APPENDIX D

D1: AIR QUALITY DATA

D2: GREENHOUSE GAS EMISSIONS DATA

D1: AIR QUALITY DATA

Increase in Vehicle Miles Traveled (VMT)

Existing Uses - Peak PM VMT (2006)									
Land Use	**Unit Quantity***	**Unit Type**	**Rate In**	**Rate Out**	**Trips In**	**Trips Out**	**Total Trips**	**Average VMT/Trip****	**VMT**
Single Family	3645	Dwelling Unit	0.65	0.36	2369.25	1312.20	3681.45	23.90	87986.655
Multifamily Units	937	Dwelling Unit	0.38	0.20	356.06	187.40	543.46	23.90	12988.694
Industrial	10672.2	1,000 Square Feet	0.12	0.86	1280.66	9178.09	10458.76	8.41	87958.138
Commercial/Retail	7884.36	1,000 Square Feet	1.19	1.52	9382.39	11984.23	21366.62	8.41	179693.24
								Peak PM VMT	**368626.72**

Proposed Uses - Peak PM VMT (2025)									
Land Use	**Unit Quantity**	**Unit Type**	**Rate In**	**Rate Out**	**Trips In**	**Trips Out**	**Total Trips**	**Average VMT/Trip****	**VMT**
Single Family	985	Dwelling Unit	0.65	0.36	640.25	354.60	994.85	24.42	24294.237
Multifamily Units	241	Dwelling Unit	0.38	0.20	91.58	48.20	139.78	24.42	3413.4276
Industrial	1014.117	1,000 Square Feet	0.12	0.86	121.69	872.14	993.83	8.74	8686.1149
Commercial/Retail	864.191	1,000 Square Feet	1.19	1.52	1028.39	1313.57	2341.96	8.74	20468.71
Hotel	209	Rooms	0.21	0.28	43.89	58.52	102.41	8.74	895.0634
Existing Home	*n/a*	*n/a*	*n/a*	*n/a*	*2725.31*	*1499.60*	*4224.91*	*24.42*	*103172.3*
Existing Work	*n/a*	*n/a*	*n/a*	*n/a*	*10663.05*	*21162.32*	*31825.37*	*8.74*	*278153.75*
								Peak PM VMT	**439084**

% Increase In VMT 19

** The source of the unit quantity for existing Industrial and Commercial/Retail uses is: Healdsburg 2025 General Plan Background Report, City of Healdsburg, 2007. The source of the unit quantity for existing Single Family and Multifamily Units is: State of California, Department of Finance, Historical Population Estimates for Cities, Counties, and the State, 1990-2007. Note: The quantity of Single Family Units does not match the information provided by the Department of Finance. The numbers were mistakenly transposed when the VMT calculation was performed. However, the quantity of Single Family units used in this analysis is greater than what is estimated by the Department of Finance. Therefore, this represents a conservative analysis.*

*** Source: Metropolitan Transportation Commission, Travel Forecasts for the San Francisco Bay Area: 1990 - 2030, website: http://www.mtc.ca.gov/maps_and_data/datamart/forecast/Travel_Forecasts_Data_Summary_Jan2005.pdf, October 16, 2007.*

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

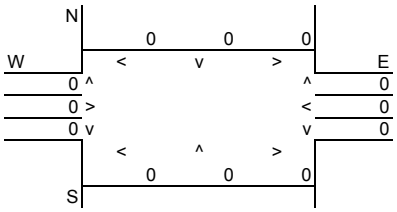
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

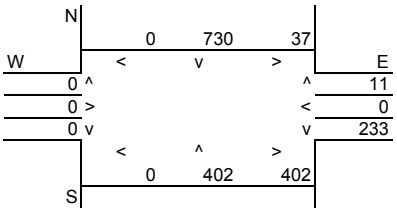
Intersection: Healdsburg Avenue & Parkland Farms Boulevard
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Parkland Farms Blvd	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,767
E-W Road:	0	E-W Road:	683

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,767	6.54	1.62	0.88	0.66	0.46
East-West Road	3.7	2.7	2.2	1.7	683	6.54	0.17	0.12	0.10	0.08

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.3	3.1
25 Feet from Roadway Edge	2.5	3.5	2.6
50 Feet from Roadway Edge	2.5	3.3	2.5
100 Feet from Roadway Edge	2.5	3.0	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

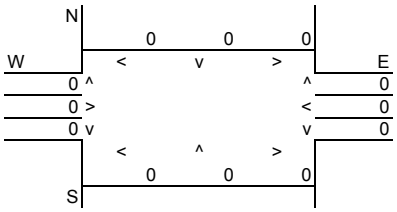
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

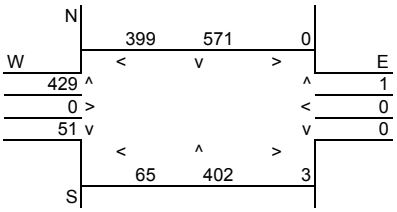
Intersection: Healdsburg & Grove
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Grove Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,802
E-W Road:	0	E-W Road:	944

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,802	6.54	1.65	0.90	0.67	0.47
East-West Road	3.7	2.7	2.2	1.7	944	6.54	0.23	0.17	0.14	0.10

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.4	3.1
25 Feet from Roadway Edge	2.5	3.6	2.6
50 Feet from Roadway Edge	2.5	3.3	2.5
100 Feet from Roadway Edge	2.5	3.1	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

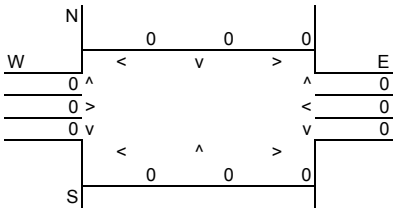
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

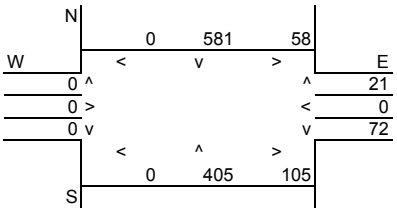
Intersection:	Healdsburg & Sunnyvale
Analysis Condition:	Traffic at Buildout

			No. of	Average Speed	
		Roadway Type	Lanes	A.M.	P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Sunnyvale Drive	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,163
E-W Road:	0	E-W Road:	256

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,163	6.54	1.06	0.58	0.43	0.30
East-West Road	3.7	2.7	2.2	1.7	256	6.54	0.06	0.05	0.04	0.03

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.6	2.7
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	3.0	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

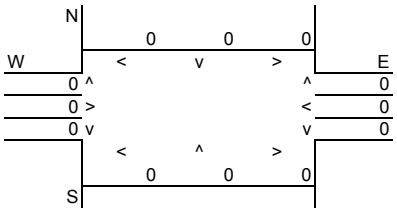
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

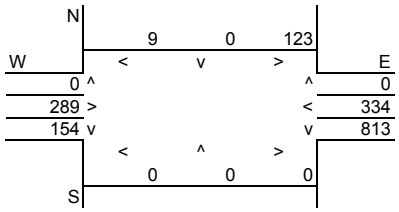
Intersection: US 101 SB Ramps & Dry Creek Rd
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	US 101 SB Ramps	At Grade	2	5	5
East-West Roadway:	Dry Creek Rd	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	967
E-W Road:	0	E-W Road:	1,559

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	967	6.54	0.23	0.17	0.14	0.11
East-West Road	14.0	7.6	5.7	4.0	1,559	6.54	1.43	0.77	0.58	0.41

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.2	3.0
25 Feet from Roadway Edge	2.5	3.4	2.6
50 Feet from Roadway Edge	2.5	3.2	2.4
100 Feet from Roadway Edge	2.5	3.0	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

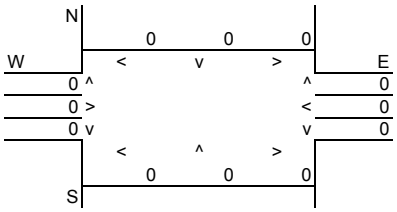
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

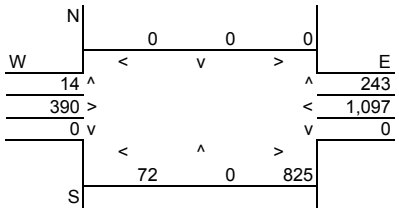
Intersection: US 101 NB Ramps & Dry Creek Rd
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	US 101 NB Ramps	At Grade	2	5	5
East-West Roadway:	Dry Creek Rd	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	897
E-W Road:	0	E-W Road:	2,555

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	897	6.54	0.22	0.16	0.13	0.10
East-West Road	14.0	7.6	5.7	4.0	2,555	6.54	2.34	1.27	0.95	0.67

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	5.1	3.5
25 Feet from Roadway Edge	2.5	3.9	2.9
50 Feet from Roadway Edge	2.5	3.6	2.6
100 Feet from Roadway Edge	2.5	3.3	2.5

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

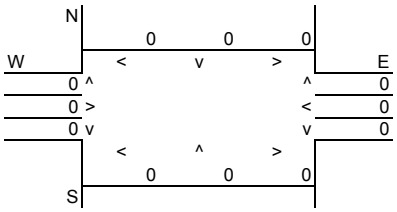
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

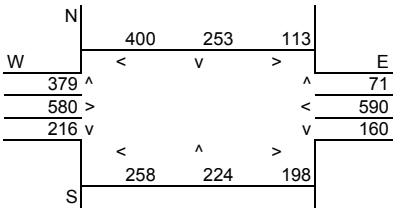
Intersection: Grove St & Dry Creek Rd
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Grove St	At Grade	2	5	5
East-West Roadway:	Dry Creek Rd	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,440
E-W Road:	0	E-W Road:	2,423

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	1,440	6.54	0.35	0.25	0.21	0.16
East-West Road	14.0	7.6	5.7	4.0	2,423	6.54	2.22	1.20	0.90	0.63

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	5.1	3.5
25 Feet from Roadway Edge	2.5	4.0	2.9
50 Feet from Roadway Edge	2.5	3.6	2.7
100 Feet from Roadway Edge	2.5	3.3	2.5

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

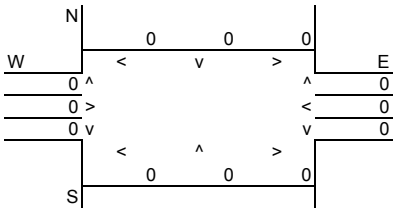
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

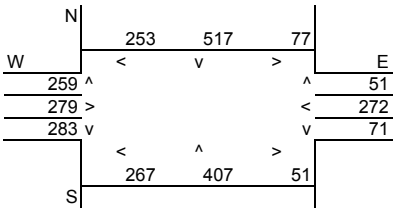
Intersection:	Healdsburg & Dry Creek - March
Analysis Condition:	Traffic at Buildout

			No. of	Average Speed	
		Roadway Type	Lanes	A.M.	P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Dry Creek Road - March Ave	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,596
E-W Road:	0	E-W Road:	1,613

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	1,596	6.54	0.39	0.28	0.23	0.18
East-West Road	14.0	7.6	5.7	4.0	1,613	6.54	1.48	0.80	0.60	0.42

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.4	3.1
25 Feet from Roadway Edge	2.5	3.6	2.6
50 Feet from Roadway Edge	2.5	3.3	2.5
100 Feet from Roadway Edge	2.5	3.1	2.4

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

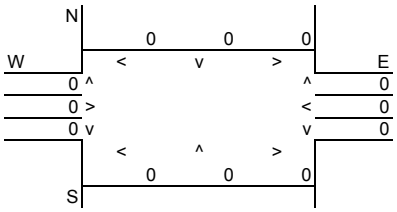
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

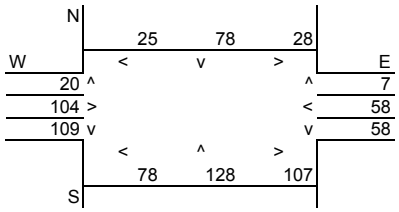
Intersection: University & March
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	University Street	At Grade	2	5	5
East-West Roadway:	March Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	558
E-W Road:	0	E-W Road:	394

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	558	6.54	0.51	0.28	0.21	0.15
East-West Road	3.7	2.7	2.2	1.7	394	6.54	0.10	0.07	0.06	0.04

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.1	2.4
25 Feet from Roadway Edge	2.5	2.8	2.2
50 Feet from Roadway Edge	2.5	2.8	2.2
100 Feet from Roadway Edge	2.5	2.7	2.1

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

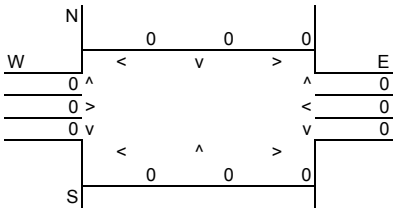
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

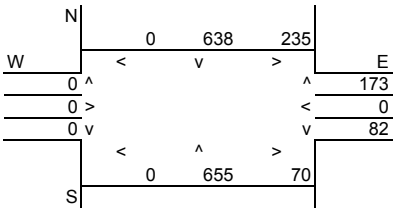
Intersection: Healdsburg & Powell
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Powell Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,701
E-W Road:	0	E-W Road:	560

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,701	6.54	1.56	0.84	0.63	0.44
East-West Road	3.7	2.7	2.2	1.7	560	6.54	0.14	0.10	0.08	0.06

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.2	3.0
25 Feet from Roadway Edge	2.5	3.4	2.6
50 Feet from Roadway Edge	2.5	3.2	2.4
100 Feet from Roadway Edge	2.5	3.0	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

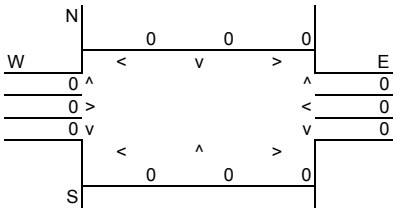
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

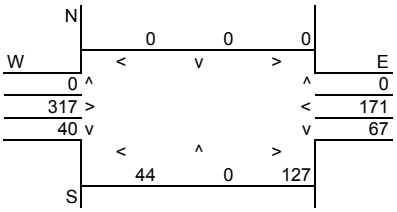
Intersection: Fitch & Powell
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Fitch Street	At Grade	2	5	5
East-West Roadway:	Powell Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	278
E-W Road:	0	E-W Road:	682

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	278	6.54	0.07	0.05	0.04	0.03
East-West Road	14.0	7.6	5.7	4.0	682	6.54	0.62	0.34	0.25	0.18

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.2	2.4
25 Feet from Roadway Edge	2.5	2.9	2.2
50 Feet from Roadway Edge	2.5	2.8	2.2
100 Feet from Roadway Edge	2.5	2.7	2.1

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

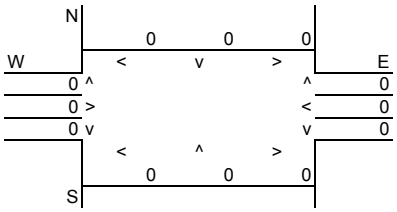
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

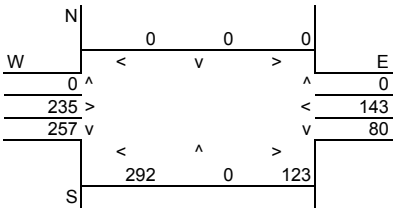
Intersection: University & Powell
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	University Street	At Grade	2	5	5
East-West Roadway:	Powell Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	752
E-W Road:	0	E-W Road:	927

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	752	6.54	0.18	0.13	0.11	0.08
East-West Road	14.0	7.6	5.7	4.0	927	6.54	0.85	0.46	0.35	0.24

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.5	2.6
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	3.0	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

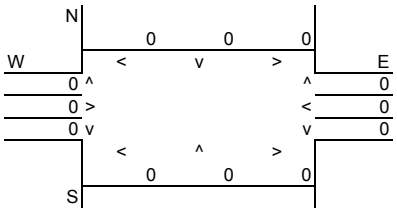
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

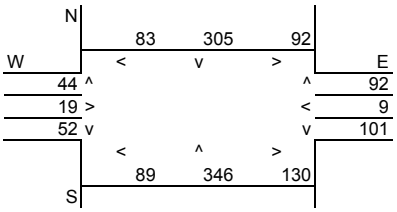
Intersection: Grove & Grant
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Grove Street	At Grade	2	5	5
East-West Roadway:	Grant Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,023
E-W Road:	0	E-W Road:	443

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,023	6.54	0.94	0.51	0.38	0.27
East-West Road	3.7	2.7	2.2	1.7	443	6.54	0.11	0.08	0.06	0.05

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.5	2.6
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	2.9	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

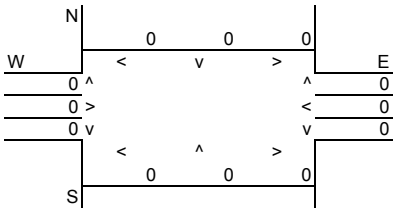
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

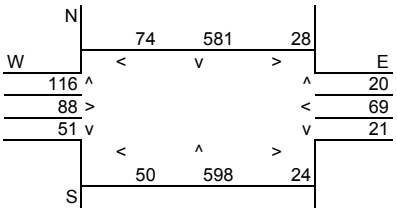
Intersection:	Healdsburg & Grant
Analysis Condition:	Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Grant Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,417
E-W Road:	0	E-W Road:	448

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,417	6.54	1.30	0.70	0.53	0.37
East-West Road	3.7	2.7	2.2	1.7	448	6.54	0.11	0.08	0.06	0.05

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.9	2.8
25 Feet from Roadway Edge	2.5	3.3	2.5
50 Feet from Roadway Edge	2.5	3.1	2.4
100 Feet from Roadway Edge	2.5	2.9	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

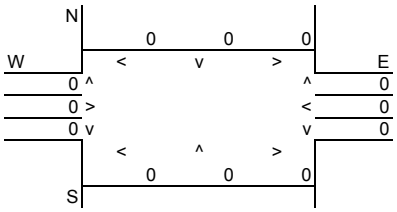
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

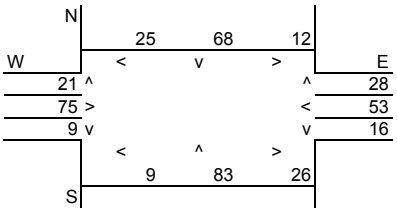
Intersection: Fitch & Grant
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Fitch Street	At Grade	2	5	5
East-West Roadway:	Grant Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	237
E-W Road:	0	E-W Road:	210

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	237	6.54	0.22	0.12	0.09	0.06
East-West Road	3.7	2.7	2.2	1.7	210	6.54	0.05	0.04	0.03	0.02

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	2.8	2.2
25 Feet from Roadway Edge	2.5	2.7	2.1
50 Feet from Roadway Edge	2.5	2.6	2.1
100 Feet from Roadway Edge	2.5	2.6	2.1

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

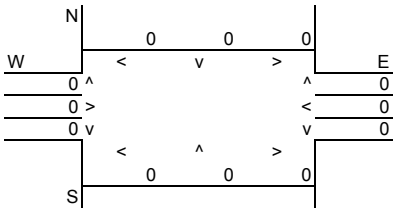
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

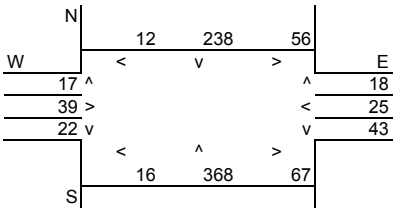
Intersection: University & Grant
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	University Street	At Grade	2	5	5
East-West Roadway:	Grant Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	754
E-W Road:	0	E-W Road:	248

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	754	6.54	0.69	0.37	0.28	0.20
East-West Road	3.7	2.7	2.2	1.7	248	6.54	0.06	0.04	0.04	0.03

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.2	2.4
25 Feet from Roadway Edge	2.5	2.9	2.3
50 Feet from Roadway Edge	2.5	2.8	2.2
100 Feet from Roadway Edge	2.5	2.7	2.1

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

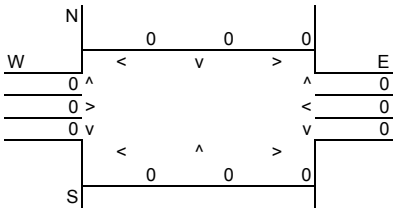
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

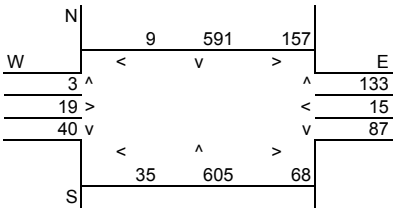
Intersection: Healdsburg & Piper
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Piper Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,498
E-W Road:	0	E-W Road:	479

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,498	6.54	1.37	0.74	0.56	0.39
East-West Road	3.7	2.7	2.2	1.7	479	6.54	0.12	0.08	0.07	0.05

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.0	2.9
25 Feet from Roadway Edge	2.5	3.3	2.5
50 Feet from Roadway Edge	2.5	3.1	2.4
100 Feet from Roadway Edge	2.5	2.9	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

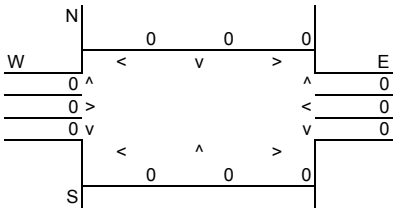
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

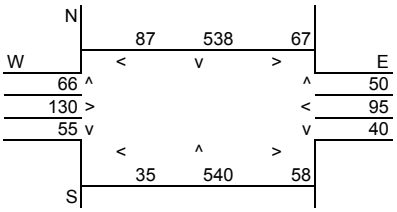
Intersection:	Healdsburg & North
Analysis Condition:	Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	North Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,348
E-W Road:	0	E-W Road:	468

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,348	6.54	1.23	0.67	0.50	0.35
East-West Road	3.7	2.7	2.2	1.7	468	6.54	0.11	0.08	0.07	0.05

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.8	2.8
25 Feet from Roadway Edge	2.5	3.3	2.5
50 Feet from Roadway Edge	2.5	3.1	2.3
100 Feet from Roadway Edge	2.5	2.9	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

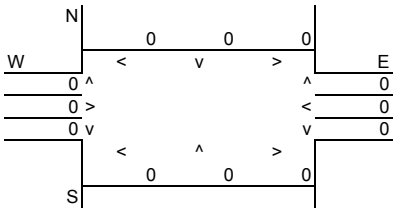
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

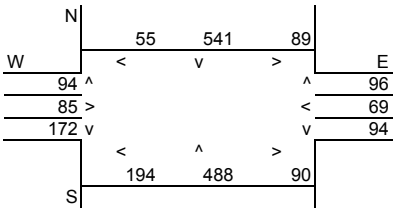
Intersection: Vine & Matheson
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Vine Street	At Grade	2	5	5
East-West Roadway:	Matheson Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,579
E-W Road:	0	E-W Road:	669

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 Reference CO Concentrations E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,579	6.54	1.44	0.78	0.59	0.41
East-West Road	3.7	2.7	2.2	1.7	669	6.54	0.16	0.12	0.10	0.07

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.1	3.0
25 Feet from Roadway Edge	2.5	3.4	2.5
50 Feet from Roadway Edge	2.5	3.2	2.4
100 Feet from Roadway Edge	2.5	3.0	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

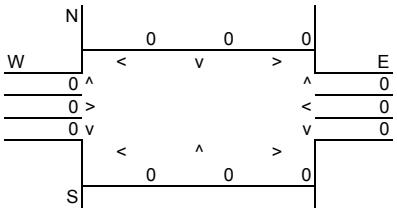
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

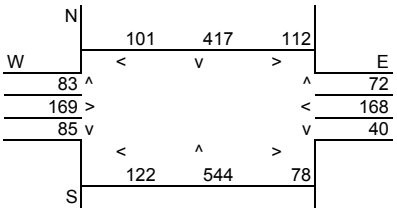
Intersection:	Healdsburg & Matheson
Analysis Condition:	Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	Matheson Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,329
E-W Road:	0	E-W Road:	728

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,329	6.54	1.22	0.66	0.50	0.35
East-West Road	3.7	2.7	2.2	1.7	728	6.54	0.18	0.13	0.10	0.08

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.9	2.8
25 Feet from Roadway Edge	2.5	3.3	2.5
50 Feet from Roadway Edge	2.5	3.1	2.4
100 Feet from Roadway Edge	2.5	2.9	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

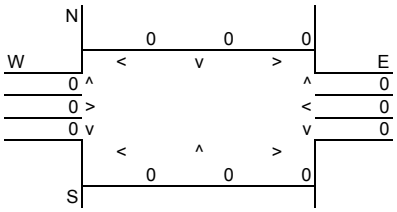
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

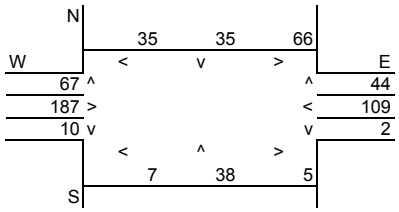
Intersection: Fitch & Matheson
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Fitch Street	At Grade	2	5	5
East-West Roadway:	Matheson Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	285
E-W Road:	0	E-W Road:	415

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	285	6.54	0.07	0.05	0.04	0.03
East-West Road	14.0	7.6	5.7	4.0	415	6.54	0.38	0.21	0.15	0.11

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	2.9	2.3
25 Feet from Roadway Edge	2.5	2.8	2.2
50 Feet from Roadway Edge	2.5	2.7	2.1
100 Feet from Roadway Edge	2.5	2.6	2.1

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

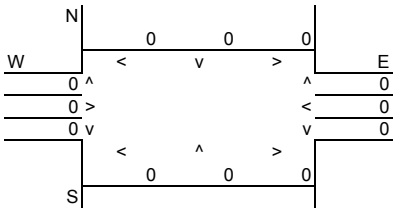
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

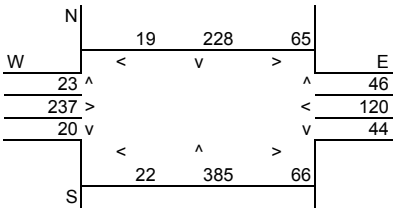
Intersection: University & Matheson
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	University Street	At Grade	2	5	5
East-West Roadway:	Matheson Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	766
E-W Road:	0	E-W Road:	578

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	766	6.54	0.70	0.38	0.29	0.20
East-West Road	3.7	2.7	2.2	1.7	578	6.54	0.14	0.10	0.08	0.06

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.3	2.5
25 Feet from Roadway Edge	2.5	3.0	2.3
50 Feet from Roadway Edge	2.5	2.9	2.2
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

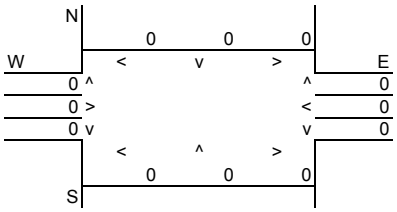
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

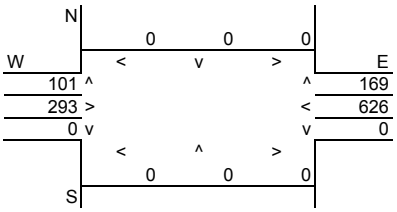
Intersection: US 101 NB Ramp & Westside
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	US 101 NB Ramp	At Grade	2	5	5
East-West Roadway:	Westside Road	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	270
E-W Road:	0	E-W Road:	1,088

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	270	6.54	0.07	0.05	0.04	0.03
East-West Road	14.0	7.6	5.7	4.0	1,088	6.54	1.00	0.54	0.41	0.28

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.6	2.6
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	2.9	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

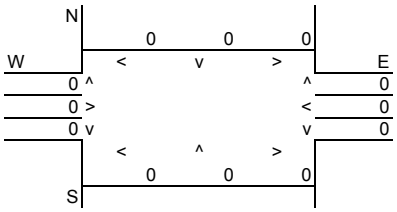
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

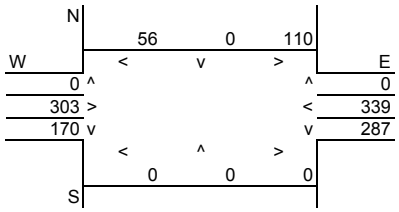
Intersection: US 101 SB Ramp & Westside
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	US 101 SB Ramp	At Grade	2	5	5
East-West Roadway:	Westside Road	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	457
E-W Road:	0	E-W Road:	1,039

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	457	6.54	0.11	0.08	0.07	0.05
East-West Road	14.0	7.6	5.7	4.0	1,039	6.54	0.95	0.52	0.39	0.27

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.6	2.6
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	3.0	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

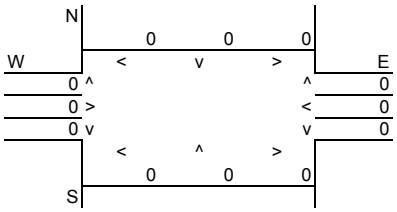
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

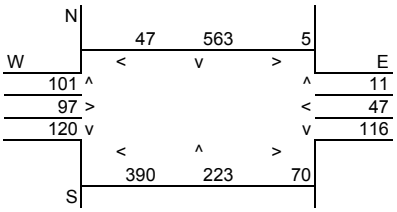
Intersection: Healdsburg - Vine & Mill
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue - Vine S	At Grade	2	5	5
East-West Roadway:	Mill Street	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	1,482
E-W Road:	0	E-W Road:	802

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	1,482	6.54	1.36	0.74	0.55	0.39
East-West Road	3.7	2.7	2.2	1.7	802	6.54	0.19	0.14	0.12	0.09

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.1	2.9
25 Feet from Roadway Edge	2.5	3.4	2.5
50 Feet from Roadway Edge	2.5	3.2	2.4
100 Feet from Roadway Edge	2.5	3.0	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

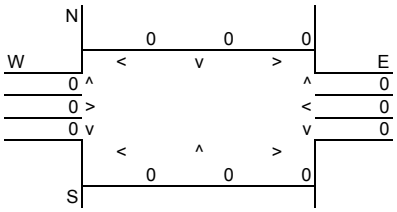
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

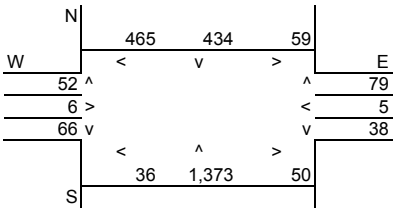
Intersection:	Healdsburg & Exchange
Analysis Condition:	Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healsburg Avenue	At Grade	2	5	5
East-West Roadway:	Exchange Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	2,462
E-W Road:	0	E-W Road:	630

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

Roadway	A_1 E.O.R.	A_2 25 Feet	A_3 50 Feet	A_4 100 Feet	B Traffic Volume	C Emission Factors[2]	Estimated CO Concentrations E.O.R.	25 Feet	50 Feet	100 Feet
	Reference CO Concentrations									
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	2,462	6.54	2.25	1.22	0.92	0.64
East-West Road	3.7	2.7	2.2	1.7	630	6.54	0.15	0.11	0.09	0.07

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.9	3.4
25 Feet from Roadway Edge	2.5	3.8	2.8
50 Feet from Roadway Edge	2.5	3.5	2.6
100 Feet from Roadway Edge	2.5	3.2	2.4

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

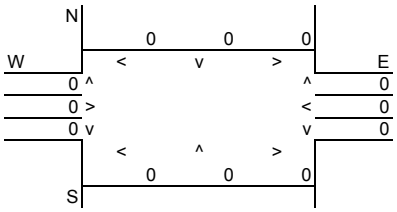
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

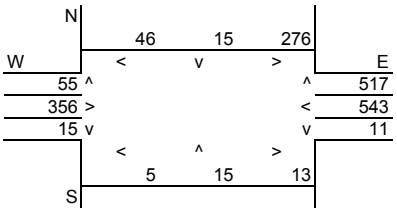
Intersection: Front & Healdsburg
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Front Street	At Grade	2	5	5
East-West Roadway:	Healdsburg Avenue	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	924
E-W Road:	0	E-W Road:	1,716

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	924	6.54	0.22	0.16	0.13	0.10
East-West Road	14.0	7.6	5.7	4.0	1,716	6.54	1.57	0.85	0.64	0.45

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	4.3	3.1
25 Feet from Roadway Edge	2.5	3.5	2.6
50 Feet from Roadway Edge	2.5	3.3	2.5
100 Feet from Roadway Edge	2.5	3.1	2.3

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

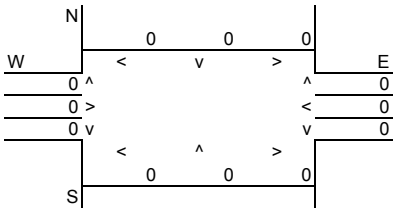
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

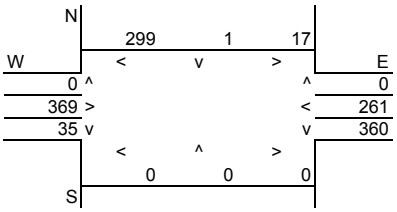
Intersection: Old Redwood Hwy & US 101 SB Ramps
Analysis Condition: Traffic at Buildout

			No. of	Average Speed	
		Roadway Type	Lanes	A.M.	P.M.
North-South Roadway:	Old Redwood Hwy	At Grade	2	5	5
East-West Roadway:	US 101 SB Ramps	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	396
E-W Road:	0	E-W Road:	1,007

Roadway CO Contributions and Concentrations
Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	396	6.54	0.10	0.07	0.06	0.04
East-West Road	14.0	7.6	5.7	4.0	1,007	6.54	0.92	0.50	0.38	0.26

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations
Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.5	2.6
25 Feet from Roadway Edge	2.5	3.1	2.3
50 Feet from Roadway Edge	2.5	2.9	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

SIMPLIFIED CALINE4 CARBON MONOXIDE ANALYSIS

Project Title: Healdsburg

Background Information

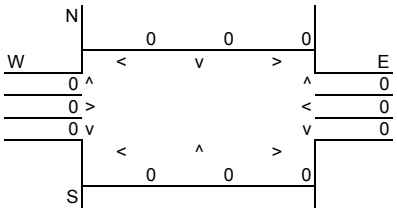
Nearest Air Monitoring Station measuring CO:	Sonoma County
Background 1-hour CO Concentration (ppm):	2.5
Background 8-hour CO Concentration (ppm):	2.0
Persistence Factor:	0.6
Analysis Year:	2007

Roadway Data

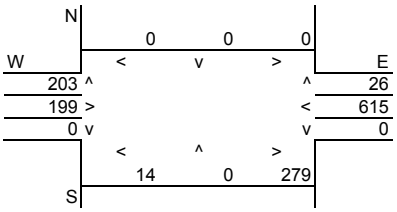
Intersection: Headsburg & 101 NB Ramps
Analysis Condition: Traffic at Buildout

		Roadway Type	No. of Lanes	Average Speed A.M.	Average Speed P.M.
North-South Roadway:	Healdsburg Avenue	At Grade	2	5	5
East-West Roadway:	US 101 NB Ramps	At Grade	2	5	5

A.M. Peak Hour Traffic Volumes



P.M. Peak Hour Traffic Volumes



Highest Traffic Volumes (Vehicles per Hour)

N-S Road:	0	N-S Road:	293
E-W Road:	0	E-W Road:	1,119

Roadway CO Contributions and Concentrations

Emissions = (A x B x C) / 100,000[1]

	A_1	A_2	A_3	A_4	B	C				
	Reference CO Concentrations				Traffic	Emission	Estimated CO Concentrations			
Roadway	E.O.R.	25 Feet	50 Feet	100 Feet	Volume	Factors[2]	E.O.R.	25 Feet	50 Feet	100 Feet
A.M. Peak Traffic Hour										
North-South Road	14.0	7.6	5.7	4.0	0	6.54	0.00	0.00	0.00	0.00
East-West Road	3.7	2.7	2.2	1.7	0	6.54	0.00	0.00	0.00	0.00
P.M. Peak Traffic Hour										
North-South Road	3.7	2.7	2.2	1.7	293	6.54	0.07	0.05	0.04	0.03
East-West Road	14.0	7.6	5.7	4.0	1,119	6.54	1.02	0.56	0.42	0.29

[1] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).
[2] Emission factors from EMFAC2007 (2007). Assumes temperature of 60 degrees F and a relatively humidity of 60%

Total Roadway CO Concentrations

Peak Hour Emissions = North-South Concentration + East-West Concentration + Background 1-hour Concentration[2]
8-Hour Emissions = ((Highest Peak Hour Concentration - Background 1-hour Concentration) x Persistence Factor) + Background 8-hour Concentration[2]

	A.M. Peak Hour	P.M. Peak Hour	8-Hour
Roadway Edge	2.5	3.6	2.7
25 Feet from Roadway Edge	2.5	3.1	2.4
50 Feet from Roadway Edge	2.5	3.0	2.3
100 Feet from Roadway Edge	2.5	2.8	2.2

[2] Methodology from Bay Area Air Quality Management District *BAAQMD CEQA Guidelines* (1996).

D2: GREENHOUSE GAS EMISSIONS DATA

Waste Characterization - Tons per Year

	1990			2007			Buildout of General Plan 2025		
	Generated	**Diverted**	**Disposed**	**Generated**	**Diverted**	**Disposed**	**Generated**	**Diverted**	**Disposed**
Paper	5,332	559	902	5,540.19	2,608.00	2,932.19	6,613.59	3,112.96	3,500.62
Food	1,176	39	1,137	3,856.82	0.00	3,856.82	4,604.50	0.00	4,604.50
Plant Debris	1,944	13	1,931	20,273.82	19,171.10	1,102.72	24,201.81	22,885.32	1,316.49
Wood Textiles	3,362	84	3,278	3,767.16	788.20	2,978.96	4,497.04	940.58	3,556.46
Other Waste	6,449	1,725	8,595	7,357.01	238.80	7,118.21	8,782.41	284.27	8,498.14
Total	18,263	2,420	**15,843**	40,795	22,806	**17,989**	48,699	27,223	**21,476**

Waste Disposal from Healdsburg Transfer - 2007

Month	Redwood	Potrero	Vasco	Keller	Daily Total
January	2,050.56	3,495.00	67.85	278.87	5,892.28
February	1,559.65	3,400.28	197.52	177.80	5,335.25
March	1,824.34	3,782.82	388.75	245.34	6,241.25
April	1,809.97	3,426.79	224.83	234.66	5,696.25
May	2,025.70	3,676.02	385.34	57.86	6,144.92
June	1,576.86	3,470.79	382.66	397.64	5,827.95
July	1,569.78	3,292.28	798.81	535.64	6,196.51
August	2,218.17	3,208.07	398.54	609.09	6,433.87
September	2,025.47	2,728.97	286.06	409.99	5,450.49
October	2,200.59	3,105.99	182.26	564.29	6,053.13
November	2,057.04	2,526.28	110.52	864.73	5,558.57
December	1,403.95	2,514.48	113.53	840.03	4,871.99
Totals	**22,322**	**38,628**	**3,537**	**5,216**	**69,702**
	32.02%	55.42%	5.07%	7.48%	

Note: Redwood, Petrero, Keller are managed landfills with methane capture. Vasco is an open landfill.

Vehicle Miles Traveled Data

VMT	1990	2007	2025
Per Day	102,000	121,460	163,077
Per Year	37,230,000	44,332,900	59,523,105

Source: Total VMT was provided by the Sonoma County Transportation Authority which uses the Highway Performance Monitoring System to model past and future VMT.

Reduction in VMT from SMART Ridership

	Riders	Multiplier	Miles
Total	413	1.0	413.0
Walkers	297	1.2	356.4
Miles Saved			**769.4**

Source and Assumptions: Ridership information was taken from the Sonoma-Marin Area Rail Transit Revised Travel Demand Forecasting Report, June 2006.
Miles saved assumed that 1 mile was saved in VMT per rider given the location of the SMART station in relation to the City Limits/Highway 101 (approximately 0.5 mile), and that walkers were coming from an average of .6 miles from the train station and therefore saved 1.2 miles per rider/trip.

Electricity Used (Megawatt Hours)

Type	1990	2007	Buildout 2025 GP
Municipal	700	5,200	6,207
Water and Sewer	455	3,600	4,297
Community Usage	59,254	65,786	78,532
Total City-wide Usage	**60,409**	**74,586**	**89,037**

Source: Electricity usage was provded from City records.
Projections are based on per-capita for 2007 and a business-as-usual scenario.

Population

1990	2003	2004	2005	2006	2007	2025
9,469	11,631	11,651	11,648	11,654	11,706	13,974

Source: General Plan 2025 Draft EIR

Megawatt Hours Per Year/Per Capita

1990		2007		Buildout 2025 GP	
Actual	Per Capita	Actual	Per Capita	Projected	Per Capita
60,409	6.380	74,586	6.372	89,037	6.372

	2007
California	38,049,462
Sonoma County	484,470
Healdsburg	11,706
CA %	**0.03%**
SC %	**2.42%**

Source: California Department of Finance

2025 Megawatts Per Year - Reduction from Mitigation

	MWH	Projected	Per Capita
Energy Efficiency Reduction:	198	88,839	6.357
Green Building Reduction - Electricity	13,356	75,681	5.416
TOTAL	**13,554**	**75,483**	**5.402**

Source: Energy Efficiency is taken from *Establishing Energy Efficiency Targets: A Public power Response to AB2021*.
Green Building assumes all future residential units receive Credit J2 and 10% receive Credit I and that future commercial projects meet the preliminary draft performance standards for energy use being developed by CARB for use in recommending significance thresholds for GHG emissions under CEQA.

Natural Gas for Zip Code 95448 (Therms per Year)

	2007
Residential	2,108,512
Commercial	1,645,448
Total	**3,753,960**

Natural Gas for Healdsburg

	1990	2007	2025
Residential	1,204,206	1,257,647	1,639,094
Commercial	939,742	981,447	1,279,122
Total	**2,358,948**	**2,463,635**	**3,210,859**

Source: 2007 data from Email Correspondence with Carol Foreman, PG&E, 12-09-2008

Population

	2007	2025
ZC 95448	17,837	
Healdsburg	11,706	13,974
% of total	**65.63%**	

Per Capita Natural Gas

	1990	2007	2025
Residential	127.17	117.30	117.30
Commercial	99.24	91.54	91.54
Total	**249.12**	**229.77**	**229.77**

Sonoma County Per Capita Reduction in Natural Gas Use from 1990 to 2007

8.42%

Source: Email Correspondence with Andrea Gough, California Energy Commission, 12-10-2008

2025 Therms Per Year - Reduction from Mitigation

	Reduction	Projected	Per Capita
Reduction from Green Building:	481,629	2,729,230	195.31

Note: Green Building assumes all future residential units receive Credit J2 and 10% receive Credit I and that future commercial projects meet the preliminary draft performance standards for energy use being developed by CARB for use in recommending significance thresholds for GHG emissions under CEQA.