976.

California Building Standards Code

The State of California has established noise insulation standards for new hotels, motels, apartment houses, and dwellings (other than single-family detached housing). These requirements are provided in the 2016 California Building Standards Code (CBC) (California Code of Regulations, Title 24).[8] As provided in the CBC, the noise insulation standards set forth an interior standard of 45 dBA CNEL as measured from within the structure's interior. When such structures are located within a 65-dBA CNEL (or greater) exterior noise contour associated with a traffic noise along a roadway, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL threshold.

Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local

City of Healdsburg 2030 General Plan

The City of Healdsburg adopted the Healdsburg 2030 General Plan in July of 2009.[9] The objective of the Healdsburg 2030 General Plan Safety element, in regard to noise, is to protect residents and other sensitive noise receptors within the City of Healdsburg from the harmful effects of excessive noise. To assist with meeting this objective, the Healdsburg 2030 General Plan Safety element establishes a standard for Land Use Compatibility for Community Noise Environments and mandatory noise-reduction measures for construction activities occurring near noise-sensitive receptors. These standards are summarized below.

The City of Healdsburg has established Land Use Compatibility for Community Noise Environments guidelines in Figure 10 of the Healdsburg 2030 General Plan (this figure is shown as Table 3.5-8 in this document). The land use categories listed in Table 3.5-8 that most closely apply to the proposed plan are Residential—Multi-family; Transient lodging—Motel, hotel; School, library, church, hospital, nursing home; and Commercial—retail, office, service.

For example, the land use category that would apply to the proposed family apartment community is Residential—Multi-family. Under this designation, noise environments with ambient noise levels up to 65 dBA L_{dn} are considered "Normally Acceptable" for new land use developments. While noise environments with ambient noise levels ranging from 60 dBA to 70 dBA L_{dn} are considered "Conditionally Acceptable" for this type of land use development; under this circumstance, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features are included in the design. However, noise environments with ambient noise levels ranging from 70-75 dBA L_{dn} are considered "Normally Unacceptable" for this type of land use development.

The City's land use compatibility table also establishes acceptable interior noise levels for new residential developments. According to this table, interior noise levels of up to 45 dBA L_{dn} are considered normally acceptable for the interior spaces of proposed residential dwellings.

[8] California Building Standards Commission. (July, 2017). California Building Standards Code (California Code of Regulations, Title 24).
[9] City of Healdsburg. (July, 2009). Healdsburg 2030 General Plan. Chapter 8: Safety.

In addition to standards for land use compatibility, the Healdsburg 2030 General Plan establishes a mandatory "implementation measure" for any construction activities that would result in potentially significant impacts to noise-sensitive receptors. This implementation measure requires that construction contractors comply with the noise-reduction practices established by Policy S-25 (see below) to ensure that potentially significant impacts are mitigated.

The following policies and implementation measures from the Healdsburg 2030 General Plan are applicable to the proposed plan:

Policies

- **S-G-1:** New development shall not be approved unless it is generally consistent with the Land Use Compatibility for Community Noise Environments guidelines contained in Figure 10 (Table 3.5-8) of the Healdsburg 2030 General Plan and it is demonstrated that the new development will not violate the City's ordinance regulating excessive noise.
- **S-G-2:** The City will require the inclusion of design techniques in new construction that minimize noise impacts, including building location and orientation, building design features, and placement of noise-tolerant components (i.e., parking, utility areas, and maintenance facilities) between noise sources and the sensitive receptor areas where necessary to meet the Land Use Compatibility for Community Noise Environments guidelines contained in Figure 10 (Table 3.5-8) of the Healdsburg 2030 General Plan.
- **S-G-4:** The City will promote compliance with State and federal noise regulations.
- **S-G-5:** The City will work to minimize noise impacts related to passenger or freight rail service.

Implementation Measures

- **S-16:** Require a noise study, including field noise measurements, for any proposed project that would place a potentially-intrusive noise source near an existing noise-sensitive use or place a noise-sensitive land use near an existing or potentially-intrusive noise source such as a freeway, arterial street or railroad, using the projected future noise contours in the Healdsburg 2030 General Plan as a guide.
- **S-19:** Work with entities providing passenger or freight rail service to utilize equipment and operate in a manner that minimizes noise impacts to the community to the maximum feasible extent. Seek the installation of supplementary safety measures at highway-rail grade crossings in order to apply for Quiet Zones in the city.
- **S-20:** Where necessary, require the provision of sound-proofing and other similar noise-attenuating measures in residential development when proximate to noise sources.
- **S-21:** Require that prospective purchasers and tenants of residential units proximate to non-residential uses are advised of potential noise and other elements typically associated with such uses.
- **S-23:** Use the Federal Transit Administration vibration impact criteria to evaluate the land use compatibility of sensitive uses proposed along the railroad using the best available information (without active railroad operations) or site-specific analyses (with active railroad operations). Developers of sensitive uses shall demonstrate that potential impacts of existing or potential vibration have been minimized to the maximum feasible extent.
- **S-25:** Where construction occurs that would result in a potentially-significant impact on noise-sensitive uses, require use of noise-reducing measures that may include the following:

a. Equip internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and are appropriate for the equipment.
b. Locate stationary noise-generating equipment as far as possible from sensitive receptors in the vicinity.
c. Utilize "quiet" air compressors and other stationary noise sources where technology exists.
d. Erect temporary noise control blanket barriers in a manner to shield noise-sensitive uses.
e. Control noise levels from workers' amplified music so that sounds are not audible sensitive receptors in the vicinity.
f. Designate a "disturbance coordinator" responsible for responding to complaints about project construction noise and taking reasonable measures to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in any notice sent to neighbors regarding the construction schedule.

Table 3.5-8: Healdsburg 2030 General Plan Noise and Land Use Compatibility

Land Use Category	Community Noise Exposure (dBA, L_{dn})			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential—Single-family, duplex, mobile home	≤60[5]	55–70	70–75	75+
Residential—Multi-family	≤65[6]	60–70	70–75	75+
Residential—Interior	≤45	—	—	—
Transient lodging—Motel, hotel	<65	60–70	70–80	80+
School, library, church, hospital, nursing home	<70	60–70	70–80	80+
Auditorium	—	<70	65+	—
Sports arena, outdoor spectator sports	—	<75	70+	—
Playground, neighborhood park	<70	—	67.5–75	72.5+
Golf course, cemetery	<75	—	70–80	80+
Commercial—retail, office, service	<70	67.5–77.5	75+	—
Industrial, utility, agriculture	<75	70–80	75+	—

Notes:
[1] Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
[2] New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and after needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh-air supply systems or air conditioning, will normally suffice.
[3] New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.
[4] New construction or development should generally not be undertaken.
[5] Outdoor private use areas
[6] Outdoor active use areas, excluding balconies
Source: City of Healdsburg. Healdsburg 2030 General Plan, Figure 10.

City of Healdsburg Municipal Code

The objective of the City of Healdsburg's noise ordinance is to protect residents and other sensitive noise receptors from the harmful effects of exposure to excessive noise and to ensure noise exposure compatibility between neighboring land uses. To meet this objective, the City has established noise performance standards for community noise sources and construction activities in Healdsburg Municipal Code (HMC) Chapter 9.32.[10] Applicable provisions from this ordinance are summarized below:

Construction and temporary activities (Section 9.32.070)

According to the HMC, noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys are permitted, shall be exempted from the provisions of this chapter provided such activities do not take place between the nighttime hours of 6:00 p.m. and 7:30 a.m. daily, or at any time on Sunday or a legal holiday, and provided the noise level created by such activities and any vibration created does not endanger the public health, welfare and safety.

Furthermore, nothing in this section shall be construed to prohibit construction activities that do not exceed the ambient noise level by more than 10 dBA, such as painting or interior work.

Standards for maximum sound levels and determining violations (Section 9.32.080)

Pursuant to HMC Chapter 9.32, intruding noise levels shall not be permitted to exceed established daytime exterior and nighttime exterior sound levels. Table 3.5-9 lists receptor land uses and corresponding sound level limits.

Table 3.5-9: City of Healdsburg Sound Level Standards

Receptor Land Use	Daytime Exterior Sound Level (dBA L_{10})	Nighttime Exterior Sound Level (dBA L_{10})
Residential zoned properties not located adjacent to Industrial zoned properties and Office zoned properties	60	55
Residential zoned properties located adjacent to Industrial zoned properties	65	55
Commercial zoned properties	65	60
Industrial zoned properties	75	70

Notes:
dBA = A-weighted decibel; L_{10} = the sound pressure level that is exceeded for 10 percent of the time for which the given sound is measured.
Source: City of Healdsburg. HMC Section 9.32.080, Standards of maximum sound levels and determining violations.

According to HMC Section 9.32.080, intruding noise levels are considered to violate City goals and policies by an evaluation of the following:

[10] City of Healdsburg. Healdsburg Municipal Code. Website: http://www.codepublishing.com/CA/Healdsburg/#!/Healdsburg09/Healdsburg0932.html.

A. Sound Level Standards. To determine if a violation exists, it is the objective of the City to require intruding noise levels not to exceed those listed in Table 3.5-9.
B. Daytime shall be considered 7:00 a.m. to 8:00 p.m., and nighttime shall be considered to be 8:00 p.m. to 7:00 a.m.
C. Where a land use activity is carried out over two of the above receptor land uses, the least restrictive sound level standard shall apply.
D. Properties that are zoned residential master plan (RMP) or planned development (PD) shall be subject to the sound level standards under this section based upon the corresponding general plan land use designation of residential, office, commercial, or industrial.
E. Mobile equipment used for ongoing land use activities shall be equipped with radar-activated backup alarms to the extent allowed under applicable State and federal regulations.
F. The following criteria, at a minimum, shall be applied in addition to the quantitative sound level measurements and standards during an enforcement procedure as set forth in HMC Section 9.32.100, to assist in a determination of the nature and severity of a potential violation:
    1. The intensity of the noise;
    2. Whether the origin of the noise is natural or unnatural;
    3. The level and intensity of the background noise;
    4. The proximity of the noise source to receptors;
    5. The time of the day or night the noise occurs;
    6. The duration of the noise;
    7. Whether the noise is recurrent, intermittent, or constant;
    8. Whether the noise is produced by a commercial or noncommercial activity; and
    9. Whether the noise is produced by equipment normally required for maintenance of residential properties or for authorized construction projects.

3.5.4 - Impacts and Mitigation Measures

Specific Thresholds of Significance

The City of Healdsburg CEQA Implementation Procedures establishes that a significant impact related to noise would occur if the proposed plan:

- Results in a substantial temporary, periodic, or permanent increase in ambient noise levels in the plan vicinity that would conflict with the Healdsburg 2030 General Plan Land Use Compatibility for Community Noise Environments guidelines of the City of Healdsburg Noise Ordinance or applicable standards of other agencies.
- Exposes people to, or generate excessive groundborne vibration or groundborne noise.
- Results in a substantial temporary periodic or permanent increase in ambient noise levels in the plan vicinity above levels existing without the plan.
- Exposes people residing or working in the vicinity of the plan area to excessive airport-related noise.

As discussed in the Initial Study for the proposed plan, the plan area is located outside of the 55-dBA CNEL noise contours for the Healdsburg Municipal Airport and is not located within 2 miles of a private airstrip, precluding the possibility of exposing persons within the plan area to excessive aviation-related noise (see Appendix A). Therefore, no impact would occur with regard to excessive airport-related noise. The topic will not be further evaluated in this section.

Approach to Analysis

Noise Measurement Methodology

To ascertain the existing noise at and adjacent to the plan area, field monitoring was conducted on Tuesday, May 8, 2018. The purpose of the noise monitoring was to document the existing noise environment and capture the noise levels associated with operations or activities in the plan area. The noise monitoring locations are shown on Exhibit 3.5-1. These locations were selected to provide baseline ambient noise levels for comparison of the plan's contemplated land uses to the City's land use compatibility standards.

The noise measurements were taken using Larson-Davis Model LxT2 Type 2 precision sound level meters programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 150. The accuracy of the calibrator is maintained through a program established through the manufacturer and is traceable to the National Bureau of Standards. All noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4 1983 identified in Chapter 19.68.020.AA).

Traffic Noise Modeling Methodology

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions in the vicinity of the plan area. Traffic data used in the model was obtained from the W-Trans Traffic Impact Study (TIS) prepared for the NEAP (see Appendix B). The resultant noise levels were weighed and summed over a 24-hour period in order to determine the L_{dn} values. The FHWA-RD-77-108 Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level. Adjustments are then made to the reference energy mean emission level to account for the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway); the total average daily traffic (ADT); and the percentage of ADT that flows during the day, evening, and night; the travel speed; the vehicle mix on the roadway; a percentage of the volume of automobiles, medium trucks, and heavy trucks; the roadway grade; the angle of view of the observer exposed to the roadway; and the site conditions ("hard" or "soft") as they relate to the absorption of the ground, pavement, or landscaping. The model does not account for terrain features, such as hills, structures or dense vegetation that could reduce traffic noise levels at certain locations on the plan area.

The model analyzed the noise impacts from the nearby roadways onto the vicinity of the plan area, which consists of the area that has the potential of being impacted from the on-site noise sources as well as the generated traffic from land uses contemplated under the NEAP on the nearby roadways. The roadways were analyzed based on a single-lane-equivalent noise source combining both directions of travel. A single-lane-equivalent noise source exists when the vehicular traffic from all lanes is combined into a theoretical single lane that has a width equal to the distance between the

two outside lanes of a roadway, which provides almost identical results to analyzing each lane separately where elevation changes are minimal.

Vibration Methodology

The City of Healdsburg has not adopted criteria for construction groundborne vibration impacts. Therefore, the FTA's vibration impact criteria are utilized to evaluate potential vibration impacts resulting from construction activities. The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment document (FTA 2006) and are summarized in Table 3.5-6 in the regulatory discussion above.

In addition to the FTA vibration impact criteria, the City of Healdsburg has adopted the U.S. Department of Transportation, FTA vibration impact assessment criteria for use in evaluating vibration impacts associated with development projects adjacent to rail lines. The FTA vibration impact criteria, summarized in Table 3.5-7 in the federal regulatory discussion above, are based on maximum overall levels for a single event. The FTA's vibration impact criterion is 72 VdB for frequent events (more than 70 events of the same source per day) as measured at sensitive residential type land uses. Assuming future conditions potentially to involve maximum daily train pass-bys, the train activity adjacent to the plan area would be considered frequent events.

Impact Evaluation

Noise Levels in Excess of Standards

Impact NOI-1:	**The proposed plan could result in a substantial temporary, periodic or permanent increase in ambient noise levels in the plan vicinity that would conflict with the Healdsburg 2030 General Plan's Land Use Compatibility for Community Noise Environments guidelines of the City of Healdsburg Noise Ordinance or applicable standards of other agencies.**

Impact Analysis

Construction

A significant impact would occur if proposed plan-related, noise-producing construction activities would occur during hours other than those established as permissible by the HMC. According to the HMC, noise-producing construction activities are permitted between the hours of 7:30 a.m. and 6:00 p.m. Monday through Saturday and shall not take place at any time on a Sunday or a legal holiday.

Noise impacts from construction activities associated with the proposed plan would be a function of the noise generated by construction equipment, equipment location, sensitivity, of nearby land uses, and the timing and duration of the construction activities.

Two types of short-term noise impacts would occur during site preparation and proposed plan construction. The first type would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the plan area. The transport of workers and construction equipment and materials to the plan area would incrementally increase noise levels on access roads leading to the plan area. Because workers and construction equipment would use existing routes, noise from passing trucks would be similar to existing vehicle-generated

noise on these local roadways. For this reason, short-term intermittent noise from trucks would be minor when averaged over a longer time-period and would not be expected to exceed existing peak noise levels in the vicinity of the plan area. Therefore, short-term construction-related noise impacts associated with worker and equipment transport to the plan area would be less than significant.

The second type of short-term noise impact is related to noise generated during site-preparation, grading, and construction activities. Construction is performed in discrete steps, each of which has its own mix of equipment, and consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on-site in the plan area. Thus, noise levels vary as construction progresses. Despite the variety in the types and sizes of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction noise ranges to be categorized by work phase. Table 3.5-2 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment.

The site preparation phase, which includes excavation and grading activities, generates the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery and compacting equipment, such as bulldozers, draglines, backhoes, front loaders, roller compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings. Operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings.

The proposed plan is expected to require the use of scrapers, bulldozers, water trucks, haul trucks, and pickup trucks. Based on the information provided in Table 3.5-2 above, the maximum noise level generated by each scraper is assumed to be 85 dBA L_{max} at 50 feet from this equipment. Each bulldozer would generate 85 dBA L_{max} at 50 feet. The maximum noise level generated by graders is approximately 85 dBA L_{max} at 50 feet. Each doubling of sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, a reasonable worst-case combined noise level during this phase of construction would be 90 dBA L_{max} at a distance of 50 feet from the acoustic center of a construction area. This would result in a reasonable worst-case hourly average of 86 dBA L_{eq}. The acoustical center reference is used, because construction equipment must operate at some distance from one another on a project site, and the combined noise level as measured at a point equidistant from the sources (acoustic center) would be the worst-case maximum noise level.

The closest off-site noise-sensitive receptors to the plan area belong to a residential community located east of Healdsburg Avenue on Spur Ridge Court. This closest off-site receptor is located approximately 600 feet from the plan area's southern boundary, so a minimum of 650 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would operate simultaneously in the plan area. At this distance, construction noise levels could range up to approximately 67 dBA L_{max}, intermittently, and could have an hourly average of up to 63 dBA L_{eq}, at the façade of the nearest single-family residential home. This represents a potentially significant impact, if these activities would occur during hours other than those established as permissible by the HMC.

However, it is expected that portions of the plan area could be built and occupied while other portions of the plan area are still under construction. These uses would be the closest sensitive receptors to potential construction activities. At the time of this analysis, a site plan indicating location of proposed building footprints is not available. However, it is conservatively assumed that these on-site uses could be located as close as 50 feet from the acoustic center of an ongoing construction activity where multiple pieces of heavy construction equipment would operate simultaneously within the plan area. At this distance, construction noise levels could range up to approximately 90 dBA L_{max}, intermittently, and could have an hourly average of up to 86 dBA L_{eq}. This represents a potentially significant impact, if these activities would occur during hours other than those established as permissible by the HMC.

However, compliance with the permissible construction hours established by the HMC would reduce the effects of noise produced by construction activities on longer-term (hourly or daily) ambient noise levels, and it would reduce potential impacts that could result in annoyance or sleep disturbances at nearby sensitive receptors. The HMC prohibits noise producing construction activities between the hours of 6:00 p.m. and 7:30 a.m. Monday through Saturday, or at any time on a Sunday or a legal holiday. Additionally, Implementation Measure S-25 of the Healdsburg 2030 General Plan establishes mandatory noise reduction measures or potentially significant construction activities. Restricting construction activities to the permissible hours established by the City and implementing the City's mandatory noise reduction measures (both included in Mitigation Measure (MM) NOI-1), would ensure that construction noise levels would not expose persons to noise levels in excess of established standards.

Therefore, with the implementation of MM NOI-1a, potential short-term construction noise impacts resulting from implementation of the proposed plan would be less than significant with mitigation.

Operation

Mobile-Source Operational Noise

A significant impact would occur if persons working, visiting, or residing within the plan area would be exposed to noise levels that would exceed the City's normally acceptable land use compatibility thresholds. The normally acceptable threshold is up to 65 dBA L_{dn} for multi-family residential or transient lodging (motel/hotel) land use developments; while the City's normally acceptable land use compatibility threshold is up to 70 dBA L_{dn} for commercial (retail, office, service) or school, library, church, hospital, nursing home type of land use developments.

Traffic Noise

The existing ambient noise environment was documented through the ambient noise monitoring effort described in the setting section discussion above. The noise measurement data and survey sheets are provided in Appendix D. The noise measurements captured noise sources in within the plan area and surrounding vicinity, including noise levels from traffic sources. The measurement results show that existing ambient noise level weekday 24-hour average day/night noise levels within the plan area ranged up to 58 dBA L_{dn}, as measured near the plan area's southern boundary, approximately 520-feet from the centerline of U.S. 101 and 300-feet from the edge of Healdsburg Avenue. The documented daytime hourly average noise level was 54.5 L_{eq} with a nighttime hourly average noise level of 50.8 L_{eq}.

These noise levels are within the City's "Normally Acceptable" range of below 65 dBA L_{dn} for new multi-family residential and transient lodging (hotel) land use developments.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was also used to evaluate existing and future plan-related traffic noise conditions along modeled roadway segments near the plan area. The projected future traffic noise levels on roadways adjacent to the plan area were analyzed to determine compliance with the City's noise and land use compatibility standards. Traffic modeling was performed using the data obtained from the plan-specific traffic modeling conducted by W-Trans (Appendix B). This traffic modeling provides data for existing (year 2018) and future conditions. The resultant noise levels were weighed and summed over a 24-hour period to determine the L_{dn} values. The traffic noise modeling input and output files—including the 60 dBA, 65 dBA, and 70 dBA L_{dn} noise contour distances—are included in Appendix D. Table 3.5-10 shows a summary of the traffic noise levels for existing and future year conditions, with and without the proposed plan as measured at 50 feet from the centerline of the outermost travel lane.

Table 3.5-10: Traffic Noise Modeling Results Summary

Roadway Segment	Existing (dBA) L_{dn}	Existing + Plus Plan (dBA) L_{dn}	Increase over Existing(dBA)	Future (dBA) L_{dn}	Future + Plan (dBA) L_{dn}	Increase over Future(dBA)
Healdsburg Avenue—Passalacqua Road to Parkland Farms Boulevard	62.3	64.2	1.9	65.4	66.4	1.0
Healdsburg Avenue—Parkland Farms Boulevard to Grove Street	61.2	62.7	1.5	63.6	64.5	0.9
Healdsburg Avenue—south of Grove Street	60.7	61.2	0.5	63.0	63.4	0.4
Grove Street—north of Dry Creek Road	59.6	61.3	1.7	62.4	63.4	1.0
U.S. 101—south of Lytton Springs Road	74.3	74.3	0.0	74.3	74.3	0.0

Notes:
[1] As measured at 50 feet from centerline of the outermost travel lane
[2] Modeling results do not take into account mitigating features such as topography, vegetative screening, fencing, building design, or structure screening. Rather it assumes a worst case of having a direct line of site on flat terrain.
Source: FirstCarbon Solutions, 2018.

The modeling results indicate that Future Plus Plan traffic noise levels range up to approximately 66.4 dBA L_{dn} at 50-feet from the centerline of the outermost travel lane along Healdsburg Avenue adjacent to the plan area. Traffic noise levels from U.S. 101 west of the plan area range up to 74.3 dBA L_{dn} at the plan area's western boundary. These traffic noise levels would attenuate to below 70 dBA L_{dn} at approximately 140 feet from the centerline of U.S. 101; and would attenuate to below 65 dBA L_{dn} at approximately 290 feet from the centerline of U.S. 101.

Therefore, based on the existing ambient noise measurement results and the modeled traffic noise level results, areas of the plan area that are more than 290 feet from the centerline of U.S. 101

would be within the City's "Normally Acceptable" range of below 65 dBA L_{dn} for new multi-family residential and transient lodging (hotel) land use developments. If future development were to occur within the plan area in a location closer than 290 feet from the centerline of U.S. 101, then an additional site-specific noise analysis would need to be performed to ensure the design of the development would meet the City's land use compatibility standards.

At the time of this analysis, a site plan indicating the location of proposed building footprints was not available. Therefore, the proposed plan shall implement a mitigation measure requiring future development to submit a noise analysis conducted by a qualified noise specialist for structures proposed within 290-feet of the centerline of U.S. 101. The City shall require that the recommendations of the analysis are implemented. The study shall recommend improvements, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. For noise environments of up to 65 dBA L_{dn} this can typically be accomplished with incorporation of an adequate forced air mechanical ventilation system to allow occupants the option of controlling noise by keeping the windows closed. For environments with noise levels above 65 dBA L_{dn}, façade upgrades that would provide greater noise reduction may be required. Therefore, with implementation of MM NOI-1b, traffic noise impacts to on-site receptors would be less than significant.

Railroad Noise

Currently, the railroad tracks that traverse the plan area are inactive; however, Sonoma Marin Area Rail Transit (SMART) trains and freight trains would be expected to use this rail line in the future. Implementation Measure S-19 of the Healdsburg 2030 General Plan requires the installation of Quiet Zones at public at-grade railroad crossings, such as at the entry to the plan area. The at-grade crossing at the plan area entry (which will be completed in Fall 2018) has been designed and approved by the California Public Utilities Code (CPUC) and SMART for a quiet zone. Furthermore, the SMART Train EIR, dated March 2008, and the Central Healdsburg Avenue Plan (CHAP) DEIR from 2012 assume the installation of Quiet Zones for at-grade crossings in Healdsburg, which would reduce noise impacts resulting from future passenger and freight trains along the corridor. As stated in the CHAP DEIR, future noise levels along the NCRA corridor, as described in the SMART EIR Revised Cumulative Impacts Section dated March 2008, are estimated to reach 60 dBA L_{dn} at a distance of 50 feet, assuming an average train speed of 25 mph within the City of Healdsburg. These noise levels are within the City's "Normally Acceptable" range of below 65 dBA L_{dn} for new multi-family residential and transient lodging (hotel) land use developments.

However, if future development were to occur within the plan area in a location closer than 50-feet from the centerline of the rail line, then an additional site-specific noise analysis would need to be performed to ensure that the development design would meet the City's land use compatibility standards.

At the time of this analysis, a site plan indicating the location of proposed building footprints is not available. Therefore, railroad noise impacts to on-site receptors would be considered potentially significant. With implementation of MM NOI-1c, the impact would be less than significant.

Stationary-Source Operational Noise

A significant impact would occur if operational noise levels generated by stationary noise sources in the plan area would exceed 60 dBA L_{10} at the property line of any residence between the hours of 7:00 a.m. and 8:00 p.m.; or 55 dBA L_{10} at the property line of any residence between the hours of 7:00 a.m. and 8:00 p.m.

The proposed plan would include new stationary noise sources such as parking lot activities, truck deliveries, and mechanical ventilation system equipment. These would be potential point sources of noise that could affect receptors in the surrounding vicinity of the plan area.

Mechanical Ventilation Equipment Noise

Residential and commercial buildings typically require mechanical equipment, such as air conditioners, exhaust fans, and air handling equipment for ventilation of the buildings. At the time that this analysis was prepared, details regarding the plan's proposed mechanical ventilation systems were not available. As a result, a reference noise level for typical mechanical ventilation systems was used for this analysis. Noise levels from typical residential mechanical ventilation equipment are anticipated to range up to approximately 60 dBA L_{eq} at a distance of 25 feet.

At the time of this analysis, a site plan indicating location of proposed building footprints is not available. Assuming a worst-case scenario, proposed mechanical ventilation equipment could be located near the plan area's southern boundary. The closest off-site noise-sensitive receptors are the residential land uses located east of Healdsburg Avenue on Spur Ridge Court. This closest off-site receptor is located approximately 600 feet from the plan area's southern boundary. At this distance and assuming a worst-case condition in which proposed mechanical ventilation equipment would not have any setback from the plan area's southern boundary, noise levels generated by mechanical ventilation equipment would attenuate to less than 33 dBA L_{eq} at the property line of the nearest residential home. These operational noise levels would not exceed the City's noise performance threshold of 60 dBA L_{10} during the daytime hours or 55 dBA L_{10} during the nighttime hours at any residential property line in the plan area surrounding vicinity. Therefore, the impact of mechanical ventilation equipment operational noise levels to sensitive off-site receptors would be less than significant.

Parking Area Noise

Proposed multi-family residential, senior and assisted living community, and commercial land uses would require parking areas for staff, visitors, and persons residing within the plan area. Typical parking lot activities include people conversing, doors closing, and vehicles idling. These activities generate noise levels of approximately 60 dBA to 70 dBA L_{max} at a distance of 50 feet. Such activities are expected to occur sporadically throughout the day, as persons arrive and leave the parking lot areas.

At the time of this analysis, a site plan indicating location of proposed parking lot areas is not available. Assuming a worst-case scenario, proposed parking areas could be located near the plan area southern boundary. The closest off-site noise-sensitive receptors are the residential land uses located east of Healdsburg Avenue on Spur Ridge Court. This closest off-site receptor is located approximately 600 feet from the plan area southern boundary. At this distance, noise generated by typical parking lot activities would range up to 48 dBA L_{max} at the property line of this nearest

residence. However, because these activities would occur sporadically throughout the day, their effect on longer-term (hourly or daily) noise levels would be small, and the L_{10} average would not exceed 48 dBA L_{10}. Therefore, the resulting operational noise levels would not exceed the City's noise performance threshold of 60 dBA L_{10} during the daytime hours or 55 dBA L_{10} during the nighttime hours at any residential property line in the plan area surrounding vicinity. The impact of noise levels generated by parking lot activities associated with land uses contemplated under the NEAP would be less than significant to off-site receptors in the plan area surrounding vicinity.

Truck Loading and Unloading Noise

Truck deliveries to the proposed commercial buildings within the plan area would generate noise. Based on the expected size of the commercial uses, the use of medium-sized trucks would be expected at these locations. Medium trucks would generate maximum noise levels ranging from 65 to 70 dBA L_{max} at a distance of 50 feet, with backup alarms potentially reaching levels of up to 75 dBA L_{max}.

At the time of this analysis, a site plan indicating location of proposed building footprints is not available. Assuming a worst-case scenario, proposed truck loading and unloading areas could be located near the plan area's southern boundary. The closest off-site noise-sensitive receptors are the residential land uses located east of Healdsburg Avenue on Spur Ridge Court. This closest off-site receptor is located approximately 600 feet from the plan area's southern boundary. At this distance, truck loading and unloading activities would range up to 52 dBA L_{max} at the property line of this nearest residence. Therefore, these operational noise levels would not exceed the City's noise performance threshold of 60 dBA L_{10} during the daytime hours or 55 dBA L_{10} during the nighttime hours at any residential property line in the plan area surrounding vicinity. The impact of noise levels generated by truck deliveries associated with land uses contemplated under the NEAP would be less than significant to off-site receptors in the plan area surrounding vicinity.

Therefore, operational noise levels associated with new plan-related stationary noise sources resulting from implementation of the proposed plan would have a less than significant impact to noise-sensitive receptors in the plan area surrounding vicinity.

Level of Significance Before Mitigation

Potential stationary noise source impacts to off-site receptors would be less than significant. Potentially significant impacts requiring mitigation include:

- Construction noise
- Traffic noise
- Railroad noise

Mitigation Measures

MM NOI-1a Implement Construction Noise Measures

To reduce the occurrence of potentially significant construction noise impacts to noise-sensitive receptors in the plan area vicinity (or sensitive receptors within the plan area during future buildout), the construction contractor for each development project within the plan area shall comply with the following requirements:

- Equip internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and are appropriate for the equipment.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors in the vicinity.
- Locate staging areas and construction material areas as far away as possible from adjacent land uses.
- Prohibit all unnecessary idling of internal combustion engines.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Erect temporary noise control blanket barriers in a manner to shield noise-sensitive uses.
- Control noise levels from workers' amplified music so that sounds are not audible to sensitive receptors in the vicinity.
- If impact pile driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced.
- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected.
- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing.
- Designate a "disturbance coordinator" responsible for responding to complaints about each project development's construction noise and taking reasonable measures to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in any notice sent to neighbors regarding the construction schedule.
- The construction contractor shall prohibit noise producing construction activities between the hours of 6:00 p.m. and 7:30 a.m. Monday through Saturday, or at any time on a Sunday or a legal holiday.

MM NOI-1b Implement Traffic Noise Measures

Prior to the issuance of building permits for each development project within the plan area, the following requirements shall be implemented:

- For multi-family residential or motel/hotel projects proposed within the plan area where exterior day/night average noise levels are, or are projected to exceed, 65 dBA L_{dn} (i.e., within 290-feet of the centerline of U.S. 101), an acoustic analysis shall be prepared that recommends project improvements to be implemented, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. This can typically

be accomplished with the incorporation of an adequate forced air mechanical ventilation system in the residential units to allow residents the option of controlling noise by keeping the windows closed. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.

- For school, library, church, hospital, nursing home, neighborhood park, or commercial projects proposed within the plan areas where exterior day-night average noise levels are, or are projected to exceed 70 dBA L_{dn} (i.e., within 140-feet of the centerline of U.S. 101), an acoustic analysis shall be prepared that recommends project improvements to be implemented, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. Standard office construction methods typically provide about 25 to 30 decibels of noise reduction in interior spaces. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.

MM NOI-1c Implement Railroad Noise Measures

Prior to the issuance of building permits for each development project within the plan area, the following requirement, if applicable, shall be met:

- For any noise-sensitive land uses proposed within the plan area within 50-feet of the railroad centerline, the City shall require that an acoustic analysis be prepared that recommends project improvements, as needed, to maintain interior noise levels at or below 45 dBA L_{dn}. The City shall confirm that the recommendations will reduce noise levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.

Level of Significance After Mitigation

Less than significant with mitigation

Groundborne Vibration

Impact NOI-2: The proposed plan could expose persons to, or generate excessive groundborne vibration or groundborne noise.

Impact Analysis

A significant groundborne vibration impact would occur if the proposed plan would expose persons to groundborne vibration or groundborne noise levels in excess of the FTA's damage threshold criteria for a receiving structure (0.12 inch per second [in/sec] PPV for the most fragile types of structures) at receiving structures, or in excess of 72 VdB for rail vibration events at proposed residential land uses or land uses where people normally sleep.

Construction

Construction activity can result in varying degrees of ground vibration, depending on the equipment used within the plan area. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of a specific construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels, to slight damage at the highest levels. Table 3.5-3 provides approximate vibration levels for particular construction activities.

Of the variety of equipment used during construction, the vibratory rollers that would be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Impact equipment such as pile drivers is not expected to be used during construction of land uses contemplated under the NEAP. Large vibratory rollers produce groundborne vibration levels ranging up to 0.210 in/sec PPV at 25 feet from the operating equipment.

The closest off-site structure to the plan area's potential construction areas belongs to a residential community located east of Healdsburg Avenue on Spur Ridge Court. This closest off-site receptor is located approximately 600 feet from the plan area's southern boundary, so a minimum of 600 feet from the construction footprint where heavy construction equipment could be operating. At this distance, groundborne vibration levels resulting from the operation of large vibratory rollers would attenuate to below 0.002 in/sec PPV, well below the FTA damage threshold criteria of 0.12 in/sec PPV for the most fragile types of structures. Therefore, the impact of short-term groundborne vibration associated with construction to off-site receptors would be less than significant.

Operation

Currently, the railroad line traversing the plan area is inactive. However, future SMART trains and freight trains are expected to revive use of the tracks, with Healdsburg's historic depot located along Hudson Street south of the plan area identified as a future SMART station. According to the Draft Supplemental EIR conducted in March 2008 for the proposed SMART train, 10 daily freight trains are expected along the tracks, nine of which would occur during SMART's off-peak daytime period and one which would occur in the early evening (between 7:00 p.m. and 10:00 p.m.). While a SMART train schedule is not currently available, trains are expected to pass by every 30 minutes during peak daytime hours, which is anticipated to be during rush hour traffic periods in the morning and evening.[11] Assuming the maximum number of train pass-bys in a day, the plan area could potentially be exposed to more than 70 train pass-bys a day.

Exposure to On-site Receptors

Trains passing through the plan area could exceed the FTA vibration impact criteria guidelines if new buildings containing residences (or buildings where people normally sleep, such as hotels) are constructed within 100 feet of the railroad centerline. This would be a potentially significant vibration impact to on-site receptors.

[11] City of Healdsburg. 2013. Central Healdsburg Avenue Plan Draft EIR. Website: http://healdsburgaveimprovements.com/get-involved/chap/

At the time of this analysis, a site plan indicating location of proposed buildings is not available. Therefore, impacts to on-site sensitive receptors are considered to be potentially significant. Implementation of MM NOI-2 would reduce operational groundborne vibration level impacts to on-site receptors to a less than significant level.

Exposure to Off-site Receptors

Implementation of the proposed plan would not include any permanent sources of vibration that could be perceptible without instruments at any existing sensitive land use near the plan area. Therefore, operational groundborne vibration level impacts to off-site receptors would be less than significant.

Level of Significance Before Mitigation

Potentially significant

Mitigation Measures

MM NOI-2 Prior to the issuance of building permits for each development project within the plan area, an acoustic analysis by a qualified noise specialist shall be prepared for any structures in the plan area that are located within 100 feet of the centerline of the railroad. The analysis shall specify measures including, but not limited to, setbacks and structural design features that will reduce vibration levels at or below the guidelines of the FTA Groundborne Vibration Impact Criteria, shown in Table 3.5-7. The City shall confirm that the recommendations will reduce vibration levels below the threshold levels and require compliance with the recommendations of the acoustic analysis.

Level of Significance After Mitigation

Less than significant with mitigation

Substantial Permanent Noise Increase

Impact NOI-3: The proposed plan would not cause a substantial permanent increase in ambient noise levels in the vicinity of the plan area above levels existing without the plan.

Impact Analysis

A significant impact would occur if implementation of the proposed plan would result in a substantial increase in ambient noise levels compared with noise levels existing without the plan. As noted in the characteristics of noise discussion above, audible increases in noise levels generally refer to a change of 3 dBA or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. A change of 5 dBA is considered the minimum readily perceptible change to the human ear in outdoor environments. Therefore, for purposes of this analysis, a permanent increase of 5 dBA or greater would be considered a substantial permanent increase in ambient noise levels.

Construction

There would be no construction-related permanent ambient noise level impacts as a result of the proposed plan.

Operation

Traffic Noise

The highest traffic noise level increase with implementation of the proposed plan would occur along Healdsburg Avenue between Passalacqua Road and Parkland Farms Boulevard, under existing plus plan conditions. Along this roadway segment, the plan would result in an increase of 1.9 dBA under plus plan conditions compared to conditions without the plan. This increase would not be perceptible to the human ear and is well below the 5 dBA L_{dn} increase that would be considered a substantial permanent increase in ambient noise levels compared to noise levels that would exist without the plan. Therefore, plan-related permanent increases in ambient noise levels impacts related to traffic would be less than significant.

Stationary Noise Source

Based on the discussion under Impact NOI-1, noise levels generated by plan-related stationary noise sources would range up to 33 dBA L_{eq}; with measured maximum noise levels of up to 52 dBA L_{max}. Based on the noise monitoring results shown in Table 3.5-4, daytime ambient noise levels in the vicinity of the nearest off-site receptor were documented to be 46.7 dBA L_{eq}; with measured maximum noise levels of up to 63.4 dBA L_{max}. Therefore, operational noise levels generated by plan-related stationary noise sources would not exceed existing ambient noise levels at the nearest off-site receptor by 5 dBA or greater. As such, plan-related operational noise levels would not result in a substantial (5 dBA or greater) increase in ambient noise levels at off-site sensitive receptors. Therefore, plan-related permanent increases in ambient noise levels impacts related to mechanical equipment operation would be less than significant.

Level of Significance

Less than significant

Substantial Temporary Noise Increase

Impact NOI-4:	**The proposed plan could result in a substantial temporary or periodic increase in ambient noise levels in the vicinity of the site above levels existing without the plan.**

Impact Analysis

A significant impact would occur if construction-related noise would result in hourly average noise levels exceeding 60 dBA L_{eq} and exceed the ambient by at least 5 dBA L_{eq}, for a period of more than one year as measured at nearby sensitive receptor land uses.

Construction

Construction noise impacts were previously discussed under Impact NOI-1. The closest off-site noise-sensitive receptors to the plan area are the single-family residential land uses located east of Healdsburg Avenue on Spur Ridge Court. As demonstrated in that discussion, these closest off-site sensitive receptors would be located approximately 600 feet from the nearest acoustic center of construction activity in the plan area when multiple pieces of heavy machinery would operate at a point along the nearest plan area boundary. At this distance, worst-case construction noise levels could range up to approximately 67 dBA L_{max}, intermittently, and could have an hourly average of up to 63 dBA L_{eq}, at the façade of the nearest single-family residential home. However, these noise

levels would drop off as equipment would operate at locations further into the plan area at greater distances from the nearest off-site sensitive receptors. Therefore, impacts to off-site sensitive receptors are considered to be potentially significant.

However, compliance with the permissible construction hours established by the HMC and discussed in detail under Impact NOI-1 would reduce the effects of noise produced by construction activities on longer-term (hourly or daily) ambient noise levels, and it would reduce potential impacts that could result related to annoyance or sleep disturbances at nearby noise-sensitive receptors. Additionally, Implementation Measure S-25 of the Healdsburg 2030 General Plan establishes mandatory noise reduction measures for potentially significant construction activities. Restricting construction activities to the permissible hours established by the City and implementing the City's mandatory noise reduction measures (both included in MM NOI-1a), would ensure that potential short-term construction noise would not expose existing sensitive receptors to noise levels exceeding the ambient noise level by at least 5 dBA L_{eq}, for a period of more than one year. Therefore, with implementation of MM NOI-1a, plan-related temporary construction noise-related increases in ambient noise level impacts to off-site sensitive receptors would be less than significant with mitigation.

Operation

There would be no operation-related temporary ambient noise level impacts as a result of the proposed plan.

Level of Significance Before Mitigation

Potentially significant construction-related noise impacts

Mitigation Measures

Implement MM NOI-1a

Level of Significance After Mitigation

Less than significant with mitigation

3.5.5 - Cumulative Impacts

Noise

The geographic scope of the cumulative noise analysis is the vicinity of the plan area, including surrounding sensitive receptors. Noise impacts tend to be localized; therefore, the area near the plan area (approximately 0.25 mile) would be the area most affected by proposed plan activities. Furthermore, given the properties and the distance between other projects (more than 0.5 mile away), plan-related noise would not combine with other sources further away.

The proposed plan's construction noise levels may cause a temporary substantial increase in noise levels at nearby receptors. Plan-specific mitigation is proposed that would require implementation of construction noise attenuation measures to reduce noise levels. Other cumulative projects under the buildout of the Healdsburg 2030 General Plan that would expose nearby sensitive receptors to excessive construction noise would be required to implement similar mitigation. Because construction noise is a localized phenomenon, the properties of noise are not additive, and

construction activity noise likely would not overlap due to distance between projects. Therefore, a less than significant cumulative impact related to construction noise would occur.

The highest traffic noise level increase with implementation of the proposed plan would occur along Healdsburg Avenue between Passalacqua Road and Parkland Farms Boulevard and along Grove Street north of Dry Creek, under future plus conditions with full buildout associated with implementation of the plan. These roadway segments would experience an increase of 1.0 dBA under plus plan conditions compared to conditions without the plan. This increase is well below a 3 dBA L_{dn} increase that would be considered a perceptible increase in ambient noise levels compared to noise levels that would exist without the plan. Therefore, the plan's incremental effect on permanent noise increases from traffic noise sources would not be cumulatively considerable.

Future development of noise sensitive land uses within the plan area in a location within 290 feet of the centerline of U.S. 101 or within 50 feet of the railroad centerline would potentially expose persons to traffic or railroad noise levels in excess of normally acceptable standards. Plan-specific mitigation is proposed, which would require site-specific noise analysis that shall recommend improvements, as needed, to maintain interior noise levels at acceptable standards. Other cumulative projects under the buildout of the Healdsburg 2030 General Plan that would expose persons to unacceptable interior noise levels would be expected to implement similar mitigation that would reduce interior noise to acceptable levels. Because exposure to on-site noise is a localized impact, the proposed plan would result in a less than significant cumulative impact related to noise exposure.

Given the above information, the proposed plan, in conjunction with other existing, planned, and probable future projects, would result in a less than significant cumulative impact related to noise.

Vibration

Implementation of the proposed plan would not include permanent sources of vibration that could be perceptible without instruments at any existing sensitive land use near the plan area. Trains passing through the plan area could exceed the FTA vibration impact criteria guidelines for any new buildings proposed to be constructed within 100 feet of the railroad centerline. However, plan-specific mitigation is proposed, which would require site-specific vibration analysis that shall recommend measures, as needed, including but not limited to setback requirements, to reduce railroad vibration levels to acceptable standards. Other cumulative projects under the buildout of the Healdsburg 2030 General Plan that would expose persons to unacceptable vibration levels from future railroad activity would be expected to implement similar mitigation that would reduce railroad vibration to acceptable levels. Because exposure to on-site vibration is a localized impact, there would be a less than significant cumulative impact related to vibration exposure.

Overall

Overall, cumulative noise and vibration impacts would be less than significant, since the cumulative permanent and temporary noise generation as well as the permanent and temporary vibration impacts would be less than significant.

Level of Cumulative Significance

Less than significant

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 4: ALTERNATIVES

Section 4.1 - Introduction

In accordance with CEQA Guidelines Section 15126.6, this Environmental Impact Report (EIR) contains a comparative impact assessment of alternatives to the proposed plan. The primary purpose of this chapter is to provide decision-makers and the public with a reasonable range of feasible alternatives to the proposed plan that could attain most of the City's objectives for the NEAP, while avoiding or reducing any of the plan's significant adverse environmental effects. Important considerations for this alternatives analysis are noted below (as stated in CEQA Guidelines Section 15126.6).

- An EIR need not consider every conceivable alternative to a project or plan;
- An EIR should identify alternatives that were considered by the lead agency, but rejected as infeasible during the scoping process;
- Reasons for rejecting an alternative include:
  - Failure to meet most of the basic project objectives;
  - Infeasibility; or
  - Inability to avoid significant environmental effects.

4.1.1 - Significant Unavoidable Impacts

The proposed plan was analyzed for potentially significant impacts on each of the environmental issues discussed in Sections 3.1 through 3.5. The results of the analysis indicate that the proposed plan as well as the proposed plan in conjunction with cumulative development in Healdsburg would result in the following respective plan-level and cumulative-level significant and unavoidable impacts:

- **Transportation/Traffic (Plan-level Impact):** With respect to vehicle circulation system performance (intersection level of service) at the south off-ramp approach from U.S. 101 to Dry Creek Road, the intersection would be expected to experience additional delay upon adding plan-generated trips. The City is implementing a project to install all-way stop signs at this location, which will improve intersection operations. However, the traffic related to the Existing-Plus-Plan Scenario would result in the intersection operating at an unacceptable LOS E level during the PM peak-hour. Mitigation measures were identified to signalize the intersection that, if implemented, would reduce the impact to less than significant. However, the City cannot guarantee that the improvements will be completed by the time development under the proposed plan occurs. Thus, the impacts to the performance of the vehicle circulation system would remain significant and unavoidable.
- **Transportation/Traffic (Plan-level Impact):** With respect to traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/U.S. 101 South Ramp, the queueing would exceed available storage in the westbound left-turn lane with plan-generated trips. Mitigation measures were identified that would require improvements to operation at the intersection. However, traffic safety hazards impacts remain significant and

unavoidable until the separate project to signalize the intersection is completed and widening to provide longer turn lane storage is constructed.

- **Transportation/Traffic (Cumulative-level Impacts):** With respect to vehicle circulation system performance (intersection level of service) and traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/Grove Street intersection, operation is projected to fall to unacceptable LOS E with plan-generated trips added to the Cumulative Plus Plan volumes. Identified mitigation (signal modifications and restriping) would result in acceptable operations, however, improvements are infeasible due to right-of-way constraints. Thus, both vehicle circulation system performance and traffic safety hazards impacts would remain significant and unavoidable.

As discussed in Section 3.2, Transportation and Traffic, the City mitigates impacts of the proposed plan to the greatest extent feasible as required by CEQA. However, mitigation is economically infeasible, because the City cannot guarantee the funding of needed roadway improvements to ensure adequate right-of-way to accommodate vehicular traffic and the planned bike lane. The City cannot ensure mitigation would be implemented to reduce potential plan- and cumulative-level impacts to less than significant.

4.1.2 - Alternatives to the Proposed Plan

Pursuant to CEQA Guidelines Section 15126.6, this EIR presents a range of reasonable alternatives to the proposed plan for analysis and evaluation of their comparative merits. These alternatives are considered to address a range of development alternatives that would meet the basic objectives of the plan while lessening one or more of its significant impacts. CEQA Guidelines Section 15126.6(a) states that an EIR need not evaluate every conceivable alternative to a project or plan. Information has been provided for each alternative that would allow meaningful comparison with the proposed plan.

CEQA requires that an EIR analyze a "no project" alternative (CEQA Guidelines, Section 15126.6(e)). Where, as here, this alternative means the proposed plan would not proceed, the discussion "[sh]ould compare the environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved" (CEQA Guidelines, Section 15126.6(e)(3)(B)). A "no project" alternative shall describe existing conditions at the time the NOP is prepared, as well as what "would reasonably be expected in the foreseeable future if the project [or plan] were not approved, based on current plans and consistent with available infrastructure and community services." (CEQA Guidelines, Section 15126.6(e)(3)(C)).

The alternatives to the proposed plan analyzed in this chapter are as follows:

- **Alternative 1 (No Project Alternative):** Under this alternative, a mixed-use development would not be constructed and operated within the plan area. Rather, the plan area would not be developed in accordance with existing Healdsburg 2030 General Plan land use designations or land uses contemplated by the proposed plan. The zoning of the plan area would remain MU, and no further discretionary action–as required by the General Plan prior to development of the area–would be taken. No new improvements or development would occur, and thus, the plan area would remain undeveloped.

- **Alternative 2 (General Plan Quaker Hills Alternative):** This alternative uses the development scenario for the North Entry Study Area that is presented in the Healdsburg 2030 General Plan EIR Mixed Use Alternative. This provided the underlying analysis for the change of the zoning of the North Village site from Industrial to Mixed Use in the Healdsburg 2030 General Plan. The assumptions in the Healdsburg 2030 General Plan EIR for "Alternative A—Quaker Hills" buildout are as follows:
  - Multi-family residential (150 units)
  - Commercial (27,500 square feet)
  - Hotel (168 rooms)

  The General Plan Quaker Hills Alternative assumes that the development limitations in the proposed plan would be modified per the General Plan Mixed Use Alternative. In addition, future development would otherwise be subject to an area plan with design guidelines similar to those in the proposed plan given that the Healdsburg 2030 General Plan requires preparation of an area plan prior to approval of development.

- **Alternative 3 (North Village Project Alternative):** This alternative evaluates a conceptual development plan for the North Village property as proposed by the property owner of the North Village site. The North Village Project Alternative assumes that development under this scenario would be subject to the same design guidelines as set forth in the proposed plan. This alternative includes the following components:
  - Senior living community consisting of 220 apartments, 30 assisted living units, and 24 memory care units;
  - Hotel facility (130 rooms) and the following ancillary uses:
    - Restaurant (85 seats),
    - Lounge (30-40 seats),
    - Rooftop Bar (40 to 50 seats), and
    - Event/meeting space (200-seat theatre)
  - Retail and Light Industrial–20,000 square feet;
  - Single Room Occupancy (workforce) housing (40 units); and
  - Multi-family apartments (30 units)

- **Alternative 4 (Reduced Commercial Alternative):** Under this alternative, the amount of residential development permitted under the proposed plan is unchanged but the allowable commercial development is reduced. The Reduced Commercial Alternative assumes that development under this scenario would be subject to the same design guidelines as set forth in the proposed plan. This results in the following maximum development scenario:
  - Multi-family residential (290 units); and
  - Commercial (195,000 square feet), including:
    - Hotel (65-room)
    - General Office (20,000 square feet)
    - Specialty Retail (15,000 square feet)

Section 4.2 - Plan Objectives

As stated in Chapter 2, Project Description, the City's objectives for the NEAP are to:

- Create a community-supported, long-term vision for a mix of residential and commercial development that will help develop the plan area into an attractive gateway into Healdsburg from the north;
- Create a livable and welcoming neighborhood for plan area residents and the surrounding Healdsburg community that complements, and does not undermine, the role of the downtown area as the commercial center of the City of Healdsburg;
- Establish a visual character for plan area development that harmonizes with the rural character and natural landscape of its surroundings;
- Provide development limitations and standards that make it feasible to develop a high quality, mixed-use community on the North Village site; and
- Define and realize the plan area's full development potential to support a variety of feasible commercial developments and to provide new housing within the City of Healdsburg.

Section 4.3 - Alternatives Rejected from Further Consideration

The proposed plan establishes development limitations that maximize the City's objectives for development of a mixed-use neighborhood on the North Village site. The identification of "preferred uses" and limits the allowable uses described in the NEAP. The allowable land uses were established based on feedback received from the City Planning Commission and the Healdsburg community at three public workshops as well as an iterative review of potential traffic impacts performed in conjunction with this EIR. Alternative development scenarios that were not evaluated in this EIR include the following:

- One alternative that the City chose not to pursue would apply the existing Mixed Use District zoning development limitations to the entire 30.16-acre North Village site. This would allow approximately 1,313,770 square feet of development (including 482 residential units). This development scenario would not meet the City's objectives for the plan area. Allowing development on the entire North Village site rather than concentrating it on the 18 acres of suitable area and preserving the hillsides is inconsistent with the Healdsburg 2030 General Plan's vision for the plan area. In addition, this alternative would not incorporate community input regarding the appropriate scale and intensity of development. This alternative would also fail to meet most of the City's basic objectives. As noted in Section 4.4 below, the City determined a reasonable estimate of what development may be permitted under the existing regulatory context (i.e., the "General Plan Quaker Hills Alternative"), as further described in the Healdsburg 2030 General Plan and associated EIR. Therefore, this alternative was rejected.
- A second alternative that the City chose not to pursue would restrict the range of permitted and conditional commercial uses on the North Village site by prohibiting development of a hotel facility. As discussed with the prior alternative, the City's intent is to allow a mix of uses

that supports an economically feasible mixed-use neighborhood in the plan area. Rather than prohibiting hotel uses altogether, this EIR includes an alternative that establishes a 65-room cap on hotel uses (see Alternative 4). Therefore, this alternative was rejected.

- A third alternative that the City chose not to pursue would locate proposed development elsewhere within the City limits. As discussed in Chapter 1 Introduction, the plan area is an important location at the northern gateway to Healdsburg. The plan area transitions from agricultural uses in the Alexander Valley to Healdsburg town uses. The plan area is also one of the last remaining sizable vacant area within the city limits. The Healdsburg 2030 General Plan further designated the plan area for land uses (see North Entry Study Area) given its ripe potential to support a mix-used community with new residential development. No other property, site, or location within the city limits would be able to support the level of development called for in the Healdsburg 2030 General Plan or the variety of land uses described in the proposed plan. Therefore, this alternative was rejected.
- A fourth alternative that the City chose not to pursue would reduce the amount of residential development permitted within the plan area. The plan area provides an unparalleled opportunity within Healdsburg for new residential development to help meet the City's housing needs. A reduced residential alternative would not meet the City's objectives of maximizing opportunities for development of a variety of housing types to accommodate anticipated growth, facilitate mobility within the ownership and rental markets, and encourage a diverse community. Furthermore, a reduced residential alternative would hinder the City's ability to provide affordable housing and to address the special housing needs identified in the City's Housing Element. Therefore, this alternative was rejected.

Section 4.4 - Alternative 1—No Project Alternative

CEQA Guidelines Section 15126.6(e) requires EIRs to evaluate a "No Project Alternative," which is defined as the "circumstance under which the project does not proceed." As discussed in Chapter 1.0, Introduction, the plan area is predominantly undeveloped and vacant. All prior improvements associated with historic uses were demolished followed by soil remediation, grading, drainage improvements, and wetland mitigation. Various other improvements were undertaken and the City entered into agreements to improve the rail crossing in anticipation of developing the plan area in the near future. The analysis below assumes that no further improvements would occur and no new development would be permitted.

4.4.1 - Impact Analysis

Aesthetics

The No Project Alternative would result in no change to the existing conditions within and around the plan area. As such, the plan area would not be developed with new buildings, structures, and infrastructure. This alternative would also not result in development that could visually obstruct City-designated scenic ridgelines or substantially degrade City-designated scenic resources. In addition, no lighting or glare sources would be created. This alternative would not have an effect on the existing visual environment of the plan area. Thus, there would be no impact related to aesthetics.

Given that impacts related to aesthetics from the proposed plan would be less than significant (see Section 3.1, Aesthetics), the aesthetics impact of Alternative 1 would be expected to be lower when compared to the proposed plan.

Transportation and Traffic

The No Project Alternative would result in no change to the existing transportation and traffic conditions within and around the plan area. Given that no new development would occur, this alternative would not generate vehicle trips or create an added demand on the circulation system. Operation of the study intersections would remain as projected for Existing and Cumulative (without Plan) Conditions.

As shown in Table 4-1, Alternative 1 would generate 0 daily trips, with 0 AM peak hour trips and 0 PM peak hour trips.

Table 4-1: No Project Alternative Trip Generation

Scenario	Daily Trips	AM Peak Hour	PM Peak Hour
No Project Alternative*	0	0	0
Proposed Plan	4,390	259	351
Difference	**(4,390)**	**(259)**	**(351)**
Source: FCS, 2018.			

Alternative 1 would not generate any new vehicular trips and, thus, would have no effects with respect to the vehicle circulation system performance (intersection levels of service) or traffic safety hazards (queueing). Thus, the No Project Alternative would result in no impact related to transportation/traffic.

Given that the proposed plan would generate trips that represent a potentially significant queuing impact in the planned westbound left-turn lane at the intersection of Dry Creek Road/U.S. 101 South Ramps, the No Project Alternative would have less of an impact related to queueing and, thus, traffic safety hazards when compared to proposed plan.

Air Quality

The No Project Alternative would result in no change to the existing conditions within and around the plan area. The number of vehicles currently accessing the plan area would not change. Similarly, no stationary sources exist and new stationary sources would be permitted. Given that no new development would occur, this alternative would not create new mobile, stationary, or area sources of air pollution from construction and operational activities. Thus, this alternative would not have an effect on existing conditions and would result in no impact related to air quality.

Given that air quality impacts anticipated from development contemplated by the proposed plan would be less than significant with mitigation (see Section 3.3, Air Quality), the air quality impacts of Alternative 1 would be expected to be lower when compared to the proposed plan.

Greenhouse Gas Emissions and Energy

The No Project Alternative would result in no change to the existing conditions within and around the plan area. As such, the plan area would not be developed with new buildings and structures that would generate new vehicle trips and demand for energy resources. Given that no new development would occur, this alternative would not result in a direct or indirect increase of GHG emissions from construction and operational activities. Thus, this alternative would not have an effect on the existing conditions and result in no impact related to GHG emissions.

Given that GHG Emissions/Energy impacts from development contemplated by the proposed plan would be less than significant with mitigation (see Section 3.4, Greenhouse Gas Emissions and Energy), the GHG Emissions/Energy impacts of Alternative 1 would be expected to be lower when compared to the proposed plan.

Noise

The No Project Alternative would result in no change to the existing conditions within and around the plan area. As such, the plan area would not be developed with new building, structures, and infrastructure that would generate new sources of noise and vibration. Given that no new development would occur, this alternative would not result in temporary or permanent increase in ambient noise levels, expose people to or generate excessive groundborne vibration. Thus, this alternative would not have an effect on the existing conditions and result in no impacts related to noise.

Given that the proposed plan's noise impacts would be less than significant with mitigation (see Section 3.5, Noise), the Noise impacts of Alternative 1 would be expected to be lower when compared to the proposed plan.

4.4.2 - Conclusion

No physical change would result under the No Project Alternative. As such, all significant impacts caused by the proposed plan would be avoided. However, the No Project Alternative would not meet any of the City's objectives because the plan area would not be developed. The No Project Alternative would also conflict with the Healdsburg 2030 General Plan, since the plan area was identified as a study area for future development. The plan area would remain undeveloped, and no new commercial or residential development would occur. Therefore, this alternative would not meet project objectives to create a community-supported high quality mixed-use development, realize the plan area's potential as an attractive Healdsburg gateway, establish a visual character for plan area development, or define the plan area's full development potential to support a variety of commercial developments and to provide new housing within Healdsburg.

Section 4.5 - Alternative 2—General Plan Quaker Hills Alternative

The Healdsburg 2030 General Plan and Healdsburg Municipal Code currently designate the plan area "Mixed Use." The underlying assumptions in the Healdsburg 2030 General Plan and its associated EIR were consulted to determine a reasonable range of development to expect in the plan area. The reasonable range of development reflects the existing physical, infrastructure, and policy constraints. The analysis below assumes the development scenario for the North Entry Study Area as presented in the Healdsburg 2030 General Plan EIR Mixed Use Alternative. The buildout assumptions are as follows:

- 150 multi-family residential units
- 27,500 square feet of commercial
- 168-room hotel

The Healdsburg 2030 General Plan requires that the City prepare and adopt an area plan to provide specific guidance for future development in the North Entry Study Area (i.e., the plan area). Therefore, Alternative 2 is presented for informational purposes, since no development of the plan area could proceed without evaluation and approval prior to the City preparing a plan or development program.

4.5.1 - Impact Analysis

Aesthetics

Under Alternative 2, and similar to the proposed plan, development within the plan area would change the visual character of the site, views across the site, nighttime lighting and potentially daytime glare. It is assumed that development under Alternative 2 would be subject to design guidelines similar to those included in the proposed plan and that, through the design review process, aesthetic impacts would be minimized. While development of the plan area under this alternative would change the existing visual character of the plan area, it would not substantially degrade the visual character of the plan or surrounding areas. Thus, impacts related to aesthetics would be less than significant.

Given that impacts related to aesthetics from the proposed plan would be less than significant (see Section 3.1, Aesthetics), Alternative 2 would have a similar aesthetics impacts when compared to the proposed plan.

Transportation and Traffic

Under Alternative 2, the plan area would be redeveloped with a range of land uses contemplated in the Healdsburg 2030 General Plan. Pursuant to the General Plan, the plan area would be developed with an internal circulation system and parking areas that connect to the local roadway network. The new land uses would support activities that generate added vehicular trips to the transportation system, demand for improved pedestrian facilities, and need to extend bicycle paths. Accordingly, new development would necessitate roadway improvements similar to the proposed plan. The City would also coordinate roadway improvements with other planning efforts (along Healdsburg Avenue) and development projects in the surrounding area (i.e., the Montage Healdsburg project).

As shown in Table 4-2, Alternative 2 would generate 3,157 daily trips, with 164 AM peak hour trips, and 233 PM peak hour trips. Under Alternative 2, and assuming that the impact would be similar to that under the proposed plan, all study intersections except U.S. 101 South/Dry Creek Road and Dry Creek Road/Grove Street would be expected to operate at an acceptable level of service.

Table 4-2: General Plan Quaker Hills Alternative Trip Generation

Scenario	Daily Trips	AM Peak Hour	PM Peak Hour
General Plan Quaker Hills Alternative*	3,157	164	233
Proposed Plan	4,390	259	351
Difference	**(1,233)**	**(95)**	**(118)**

Notes:
* ITE does not provide trip rates for general commercial land use. Thus, trip rates for proposed commercial land uses are applied for a conservative estimate derived from an averaged General Office Building (ITE 710) and Shopping Center (ITE 820).
Source: FCS, 2018.

The off-ramp approach from U.S. 101 South to Dry Creek Road is currently operating at LOS F and would be expected to experience additional delay upon adding trips generated under this alternative. To help improve operations, the City proposes to install all-way stop signs at this location in the Spring of 2019. However, even with these improvements the intersection would be expected to operate unacceptably during the PM peak hour assuming that the impact would be similar to that under the proposed plan. It is anticipated that signalization of the intersection would be required to achieve acceptable operation. Implementation of Mitigation Measures TRANS-1a and TRANS-5, which require proportional share payments toward signalization of Dry Creek Road/U.S. 101 South, including providing additional lanes would not reduce this impact to less than significant. Therefore, the impact would remain significant and unavoidable until the signalization and intersection improvements are completed.

The intersection of Dry Creek Road/Grove Street would be expected to deteriorate to LOS E during the evening peak hour with the addition of traffic that would be generated from plan-related land uses under Alternative 2. To achieve acceptable operation, it is anticipated that the northbound approach would require reconfiguration to include a separate left-turn lane with protected left-turn phasing and the existing right-turn lane converted to use for through/right-turn movements. This impact is based on land uses associated with the proposed plan and could be mitigated to a level below significance with implementation of Mitigation Measure TRANS-1b.

Similar to the proposed plan, this alternative would generate trips that represent a potentially significant traffic safety hazard (queuing) impact in the planned westbound left-turn lane at the intersection of Dry Creek Road/U.S. 101 South Ramps and the eastbound left-turn lane at Dry Creek Road/Grove Street. It should be noted, however, that while queue lengths are expected to exceed available storage at other locations, Alternative 2 would either result in an increase in the queue by less than 25 feet or result in a turn-lane that would connect to a two-way left-turn lane with room to

accommodate the queue. Nevertheless, similar to the proposed plan, Alternative 2 would have queueing and, thus, traffic safety hazards impacts that are significant and unavoidable adverse impacts until the Dry Creek Road/U.S. 101 interchange improvements, which include the lane modifications identified in Mitigation Measures TRANS-5, are implemented.

In summary, Alternative 2 would have a lower level of traffic impact than the proposed plan related to the vehicle circulation system performance (intersection levels of service) as well as traffic safety hazards (queueing), but would be expected to have the same significant and unavoidable impacts as the proposed plan. Thus, this alternative would require similar improvements (signalization, turn lanes, and road widening) and would have the same significant and unavoidable impacts as the proposed plan.

Air Quality

Under Alternative 2, the plan area would be developed with a mix of commercial and residential uses consistent with the Mixed Use Alternative identified in the Healdsburg 2030 General Plan EIR. Development contemplated under Alternative 2 would include to the same land uses as those in the proposed plan, although anticipated air quality impacts would be expected to be less than those identified for the proposed plan since development and project-related traffic would be less under Alternative 2.

Given that air quality impacts anticipated from development contemplated by the proposed plan would be less than significant with mitigation (see Section 3.3, Air Quality), the impacts of Alternative 2 would be expected to be similar or lower when compared to the proposed plan. Thus, the air quality impacts under this alternative would similarly be expected to be reduced to less than significant with implementation of the identified mitigation measures.

Greenhouse Gas Emissions and Energy

Development contemplated under Alternative 2 includes land uses similar to those of the proposed plan. However, the overall intensity of development would be less and associated traffic levels would be less. Therefore, the anticipated GHG Emissions/Energy impacts under Alternative 2 are expected to be similar or less than those identified for the proposed plan.

Given that GHG impacts from development contemplated by the proposed plan would be less than significant with mitigation (see Section 3.4, Greenhouse Gas Emissions and Energy), Alternative 2 would be expected to have a similar level of GHG impact compared to the proposed plan. Thus, the GHG Emissions/Energy impact under this alternative would similarly be expected to be reduced to less than significant with implementation of the identified mitigation measures.

Noise

Development contemplated under Alternative 2 includes land uses similar to those of the proposed plan. The overall amount of development would be less across the plan area but the anticipated noise impacts are expected to be similar to those identified under proposed plan.

Given that the proposed plan's noise impacts would be less than significant with mitigation (see Section 3.5, Noise), Alternative 2 would be expected to have a similar or lower level of noise impact compared to the proposed plan. This alternative would similarly be expected to have noise impacts that are less than significant with implementation of the identified mitigation measures.

4.5.2 - Conclusion

Alternative 2 would, in general, be expected to have a similar or slightly lower level of impacts compared to the proposed plan. As with the proposed plan, potentially significant impacts would be expected to be reduced to less than significant with implementation of the identified mitigation measures. Additional traffic generated by development under Alternative 2 would be expected to result in a significant and unavoidable adverse impact at the U.S. 101/Dry Creek Road intersection similar to the proposed plan. As discussed above, impacts to aesthetics, transportation, air quality, greenhouse gas emissions and energy, and noise would be similar compared to the proposed plan. This alternative would also advance some of the City's objectives. However, this alternative proposes substantially fewer residential units while allowing more hotel units than contemplated by the proposed plan. Therefore, Alternative 2 would not fully realize the plan area's potential as an attractive Healdsburg gateway, and it would not develop the plan area in harmony with the rural character and natural landscape, or define the plan area's full potential to support feasible mixed use developments.

Section 4.6 - Alternative 3—North Village Project Alternative

This alternative addresses a conceptual development plan proposed by the property owner of the North Village site and includes the following components:

- Senior living community consisting of 220 apartments, 30 assisted living units, and 24 memory care units;
- Hotel facility with 130 hotel rooms and ancillary uses including: Restaurant (85 seats), Lounge (30-40 seats), Rooftop Bar (40 to 50 seats), and Event/meeting space (200 seats);
- Retail and Light Industrial (20,000 square feet);
- Single Room Occupancy (workforce) housing (40 units); and
- Multi-family apartments (30 units)

The Healdsburg 2030 General Plan requires that the City prepare and adopt an area plan to provide specific guidance for future development in the North Entry Study Area. Thus, the North Village Project Alternative assumes that development under this scenario would be subject to design guidelines similar to those provided in the proposed plan.

4.6.1 - Impact Analysis

Aesthetics

Under the North Village Project Alternative, the plan area would be developed with a mix of uses described above. Similar to the proposed plan, development within the plan area would change the

existing visual character of the site and its surroundings, change views across the plan area, and create new sources of nighttime lighting and potentially daytime glare. However, it is assumed that development under the North Village Project Alternative would be subject to design guidelines similar to those included in the proposed plan and that, through the design review process, aesthetic impacts would be minimized.

As such, similar to development under the proposed plan, the change from an undeveloped area to a more urban mixed commercial and residential neighborhood would not substantially degrade the visual character of the plan or surrounding areas. Given that impacts to aesthetics from development under the proposed plan would be less than significant (see Section 3.1, Aesthetics), the North Village Project Alternative would have a similar aesthetics impact. Thus, as with the proposed plan, impacts to aesthetic resources would be less than significant under the North Village Project Alternative.

Transportation and Traffic

Under the North Village Project Alternative, the plan area would be developed with a senior living community, hotel and ancillary visitor-serving uses, retail and light industrial uses, and a mix of housing. The plan area would be developed with an internal circulation system including streets, parking, pedestrian pathways and bicycle facilities. Development under the North Village Project Alternative would generate vehicular trips that would be added to the transportation system, demand for improved pedestrian facilities, and the need to extend bicycle paths. Accordingly, development under the North Village Project Alternative would necessitate roadway improvements similar to the proposed plan.

As shown in Table 4-3, the North Village Project Alternative would generate 3,135 daily trips, 162 AM peak hour, and 248 PM peak hour trips (see Appendix B.4). The trip generation is less than that of the proposed plan primarily due to the lower trip generation rates associated with the senior residential community proposed in the North Village Project Alternative.

Table 4-3: North Village Project Alternative Trip Generation

Scenario	Daily Trips	AM Peak Hour	PM Peak Hour
North Village Project Alternative[1]	3,135	162	248
Proposed Plan	4,390	259	351
Difference	**(1,255)**	**(97)**	**(103)**

Notes
[1] Estimates conservatively assume vehicle trips associated with events in addition to trip generation potential for the North Village Project Alternative land uses.
Source: W-Trans, 2018.

The off-ramp approach from U.S. 101 South to Dry Creek Road is currently operating at LOS F and, as with the proposed plan, would be expected to experience additional delay upon adding trips generated by the North Village Project Alternative. The City proposes to install all-way stop signs at

this location in the Spring of 2019, and, with these improvements, the intersection would be expected to operate acceptably at LOS D during the PM peak hour with North Village Project Alternative trips added.

Also similar to the proposed plan, the northbound approach to the intersection of Dry Creek Road/Grove Street would be expected to deteriorate to LOS E during the evening peak hour with the addition of traffic that is generated from North Village Project Alternative-related land uses. To achieve acceptable operation, the northbound approach would require reconfiguration to include a separate left-turn lane with protected left-turn phasing and the existing right-turn lane converted to use for through/right-turn movements. With these improvements, the intersection would be expected to operate at LOS B during the PM peak hour. Implementation of Mitigation Measure TRANS-1b, which requires restriping the northbound approach and re-phasing the signal at Dry Creek Road/Grove Street, would reduce the impact of North Village Project Alternative traffic to a level below significance at this intersection. However, as with the proposed plan, Mitigation Measure TRANS-1a and TRANS-5, which require proportional share payments toward signalization of Dry Creek Road/U.S. 101 South as well as widening to provide additional lanes, would not reduce the cumulative impact to less than significant until the improvements are implemented.

Like to the proposed plan, the North Village Project Alternative would generate trips that represent a potentially significant traffic safety hazard (queuing) impact in the planned westbound left-turn lane at the intersection of Dry Creek Road/U.S. 101 South Ramps. While queue lengths are expected to exceed available storage at other locations, the North Village Project Alternative would either result in an increase in the queue that would not extend into an adjacent intersection or the turn-lane connects to a two-way left-turn lane with room to accommodate the increased queue. While the North Village Project Alternative would have less of an impact related to queueing and, thus, traffic safety hazards than the proposed plan, mitigation of queueing impact at Dry Creek Road/U.S. 101 South Ramps would still be necessary.

The impact of trips generated by development under the North Village Project Alternative on transportation and traffic would be less than significant with mitigation (see Section 3.2, Transportation and Traffic) except for at the U.S. 101/Dry Creek Road intersection where impacts would be considered significant and unavoidable impacts until signalization and associated improvements are implemented. The North Village Project Alternative would have a lower level of traffic impact related to the vehicle circulation system performance (intersection levels of service) as well as traffic safety hazards (queueing) than the proposed plan. However, this alternative would require similar improvements (signalization, turn lanes, and road widening) when compared to the proposed plan.

Air Quality

Under the North Village Project Alternative, the plan area would be developed with a mix of commercial and residential uses consistent with the goals and objectives of the Healdsburg 2030 General Plan. The plan area is designated MU, which allows a variety of land uses but subject to the limits of General Plan Policy LU-18. Development contemplated under the North Village Project Alternative proposes a development density that is similar to but slightly less than that

contemplated in the proposed plan. As described above, traffic volumes generated by the North Village Project Alternative are lower than those of the proposed plan primarily as a result of lower trip generation rates associated with senior residential uses. Therefore, the anticipated air quality impacts under the North Village Project Alternative would be expected to be similar to or less than those identified for the proposed plan.

Given that the proposed plan's air quality impacts would be less than significant with mitigation (see Section 3.3, Air Quality), the impacts of the North Village Project Alternative would be similar or lower compared to the proposed plan. Thus, this alternative would be similarly expected to result in less than significant with implementation of the identified mitigation measures.

Greenhouse Gas Emissions and Energy

Development contemplated under the North Village Project Alternative proposes land uses similar to the proposed plan with the primary distinction being that a substantial portion of the residential use would be for a senior living community. As discussed above, traffic volumes generated by this alternative are lower than those of the proposed plan. Thus, the anticipated GHG Emissions/Energy impacts under the North Village Project Alternative are expected to be similar to or less than those identified for the proposed plan.

Given that GHG Emissions/Energy impacts would be less than significant with mitigation under the proposed plan (see Section 3.4, Greenhouse Gas Emissions and Energy), the North Village Project Alternative would be expected to have a similar level of GHG impact. Thus, this alternative would similarly be expected to have a less than significant impact with implementation of the identified mitigation measures.

Noise

Development contemplated under the North Village Project Alternative proposes land uses similar to the proposed plan. Therefore, anticipated noise impacts under the North Village Project Alternative are expected to be similar to those identified for the proposed plan.

Given that the proposed plan's noise impacts would be less than significant with mitigation (see Section 3.5, Noise), the North Village Project Alternative would be expected to have a similar level of impact compared to the proposed plan. Thus, this alternative would similarly be expected to have noise impacts that are less than significant with implementation of the identified mitigation measures.

4.6.2 - Conclusion

In general, the North Village Project Alternative would be expected to have a similar level of impact as that identified for the proposed plan. Potentially significant impacts would similarly be expected to be reduced to less than significant with implementation of the identified mitigation measures. Impacts to aesthetics, air quality, GHG emissions and energy, and noise would be similar when compared to the proposed plan. Under the North Village Project Alternative, traffic-related impacts would be lesser than those projected for the proposed plan due to the lower trip generation rates associated with the senior housing component of the North Village Project Alternative. Queuing

impacts at the Dry Creek Road/U.S. 101 South Ramps intersection would be significant and unavoidable. The North Village Project Alternative would advance the City's basic objectives. However, this alternative would narrowly prescribe the range of allowable land uses, and thus, limit flexibility for future development in the plan area. Therefore, this alternative would not define the plan area's full development potential to support a variety of feasible commercial developments or establish a visual character in harmony with the rural setting.

Section 4.7 - Alternative 4—Reduced Commercial Alternative

Under the Reduced Commercial Alternative, the amount of residential development permitted under the proposed plan is unchanged but the allowable commercial development is reduced. This results in the following development scenario:

- 290 multi-family units; and
- 195,000 square feet non-residential square footage, including:
  - 65-room hotel,
  - 20,000 square feet of general office, and
  - 15,000 square feet of specialty retail

4.7.1 - Impact Analysis

Aesthetics

Under the Reduced Commercial Alternative, the plan area would be developed with a mix of uses as identified above. Under this alternative, similar to the proposed plan, development on the plan area would change the visual character of the site, views across the site, and create sources of nighttime lighting and potentially daytime glare. However, it is assumed that development under this alternative would be subject to design guidelines similar to those included in the proposed plan and that, through the design review process, aesthetic impacts would be minimized.

As such, similar to the proposed project, the change from an undeveloped area to an urban mixed commercial and residential neighborhood would not substantially degrade the visual character of the plan or surrounding areas. Thus, impacts to aesthetic resources would be less than significant under the Reduced Commercial Alternative. Given that impacts to aesthetics from development under the proposed plan would be less than significant (see Section 3.1, Aesthetics), the Reduced Commercial Alternative would have a similar aesthetic impacts.

Transportation and Traffic

Under the Reduced Commercial Alternative, the plan area would be developed with a mix of residential and commercial land uses similar to those contemplated in the Healdsburg 2030 General Plan. The plan area would be developed with an internal circulation system, including streets, parking, pedestrian pathways and bicycle facilities. Development under the Reduced Commercial Alternative would generate vehicular trips that would be added to the transportation system and increase demand for pedestrian and bicycle facilities. Accordingly, the new development under the Reduced Commercial Alternative would necessitate roadway improvements similar to the proposed plan.

As shown in Table 4-4, the Reduced Commercial Alternative would be expected to generate 3,526 daily trips, 197 AM peak hour trips, and 351 PM peak hour trips. The number of daily and peak hour trips is lower than the traffic volumes estimated for future development under the proposed plan due to the reduction in commercial development under the Reduced Commercial Alternative.

Table 4-4: Reduced Commercial Alternative Trip Generation

Scenario	Daily Trips	AM Peak Hour	PM Peak Hour
Reduced Commercial Alternative	3,526	197	258
Proposed Plan	4,390	259	351
Difference	**(864)**	**(62)**	**(93)**
Source: FCS, 2018.			

The off-ramp approach from U.S. 101 South to Dry Creek Road is currently operating at LOS F and would be expected to experience additional delay upon adding trips associated with the Reduced Commercial Alternative. The City plans to install all-way stop controls at this location in the Spring of 2019, and, with these improvements, the intersection would be expected to operate acceptably at LOS D during the PM peak hour even with Reduced Commercial Alternative trips added.

The northbound approach to the intersection of Dry Creek Road/Grove Street would be expected to deteriorate to LOS E during the evening peak hour with the addition of traffic that is generated from Reduced Commercial Alternative-related land uses. To achieve acceptable operation, the northbound approach would need to be reconfigured to include a separate left-turn lane with protected left-turn phasing and the existing right-turn lane converted to use for through/right-turn movements. With these improvements, the intersection would be expected to operate at LOS B during the PM peak hour. Implementation of Mitigation MeasureTRANS-1b, which requires restriping the northbound approach and re-phasing the signal at Dry Creek Road/Grove Street, would reduce the impact of Reduced Commercial Alternative traffic to a level of insignificance at this intersection. As with the proposed plan, Mitigation Measures TRANS-1a and TRANS-5, which require proportional share payments toward signalization of Dry Creek Road/U.S. 101 South and widening to provide additional lanes, would not reduce the cumulative impact to less than significant until the improvements are implemented.

Similar to the proposed plan, the Reduced Commercial Alternative would generate trips that represent a potentially significant traffic safety hazard (queuing) impact in the planned westbound left-turn lane at the intersection of Dry Creek Road/U.S. 101 South Ramps. Queuing would remain within available storage or at a length that does not exceed into an adjacent intersection at all other intersections. Thus, the Reduced Commercial Alternative would have less of an impact related to queueing and, thus, traffic safety hazards than the proposed plan, though mitigation of queueing impacts would still be necessary at Dry Creek Road/U.S. 101 South Ramps.

The impact of trips generated by development under the Reduced Commercial Alternative on transportation and traffic would be less than significant with mitigation (see Section 3.2,

Transportation and Traffic) except for at the U.S. 101/Dry Creek Road intersection where impacts would be considered significant and unavoidable until signalization and associated improvements are implemented. The Reduced Commercial Alternative would have a lower level of traffic impact related to the vehicle circulation system performance (intersection levels of service) as well as traffic safety hazards (queueing) than the proposed plan. However, this alternative would require similar improvements (signalization, turn lanes, and road widening) when compared to the proposed plan.

Air Quality

Under the Reduced Commercial Alternative, the plan area would be developed with a mix of commercial and residential uses consistent with the goals and objectives of the Healdsburg 2030 General Plan. The plan area is designated MU, which allows a variety of land uses but subject to the limits of General Plan Policy LU-18. Development contemplated under the Reduced Commercial Alternative proposes land uses similar to those of the proposed plan. However the commercial component would be reduced from that permitted under the proposed plan. As a result, the traffic volumes generated by the Reduced Commercial Alternative are lower than those of the proposed plan. Therefore, the anticipated air quality impacts under the Reduced Commercial Alternative would be expected to be similar to or less than those identified for the proposed plan.

Given that the proposed plan's air quality impacts would be less than significant with mitigation (see Section 3.3, Air Quality), the impacts of the Reduced Commercial Alternative would be similar or lower compared to the proposed plan. Thus, impacts would be expected to be reduced to less than significant with implementation of the identified mitigation measures.

Greenhouse Gas Emissions and Energy

Development contemplated under the Reduced Commercial Alternative proposes land uses similar to the proposed plan with the primary distinction being that the amount of commercial development would be reduced. Consequently, the anticipated GHG impacts under the Reduced Commercial Alternative are expected to be similar to or less than those identified under plan implementation.

Given that the proposed plan's GHG Emissions/Energy impacts would be less than significant with mitigation (see Section 3.4, Greenhouse Gas Emissions and Energy), the Reduced Commercial Alternative would be expected to have a similar or lower level of GHG Emissions/Energy impact compared to the proposed plan. Thus, this alternative would similarly be expected to have a less than significant impact with implementation of the identified mitigation measures.

Noise

Development contemplated under the Reduced Commercial Alternative would comprise land uses similar to the proposed plan but with a reduced amount of commercial development. Therefore, anticipated noise impacts under the Reduced Commercial Alternative are expected to be similar to or lower than those identified for the proposed plan.

Given that the proposed plan's noise impacts would be less than significant with mitigation (see Section 3.5, Noise), the Reduced Commercial Alternative would be expected to have a similar or lower

level of impact compared to the proposed plan. Thus, this alternative would be expected to have noise impacts that are less than significant with implementation of the identified mitigation measures.

4.7.2 - Conclusion

In general, the Reduced Commercial Alternative would be expected to have a similar or lower level of impact as that identified for the proposed plan. Thus, potentially significant impacts would similarly be expected to be reduced to less than significant with implementation of the mitigation measures identified in the proposed plan. Impacts to aesthetics, air quality, GHG emissions and energy, and noise would be similar or lower when compared to the proposed plan. Under the Reduced Commercial Alternative, traffic-related impacts would be lower than those projected for the proposed plan primarily due to the reduced commercial use in the Reduced Commercial Alternative. Impacts on delay and queuing would remain significant and unavoidable at Dry Creek Road/U.S. 101 South Ramps until the project to signalize the intersection and widening to provide longer turn lanes is constructed.

However, the reduction of commercial uses may make development infeasible given the limitations on the development of market-rate housing imposed by the City of Healdsburg's Growth Management Ordinance. While this alternative would include a range of land uses similar to the proposed plan, a number of City objectives would not be met. This includes realizing the full development potential of the North Village site, not fully realizing the plan area's potential as an attractive Healdsburg gateway, and not supporting a feasible mix of commercial and residential development.

Section 4.8 - Environmentally Superior Alternative

CEQA Guidelines Section 15126(e)(2) requires identification of an environmentally superior alternative. If the No Project Alternative is environmentally superior, CEQA requires selection of the "environmentally superior alternative other than the No Project Alternative" from among the proposed project and the alternatives evaluated.

To identify the environmentally superior alternative in accordance with the State CEQA Guidelines, Table 4-5 presents a comparison of the impacts related to the alternatives. As shown in Table 4-5, potential impacts from Alternatives 2, 3, and 4 are substantially similar when compared to the proposed plan. Alternative 1 would not result in potential impacts given the plan area would remain undeveloped but conflict with the Healdsburg 2030 General Plan policies and objectives as a study area for future development.

Table 4-5: Summary of Alternatives' Impact Significance Conclusions

Impact	Proposed Plan	Alternative 1—No Project Alternative	Alternative 2—General Plan Quaker Hills Alternative	Alternative 3—North Village Project Alternative	Alternative 4—Reduced Commercial Alternative
Aesthetics	LTS	NI	LTS	LTS	LTS
Air Quality	LTSM	NI	LTSM	LTSM	LTSM
Greenhouse Gas Emissions	LTSM	NI	LTSM	LTSM	LTSM

Table 4-5 (cont.): Summary of Alternatives' Impact Significance Conclusions

Impact	Proposed Plan	Alternative 1—No Project Alternative	Alternative 2—General Plan Quaker Hills Alternative	Alternative 3—North Village Project Alternative	Alternative 4—Reduced Commercial Alternative
Noise	LTSM	NI	LTSM	LTSM	LTSM
Transportation and Traffic	SU	NI	SU	SU	SU

Notes:
NI = no impact
LTS = less than significant
LTSM = less than significant with mitigation incorporated
SU = significant and unavoidable
SUM = significant and unavoidable with mitigation incorporated
Source: FCS, 2018.

Alternative 1 (No Project) would result in no impacts when compared to the proposed plan and all of the other Alternatives. However, the No Project Alternative would not meet any of the City's objectives, because the plan area would not be developed. This alternative would also conflict with the Healdsburg 2030 General Plan since the plan area was identified as a study area for future development. Therefore, this alternative would not create a community-supported high quality mixed-use development, realize the plan area's potential as an attractive Healdsburg gateway, establish a visual character for plan area development, or define the plan area's full development potential to support a variety of commercial developments and to provide new housing within Healdsburg.

Alternatives 2, 3, and 4 result in similar amount and type of potentially significant impacts, and thus, require similar mitigations that would reduce impacts to less than significant. As with the proposed plan, all of the Alternatives would add traffic to the U.S. 101/Dry Creek Road intersection, which is operating at an unacceptable level of service. While mitigations are proposed to require a developer contribution of a proportional share to the cost of future signalization of the intersection, the adverse impact would remain significant and unavoidable until the signalization project is implemented.

Alternative 2 (General Plan Quaker Hill Alternatives) would result in similar Aesthetics, Air Quality, GHG and Energy and Noise impacts when compared to the proposed plan, Alternative 3 (North Village Project), and Alternative 4 (Reduced Commercial Alternative). When compared to the proposed plan, Alternatives 3 and 4 trip generation, Alternative 2 generates more daily trips—and while the impact would be somewhat greater—it would require similar mitigation. Since Alternative 2 does not reduce or avoid any significant environmental impacts of the proposed project, it would not be considered an environmentally superior alternative. In any event, Alternative 2 does not implement a substantial number of the City's objectives.

Alternative 3 (North Village Project Alternative) would result in similar or lesser Aesthetics, Air Quality, GHG and Energy and Noise impacts when compared to the proposed plan, Alternative 2, and Alternative 4. Alternative 3 would generate fewer daily trips than the proposed plan and it would not require signalizing the U.S. 101/Dry Creek Road intersection to mitigate Existing Conditions plus

Plan impacts. Alternative 3 generates lower traffic volumes than the proposed plan, and has a potentially significant queuing impact. However, Alternative 3 generates more trips than development forecasted under Alternative 4, and thus, would not be considered the environmentally superior alternative. Furthermore, by specifically prescribing the mix of use for development in the plan area, Alternative 3 does not meet the City's objective of providing flexibility for development of a mixed-use neighborhood on the North Village site, not fully realize the plan area's potential as an attractive Healdsburg gateway, not develop the plan area in harmony with the rural character and natural landscape, or define the plan area's full potential to support a variety of feasible commercial developments.

Alternative 4 (Reduced Commercial Alternative) would result in similar or lesser Aesthetics, Air Quality, GHG and Energy and Noise impacts when compared to the proposed plan, Alternative 2, and Alternative 3. Alternative 4 would generate fewer daily trips than development under the proposed plan and Alternative 2 (3,135 daily trips, 4,390 daily trips and 3,157 daily trips, respectively) given its reduced overall amount of commercial development but would still result in the same significant and unavoidable impacts on operation and queuing at Dry Creek Road/U.S. 101 South Ramps. After the Alternative 1 (No Project), Alternative 4 (Reduced Commercial Alternative) may be considered the environmentally superior alternative. However, Alternative 4 substantially reduces the allowable amount of commercial development on the North Village site. Thus, Alternative 4 does not meet the City's objectives of providing for an economically viable development program that will support development of a mixed-use neighborhood on the site. In addition, Alternative 4 would not define the plan area's full development potential to support a variety of feasible commercial developments or establish a visual character in harmony with the rural setting.

Thus, Alternative 1 (No Project) is the environmentally superior alternative, because it avoids all significant impacts identified under the proposed plan and the other alternatives. However, CEQA stipulates that if the no project alternative is the environmentally superior alternative, then "the EIR must also identify an environmentally superior alternative among the other alternatives." (CEQA Guidelines Section 15126.6(e)(2)). Therefore, Alternative 4 (Reduced Commercial Alternative) is identified as the environmentally superior alternative. As shown in Table 4-5, Alternative 4 results in similar significance conclusions with regard to aesthetics, transportation/traffic, air quality, GHG emissions/energy, noise impacts but (as described throughout Chapter 4.0, Alternatives) to a lesser degree for all these topics when compared to the proposed plan. Nonetheless, Alternative 4 does not meet the City's objectives of providing for an economically viable development program that will support development of a mixed-use neighborhood within the plan area.

SECTION 5: OTHER CEQA CONSIDERATIONS

5.1 - Significant Unavoidable Impacts

CEQA Guidelines Section 15126.2(a)(b) requires an EIR to identify and focus on the significant environmental effects of the proposed project, including effects that cannot be avoided if the proposed project were implemented.

Based on the analyses contained in this EIR, the City has determined that the proposed plan in conjunction with cumulative development in Healdsburg would result in the following respective plan-level and cumulative-level significant and unavoidable impacts:

- **Transportation/Traffic (Plan-level Impact)**: With respect to vehicle circulation system performance (intersection level of service) at the south off-ramp approach from U.S. 101 to Dry Creek Road, the intersection would be expected to experience additional delay upon adding plan-generated trips. The City is implementing a project to install all-way stop signs at this location, which will improve intersection operations. However, the traffic related to the Existing-Plus-Plan Scenario would result in the intersection operating at an unacceptable LOS E level during the PM peak-hour. Mitigation measures were identified to signalize the intersection that, if implemented, would reduce the impact to less than significant. However, the City cannot guarantee that the improvements will be completed by the time development under the proposed plan occurs. Thus, the impacts to the performance of the vehicle circulation system would remain significant and unavoidable.
- **Transportation/Traffic (Plan-level Impact):** With respect to traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/U.S. 101 South Ramp, the queueing would exceed available storage in the westbound left-turn lane with plan-generated trips. Mitigation measures were identified that would require improvements to operation at the intersection. However, traffic safety hazards impacts remain significant and unavoidable until the separate project to signalize the intersection is completed and widening to provide longer turn lane storage is constructed.
- **Transportation/Traffic (Cumulative-level Impacts):** With respect to vehicle circulation system performance (intersection level of service) and traffic safety hazards (queuing exceeding lane storage and intersection conditions) at Dry Creek Road/Grove Street intersection, operation is projected to fall to unacceptable LOS E with plan-generated trips added to the Cumulative Plus Plan volumes. Identified mitigation (signal modifications and restriping) would result in acceptable operations, however, improvements are infeasible due to right-of-way constraints. Thus, both vehicle circulation system performance and traffic safety hazards impacts would remain significant and unavoidable.

5.2 - Growth-Inducing Impacts

There are two types of growth-inducing impacts that a project may have: direct and indirect. To assess the potential for growth-inducing impacts, the proposed project's characteristics that may encourage and facilitate activities that individually or cumulatively may affect the environment must be evaluated (CEQA Guidelines § 15126.2(d)). The CEQA Guidelines, as interpreted by the City, state that a significant growth-inducing impact may result if the proposed project would:

- Induce substantial population growth in an area (for example, by proposing new homes and commercial or industrial businesses beyond the land use density/intensity envisioned in the general plan);
- Substantially alter the planned location, distribution, density, or growth rate of the population of an area; or
- Include extensions of roads or other infrastructure not assumed in the general plan or adopted capital improvements project list, when such infrastructure exceeds the needs of the project and could accommodate future developments.

Direct growth-inducing impacts occur when the development of a project imposes new burdens on a community by directly inducing population growth, or by leading to the construction of additional developments in the same area. Also included in this category are projects that remove physical obstacles to population growth (such as a new road into an undeveloped area or a wastewater treatment plant with excess capacity that could allow additional development in the service area). Construction of these types of infrastructure projects cannot be considered isolated from the development they facilitate and serve. Projects that physically remove obstacles to growth, or projects that indirectly induce growth may provide a catalyst for future unrelated development in an area such as a new residential community that requires additional commercial uses to support residents.

According to the U.S. Census Bureau's American Community Survey, as of 2017, the City's population was 11,840 people.[1] Assuming full buildout of the Healdsburg 2030 General Plan, the City has anticipated population would grow to 12,300 by 2030.[2] As discussed in Chapter 3.0: Environmental Setting and Impacts, the Healdsburg 2030 General Plan identified a citywide development potential and capacities that included residential, hotel, and commercial land uses.

The plan area is located in the partially developed northern area of Healdsburg. The City anticipated that the plan area would absorb a portion of future growth that would occur within city limits. In fact, the Healdsburg 2030 General Plan identifies the North Entry Area Plan (NEAP) planning area as a special study area given its strategic location and development opportunity. To achieve the City's objectives for the planning area, the NEAP helps to facilitate development by identifying development opportunities and addressing on-site constraints. The proposed plan will be used to evaluate future development projects and to ensure consistency with the Healdsburg 2030 General Plan goals and policies.

[1] U.S. Census Bureau. American Fact Finder, Population Estimate for City of Healdsburg, California. (2017). Website: https://www.census.gov/quickfacts/fact/table/healdsburgcitycalifornia/PST045217.
[2] California Department of Finance, 2017.

Consistent with the Healdsburg 2030 General Plan growth objectives and policies for the plan area, the NEAP articulates a vision and establishes guiding principles for future development. The NEAP provides a land use framework for a mix of residential and commercial development, which is complemented by design objectives and guidelines, including identification of preferred land uses and site planning recommendations. In addition to circulation and open space components, the NEAP also describes the need for and location of utility improvements (water, wastewater, stormwater, etc.) to support development. The mix of residential and non-residential development contemplated under the proposed plan further reflects the land uses, densities, and limits established in the Healdsburg 2030 General Plan. Thus, the proposed plan supports future development that is consistent with the City's goals and objectives for the planning area.

Implementing the proposed plan would directly induce growth in the City, but in a manner that is consistent with the Mixed Use land use designation assigned to the plan area in the Healdsburg 2030 General Plan.

In addition to residential units, direct growth from the proposed plan would include retail and hotel facilities as well as provision of new roadways within the plan area. This growth would add jobs, and infrastructure and services would be expanded to serve the proposed plan without exceeding the City's planned-for growth potential or capacity. This growth would not lead to additional growth beyond that already planned for in the Healdsburg 2030 General Plan. As a result, the proposed plan would create minimal to no indirect growth that would be inconsistent with the City or the Association of Bay Area Governments (ABAGs) growth projections for the City of Healdsburg.

The proposed plan would not significantly and adversely affect the City's permanent jobs/housing balance. The proposed plan includes nonresidential development, which would generate new employment opportunities. The proposed plan is expected to result in the development of up to 290 new residential units and to have up to 754 new residents.[3] The proposed plan is also expected to result in approximately 952 full- and part-time jobs that would draw from the local labor pool.[4] The mix of residential and non-residential development pursuant to the proposed plan would help the City achieve a more even jobs/housing balance by providing much-needed housing.

The plan area currently consists of vacant, undeveloped land. Implementing the proposed plan would not require the extension of electrical, natural gas, or water utility infrastructure, but would require connections to existing utilities infrastructure adjacent to the plan area. The proposed plan also would not require extending urban infrastructure other than to the plan area or induce growth in other areas, because the adjacent areas within the City of Healdsburg are already developed pursuant to residential, public/quasi-public, and industrial zoning districts. In addition, the proposed plan would retain roughly 12 acres (approximately 40 percent) of the plan area as natural/open space. The proposed plan would be compatible with the surrounding residential uses within the City of Healdsburg to the south, and the agricultural and open space uses outside the City to the north,

[3] *See*, City of Healdsburg. *Housing Element (2015-2023),* at page 40. (Adopted November, 2014). Average person per household assumed an average of 2.6 persons per household. Assumption represents a conservative estimate given senior residency component, and renters in Healdsburg have a larger household size (2.81) than owner-occupied units (2.38).

[4] Assumes a conservative estimate of one employee per 210 square feet of non-residential space. See, U.S. Bureau of Labor Statistics, *Use of Employment Data to Estimate Office Space Demand*. Website: https://www.bls.gov/opub/mlr/1984/12/rpt3full.pdf.

and would not pressure adjacent properties to redevelop with new or different land uses. Therefore, the proposed plan would not remove a barrier to growth nor create an indirect population increase.

Since the proposed plan would not result in indirect growth, negatively alter the existing jobs/housing balance, or be inconsistent with the Healdsburg 2030 General Plan or ABAGs direct growth projections for the City, implementation of the proposed plan would have a less than significant growth-inducing impact. No mitigation measures are necessary.

5.3 - Significant Irreversible Environmental Changes

As mandated by CEQA Guidelines Section 15126.2(c), the EIR must address significant irreversible environmental changes that would result from implementation of the proposed plan. Specifically, such an irreversible environmental change would occur if:

- The proposed plan would involve a large commitment of nonrenewable resources;
- Irreversible damage can result from environmental accidents associated with the proposed plan; and
- The proposed consumption of resources is not justified (e.g., the proposed plan results in the wasteful use of energy) (refer to Utilities and Service Systems in the Initial Study in Appendix A that addresses this topic in accordance with CEQA Guidelines Appendix F).

The proposed plan is expected to result in the construction and operation of up to 290 multi-family residences and up to 200,000-gross-square-feet of non-residential uses. The proposed plan design includes cluster development, so that at least 40 percent of the plan area would be left as natural open space. Additionally, all existing on-site trees would remain in place.

Construction debris recycling practices would be expected to allow for the recovery and reuse of building materials such as concrete, lumber, and steel, and would limit disposal of these materials, some of which are non-renewable. Construction would include the use of building materials, such as petroleum-based products and metals that cannot reasonably be recreated. Construction also would involve significant consumption of energy, usually consisting of petroleum-based fuels that deplete supplies of nonrenewable resources. Construction of structures and infrastructure would consume energy and water; however, because of its temporary and one-time nature, construction under the proposed plan would not represent a significant irreversible use of resources.

Once construction is complete, the land uses associated with the proposed plan would use nonrenewable fuels for heating, lighting, and water consumption. The new residential and recreational uses would be required to be built to and adhere to the latest adopted edition of the California Green Building Standards Code, which includes a number of standards that would reduce energy demand, water consumption, wastewater generation, and solid waste generation that would collectively reduce the demand for resources. This would result in the emission and generation of less pollution and effluent, and lessen the severity of corresponding environmental effects. Thus, although the proposed plan would result in an irretrievable commitment of non-renewable

resources—energy for heat and light, and water for irrigation and plumbing—resources would not be consumed inefficiently, unnecessarily, or wastefully.

Environmental accidents encompass natural disasters, incidents that include fire-related damage, and releases of hazardous materials. New development on vacant land has the potential to require new or expanded public services such as fire protection and hazard response teams. The plan area is located in an area that is prone to wildfires. However, as discussed in the Public Services and Hazards/Hazardous Materials sections of the Initial Study (included in Appendix A), implementation of the proposed plan would neither result in a significant impact related to the need for new or altered fire protection facilities nor result in greater risk respective to wildfire hazards. Thus, implementation of the proposed plan's residential and nonresidential uses would not result in significant impacts related to fire protection service or wildfire hazards. Furthermore, the residential and non-residential uses do not have the potential to cause significant environmental accidents through releases into the environment, as they would not involve large quantities of hazardous materials.

The proposed plan is expected to result in the construction and operation of multi-family residences and non-residential uses. The proposed plan would cluster development and preserve natural open space. Construction practices allow for the recovery and reuse of building materials thereby making efficient use of available resources and minimizing solid waste. New residential and recreational uses would be required to adhere to the latest adopted edition of the California Green Building Standards Code, which reduce energy and resource consumption. Although implementation of the proposed plan would result in an irretrievable commitment of non-renewable resources, the demand for energy and water would not be consumed inefficiently, unnecessarily, or wastefully. Therefore, implementation of the proposed plan and future development do not have the potential to result in irreversible environmental changes.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 6: PERSONS AND ORGANIZATIONS CONSULTED/ LIST OF PREPARERS

Section 6.1 - Persons and Organizations Consulted

6.1.1 - Lead Agency

City of Healdsburg

Planning and Building Department

Planning and Building Director ..... Maya DeRosa
Planning Consultant..... Linda Ruffing
Legal Counsel .....Deborah Kartiganer

Section 6.2 - List of Preparers

6.2.1 - Lead Consultant

FirstCarbon Solutions (Environmental)

Project Director .....Jason Brandman
Project Manager ..... Kelsey Bennett
Assistant Project Manager..... Ian Peterson
Air Quality/GHG Emissions Lead .....Jason Paukovits
Noise Lead .....Phil Ault
Visual Simulations Lead ..... Yiu Kam
Technical Editor ..... Susie Harris
Word Processor .....Ericka Rodriguez
GIS/Graphics ..... Karlee McCracken

6.2.2 - Subconsultants

W-Trans (Transportation/Traffic)

Principal .....Dalene Whitlock
Assistant Engineer ..... Cameron Nye

THIS PAGE INTENTIONALLY LEFT BLANK