



CITY OF HEALDSBURG CITY COUNCIL AGENDA STAFF REPORT

MEETING DATE: October 17, 2022

SUBJECT: 2020 Greenhouse Gas (GHG) Inventory Summary for Healdsburg

PREPARED BY: Terra Sampson, Utility Conservation Analyst

STRATEGIC INITIATIVE(S):

Pursue Initiatives that Promote Environmental Stewardship

RECOMMENDED ACTION(S):

Receive a presentation summarizing the results and discussion of the 2020 greenhouse gas (GHG) inventory for Healdsburg.

COMMUNITY ENGAGEMENT/OUTREACH:

The Sonoma County Regional Climate Protection Authority (RCPA) presented the results of the 2020 Greenhouse Gas (GHG) Inventory to their Board of Directors on September 12, 2022 (See Attachment A). The report, presentation, and recording are available on the RCPA website. City staff recently prepared the 2021 Power Content Label, which was included in the September 19, 2022 City Council packet and has been distributed in the mail to all Healdsburg electric customers in October 2022.

BACKGROUND:

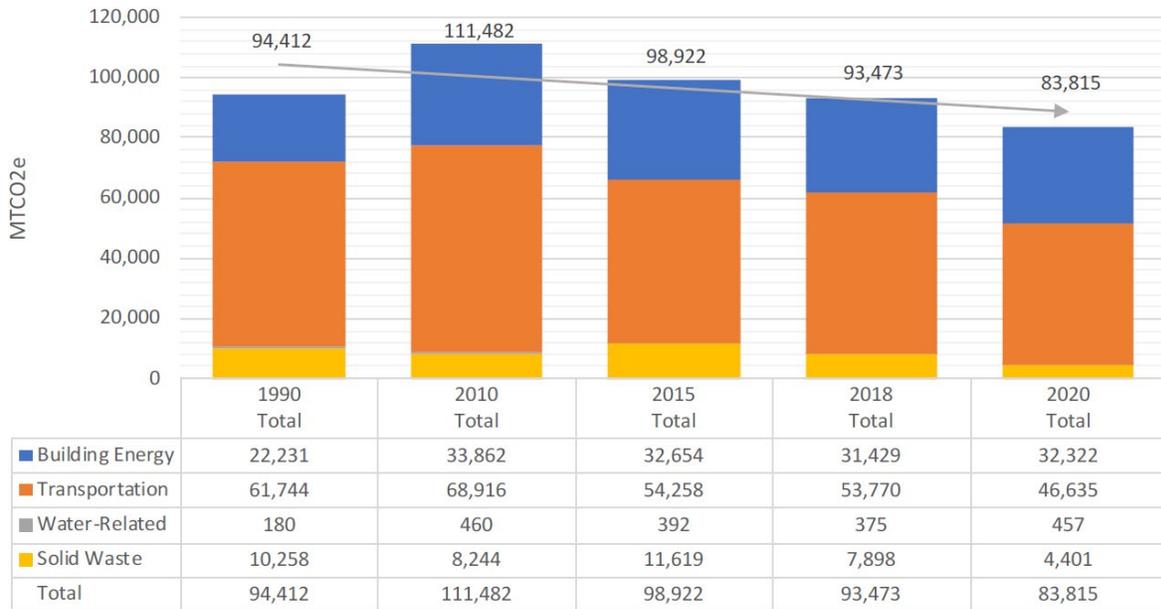
The Sonoma County Regional Climate Protection Authority (RCPA) established a baseline communitywide GHG inventory for calendar year 2010 and a back cast inventory for 1990 as part of the Climate Action 2020 and Beyond (CA2020) development process. The RCPA has since completed inventory updates for 2015, 2018, and 2020 to help track progress towards achieving the short and long-term emissions reduction goals established in CA2020 and in the Sonoma Climate Mobilization Strategy. The inventory updates provide countywide results, as well as breakouts for each of the jurisdictions.

DISCUSSION/ANALYSIS:

In September 2022, RCPA released its updated 2020 GHG Inventory for Sonoma County (See Attachment A). The County achieved a 23% overall emission reduction from the 1990 baseline. During the period of 1990-2020, the City of Healdsburg achieved an 11% GHG reduction overall, and a 26% GHG reduction per capita (See Figure 1). Similar to the overall County

inventory, the two main emissions sectors for Healdsburg are Transportation and Building Energy (see Figure 2).

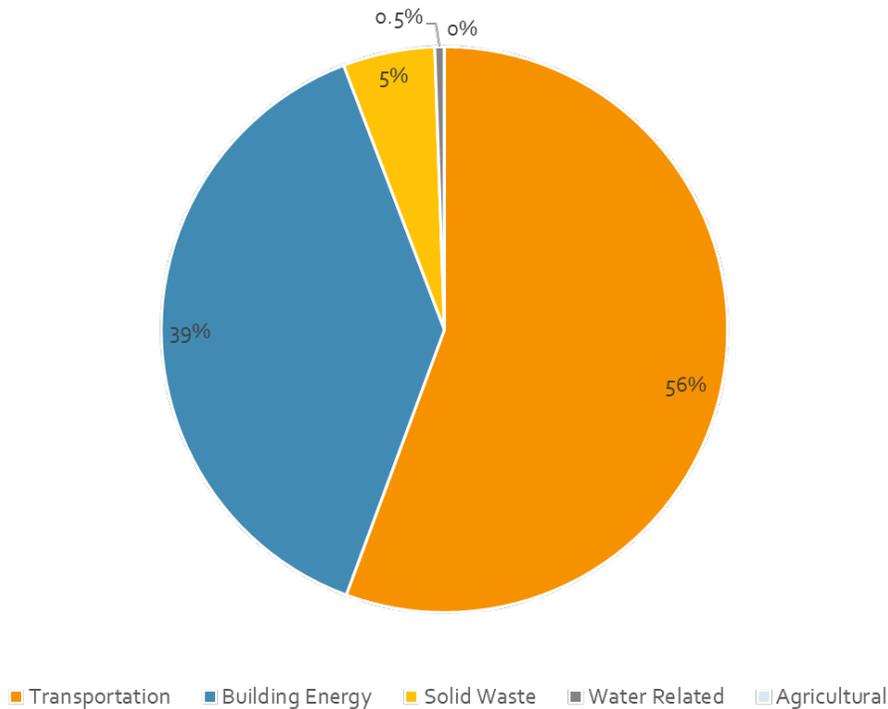
1990-2020 GHG Emission Trends by Year - Healdsburg



Source: RCPA, 2020 GHG Inventory

Figure 1. 1990-2020 GHG Emission Trends by Year - Healdsburg

GHG Emissions by Sector (MTCO2e)



Source: RCPA, 2020 GHG Inventory

Figure 2. Healdsburg GHG Emissions by Sector

Building Energy

In the 2020 GHG Inventory, Healdsburg's building emissions are up 45% compared to 1990. In 1990 the City electric sources had a very low carbon content of 0.002 metric ton/ megawatt-hour (MT/MWh) as opposed to PG&E's 1990 emission rate of 0.257 MT/MWh. This creates a very low starting point for Healdsburg's building emissions. If PG&E supplied Healdsburg energy in 1990 similar to the rest of the county, 1990 baseline emissions would have been higher by nearly 16,000 MT. When applying PG&E's 1990 emissions to Healdsburg's 1990 electric usage, Healdsburg would have achieved 15% reduction with 2020 building sector emissions.

Since 1990, Healdsburg's building square footage has increased roughly 35% with electricity usage increasing 19% over the same period. To meet these growing energy needs, the City increased purchases of unspecified market energy (typically natural gas). In 2007, through the NCPA, the City began the development of the Lodi Energy Center (LEC), a natural gas generator completed in 2012. Additionally, over the past decade the City experienced a decline in the geothermal steam fields and multiple drought years that reducing in-state hydroelectric resources (drought years impacted GHG inventories in 2015, 2018, and 2020).

In 2020, Healdsburg experienced various challenges to no and low-carbon resources, including:

- Loss of transmission from the Geysers Geothermal Plant in the early months of 2020 due to the 2019 Kincade Fire, during which time the City had to temporarily procure other electric sources with higher carbon emissions
- Reduced in-state hydroelectric resources during 2020 from low precipitation
- LEC turbine failure that required additional high-carbon market purchases

Each of these events increased the carbon intensity of Healdsburg energy sources in calendar year 2020. Staff believes, therefore, that both 1990 (with high levels of low-carbon energy) and 2020 (with several disruptions to our supply of low-carbon energy) were somewhat anomalous. Looking forward, as we continue implementing planned projects to increase our supply of clean energy, we anticipate an accelerated pace of GHG emission reduction from building energy in Healdsburg. That trend is already evident in our review of energy composition post 2020.

For calendar year 2021, Healdsburg electric emissions are 12% below 2020, despite a historic drought that further reduced in-state hydroelectric resources. The reduction in emissions for 2021 is largely due to the implementation of the City's floating solar project. In 2021 solar energy met 9% of citywide electricity needs versus previous years of less than 1% (See Attachments C and D).

Healdsburg's Power Content Label, used to complete RCPA's 2020 GHG inventory, includes necessary in-state resources to support grid functions required to deliver energy 24/7. On an annualized basis, purchasing out-of-state hydroelectric power would reduce emissions reported on the Power Content Label and captured in RCPA's GHG inventories. However, it may mislead consumers regarding the actual GHG emissions associated with delivering electricity at the time it is used. Within California, necessary in-state grid support and peak energy is currently met using natural gas fired generation plants but is not consistently represented on power content labels used to develop GHG inventories. To reduce GHG production while maintaining grid

reliability and stable energy sources, city staff have focused on preserving existing renewable and low-carbon resources, worked to develop new in-state low and no-carbon generation, and participated in the development of transition plans to convert existing carbon-based generation to cleaner energy forms (See Attachment B). Some of these projects include:

- The late 2021 hydroelectric contract with South Feather Water and Power, which is expected to meet 6% of citywide electricity
- New Antelope Solar Project in southern California, which is now operational and expected to meet 8% of citywide electricity needs starting in 2023
- Progress towards converting the LEC's main turbine, that failed in 2020 to include green-hydrogen generation
- Potential development of utility scale batteries and micro-grids to improve Healdsburg ability to store mid-day solar energy for use later in the evening when solar generation is not available.

To maintain grid stability and the ability to meet peak and seasonal demands, the LEC has the potential of switching to green-hydrogen to reduce GHG emissions while preserving critical grid-support and to provide energy when wind, hydro, and solar are not available. The design and construction of a hydrogen-electrolyzer at the LEC will be a large part of Healdsburg's efforts to reduced GHG emissions while building a reliable energy portfolio to meet the future's electrification of the building and transportation sector.

Transportation

Healdsburg's transportation section produced approximately 46,635 metric tons of emissions or roughly 55% of Healdsburg's 2020 emissions. The 2020 GHG inventory indicates Healdsburg's transportation emissions are down 24% compared to 1990, and down 13% compared to 2018. This reduction will need to be monitored in the next inventory to determine if emissions begin to rebound after COVID-19 restrictions were lifted. The City continues to focus on infrastructure improvements for safe active transportation within City limits but future reductions will also be dependent upon fuel switching to reduce emissions associated with travel that begins or ends outside city limits.

Water-Related

In RCPA's 2020 GHG inventory, Healdsburg's water-related emissions are up 154% compared to 1990 and indicate some of the highest numbers per capita in the county. Due to regulatory obligations, Healdsburg's water and wastewater treatment processing have significantly increased and now include microfiltration for domestic water and tertiary treatment for wastewater. These two processes require more energy to meet the drinking water and wastewater treatment regulatory requirements but are not significantly different from other Sonoma County jurisdictions. Since late 2018, all City accounts (including water and wastewater treatment) are on the Green Rate and receive 100% renewable electricity. City staff are working with RCPA to better understand RCPA's methodology applied to the water and wastewater sector. Of note is that water-related emissions shown in RCPA's report are less than 1% of the City's overall emissions.

Solid Waste

In the 2020 GHG Inventory, Healdsburg's solid waste emissions are down 57% compared to

1990. City staff continues to work collaboratively with Recology and Zero Waste Sonoma. The City and Zero Waste Sonoma will also focus on implementing measures to comply with SB 1383 to reduce organic waste disposal by 75% by 2025 and to rescue at least 20% of currently disposed surplus food by 2025. The City also recently provided residents with hundreds of high-quality countertop bins to encourage composting.

ENVIRONMENTAL STEWARDSHIP:

Reviewing the 2020 GHG Inventory for Healdsburg supports environmental stewardship of our community and the environmental goals of our region. Discussion and understanding of the results can help inform future GHG reduction projects, such as developing the Climate Mobilization Strategy.

ALTERNATIVES:

Council may wish to provide feedback and discussion related to the 2020 GHG Inventory.

FISCAL IMPACT:

There is no fiscal impact related to the recommended action.

ENVIRONMENTAL ANALYSIS:

Pursuant to California Environmental Quality Act (“CEQA”) and Title 14, the California Code of Regulations Section 15378(b)(2), continued administrative actions do not qualify as a “Project”. Therefore, no further CEQA or environmental review is required.

ATTACHMENT(S):

Attachment A: RCPA Community GHG Inventory 2020

Attachment B: Healdsburg Electric Map

Attachment C: Power Content Label 2020

Attachment D: Power Content Label 2021

Greenhouse Gas Inventory Healdsburg 2020

City Council Meeting

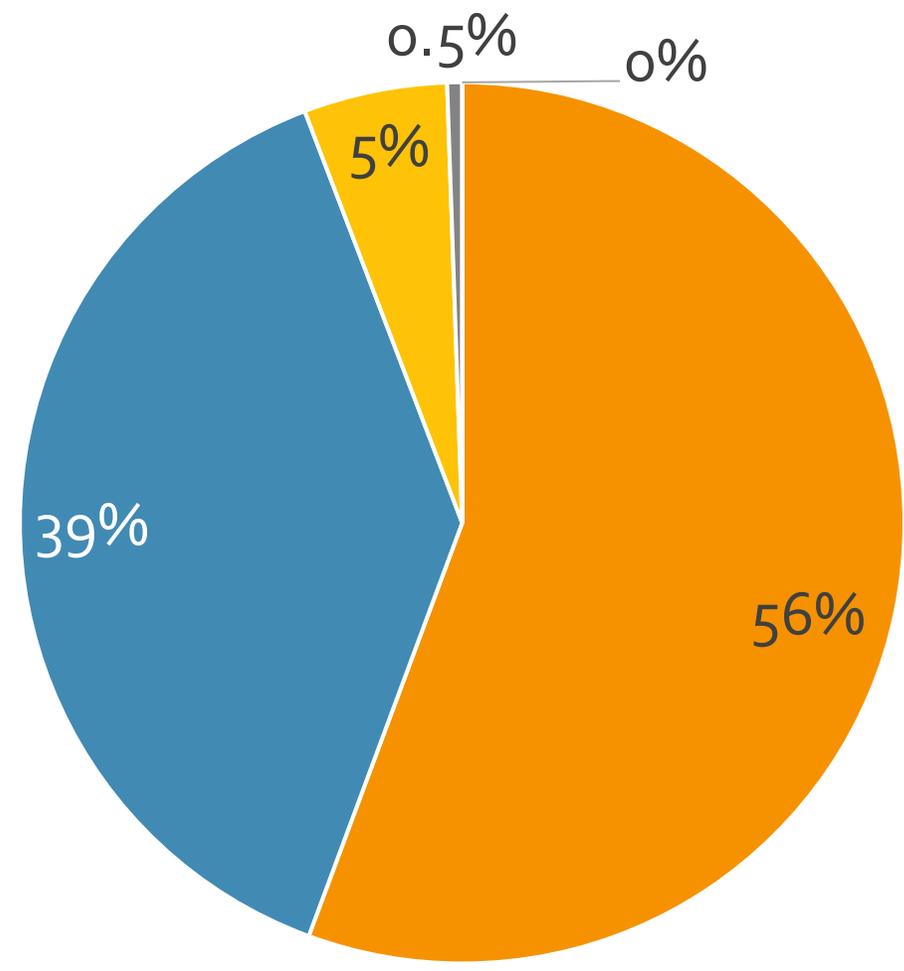
City Council, October 17, 2022



Healdsburg GHG Emissions

Transportation & Building Energy continue to be the main emissions sectors

GHG Emissions by Sector



■ Transportation ■ Building Energy ■ Solid Waste ■ Water Related ■ Agricultural

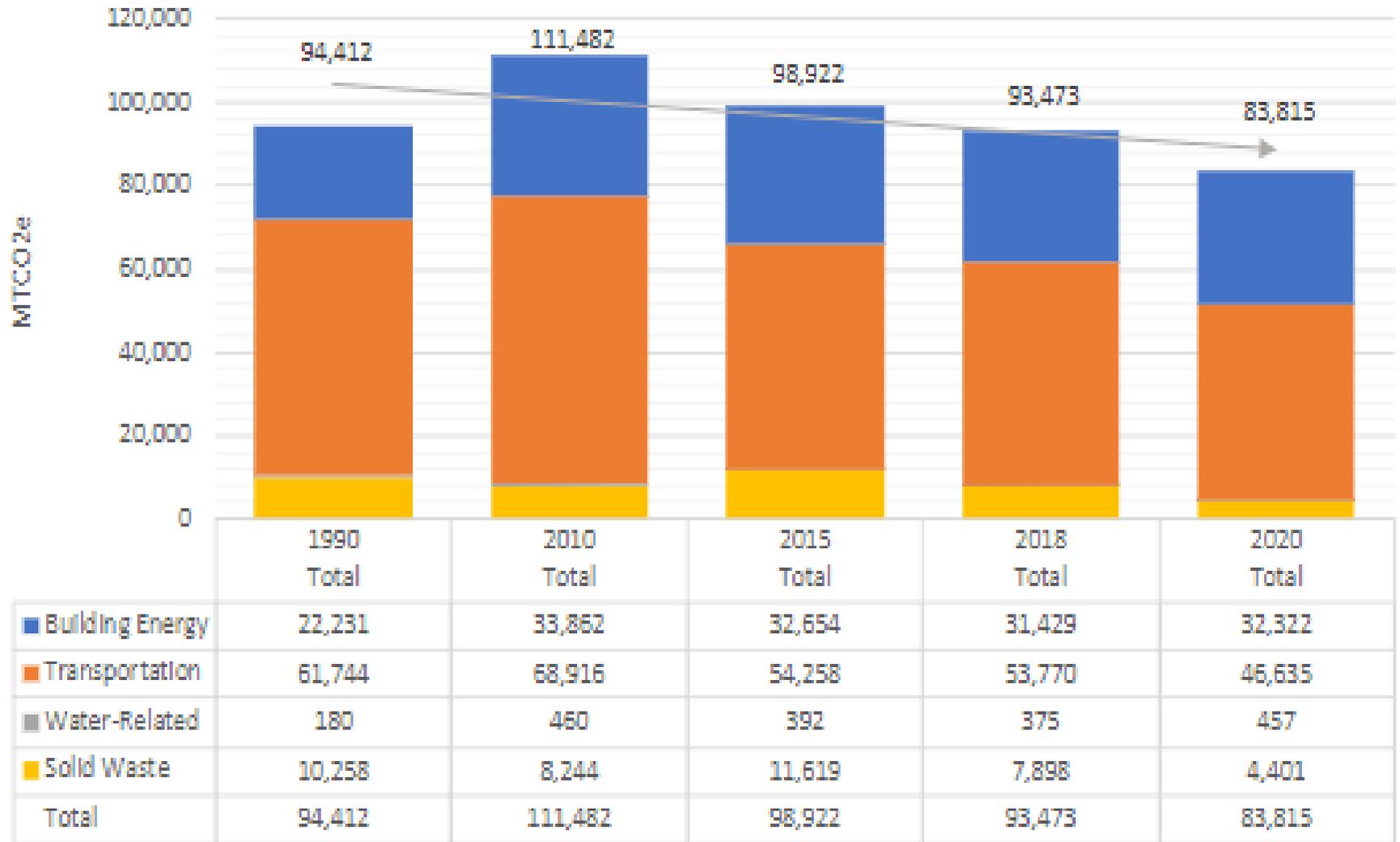
1990-2020 GHG Emission Trends by Year

Healdsburg emissions **down 11%** from 1990

Per capita emissions **down 26%**

7.4 MTCO_{2e} per person

1990-2020 GHG Emission Trends by Year - Healdsburg



Building Energy Use Emissions (MTCO₂e)

2020 Total	Electricity	Natural Gas	Stationary Sources	Minus Water Conveyance
32,322	15,337	17,220	124	-359

- **1990 Energy content was 99% renewable & carbon free**
 - Population has increased 16%
 - Building square footage has increased approx. 35%
 - Electricity consumption up 19%, but flat over the last decade
 - 1990 electric sources were 92% geothermal, 7% hydro and 1% natural gas > .002 MT/MWh
 - Applying PG&E's 1990 emission rate (0.257 MT/MWh), Healdsburg's 2020 building emissions are down 15%
 - Reaching the goal of 80% below 1990 numbers will be more difficult for Healdsburg.
 - Inventory years 2015, 2018, and 2020 were dry years, limiting hydroelectric generation
 - 2020 natural gas consumption accounted for over 1/2 of building energy emissions

2020 Electric Supply Impacts

The Kincade Fire and Planned outages reduced generation from the Geysers in 2020

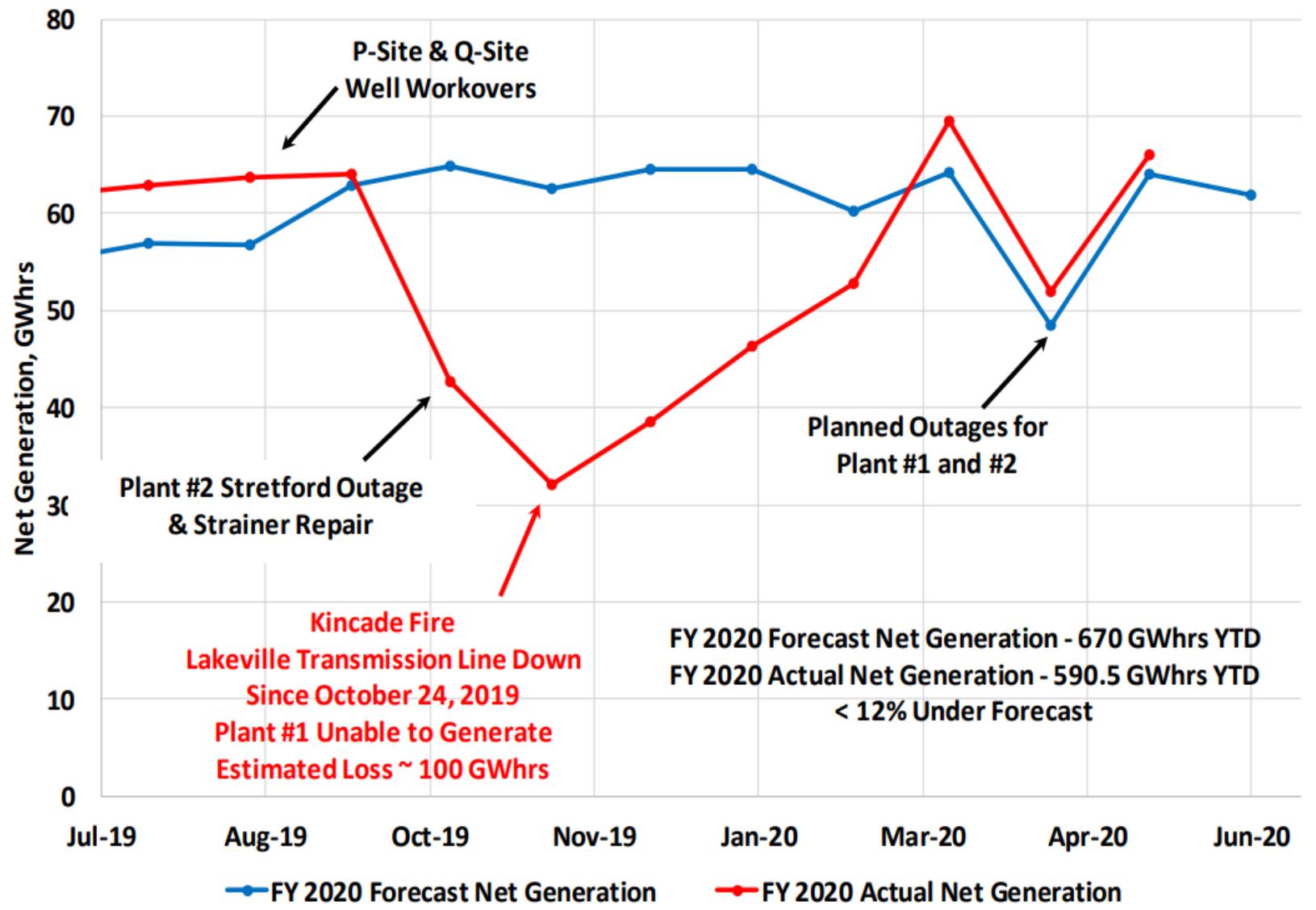
Loss of generation requires purchasing replacement energy from sources with higher carbon-intensity

Lodi Energy Center turbine failure and planned outages

Provided opportunity to begin converting to include hydrogen but required unspecified market purchases

2021 electric emissions were 12% below 2020, further decrease expected in 2022 from new energy projects

FY 2020 Comparison of Forecast and Actual Net Generation Geothermal Facility



Hydro Fluctuations

2020 Water Year was 50-70% of average precipitation for Sonoma County

2015 and 2018 were also dry years

Dry years limit availability of in-state hydro power

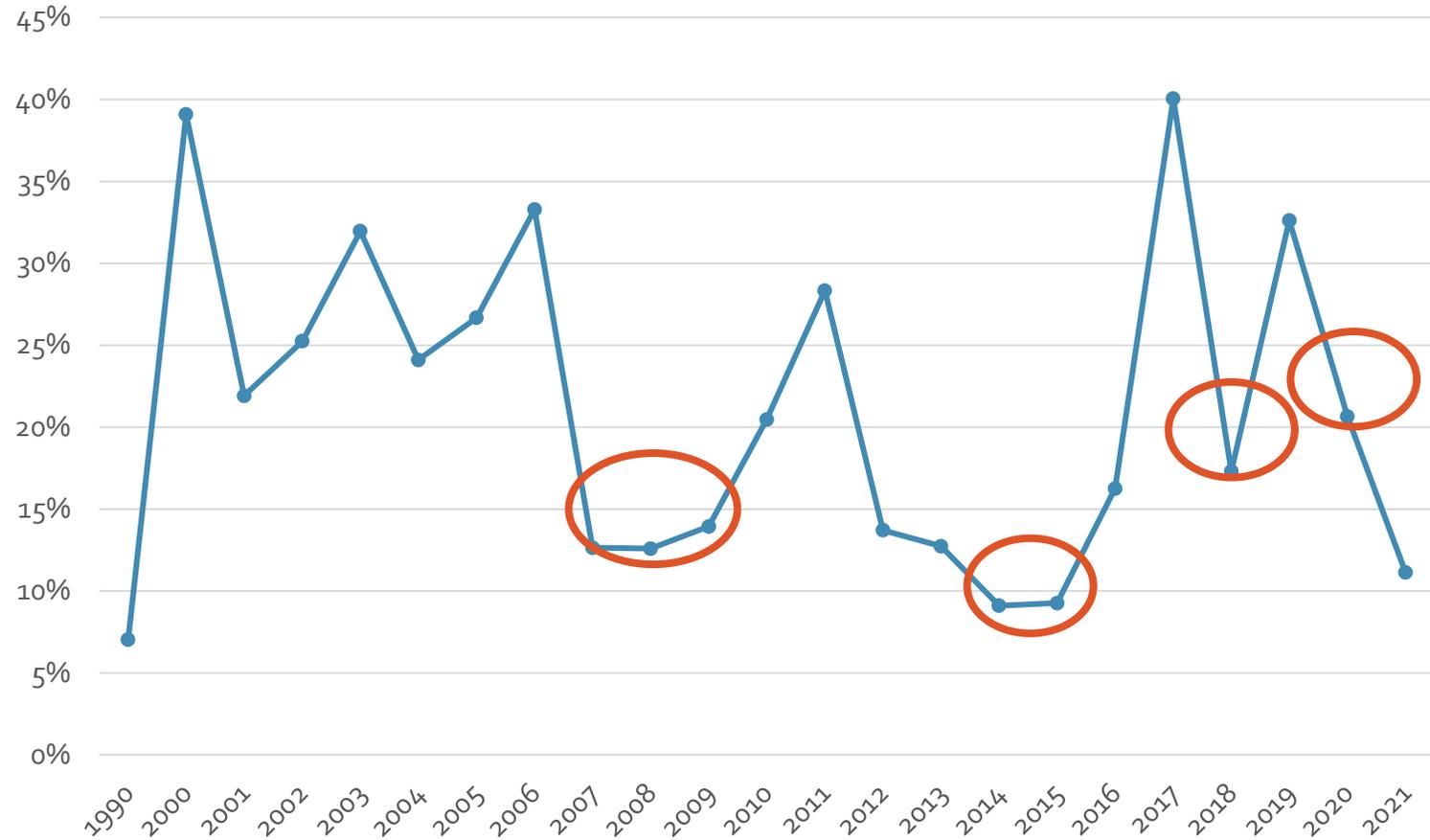
Option to purchase out-of-state hydro and renewables

Requires in-state 'dispatchable' resource, mainly natural gas

If available could reduce annualized emissions indicated by the Power Content Label

Would not eliminate the actual GHG emissions associated with providing electricity at the time it is used

Hydroelectric Resources as Percent of Electric Supply (1990-2021)



2021 Electricity Sources & Planned Projects

Approx. 60% of citywide electricity supplied in 2021 was no or low-carbon

Projects underway to provide an additional 14% of no and low-carbon sources by 2023

WHERE DOES OUR ELECTRICITY COME FROM?

(¿De dónde viene nuestra electricidad?)

 **The Geysers Geothermal Plant**
Middletown, CA **41%**

 **Lodi Energy Center**
Lodi, CA **39%**
**In process of converting to include hydrogen generation*
(En proceso de conversión para incluir generación de hidrógeno)

 **Floating Solar Project**
Healdsburg, CA **9%**

 **Western Area Power Administration**
6%

 **Collierville Power House**
Calaveras County, CA **5%**

 **New Spicer Meadow Reservoir**
Tuolumne County, CA **0.2%**

 **South Feather Water and Power**
Butte County, CA **0.2%**
**Expected to provide 6% in 2022*
(Se espera que proporcione 6% en 2022)

 **Geo Solar**
Clearlake and Middletown, CA **0.1%**

 **Antelope Solar**
Lancaster, CA
**Expected to provide 8% in 2023*
(Se espera que proporcione 8% en 2023)



 Geothermal  Hydro  Natural Gas  Solar

Transportation Emissions (MTCO₂e)

2020 Total	On-Road Transportation	Off-Road Transportation
46,635	43,763	2,872

- **Down 24%** compared to 1990
 - Down 13% compared to 2018
- Substantial impacts from COVID-19 in 2020
 - Exiting pandemic may see emissions increase
- Continue to focus on infrastructure improvements for safe active transportation
 - E-bike share program to launch soon
 - Transportation electrification also needed to reduce emissions associated with travel that begins or ends outside city limits

Water-Related Emissions (MTCO₂e)

2020 Total	Water Conveyance	Wastewater
457	359	98

- **Up 154%** compared to 1990
- In the 2000's the City developed both the microfiltration for domestic water and Tertiary Treatment for wastewater, both increase energy usage
- City facilities, including water and wastewater treatment, are on the Green Rate to receive 100% renewable electricity
- Working with RCPA to better understand methodology applied to the water and wastewater sector
- Water-related emissions are less than 1% of overall emissions

Solid Waste Emissions (MTCO_{2e})

2020 Total	Residential Single Family	Residential Multifamily	Commercial	Self Haul
4,401	1,602	434	1,194	1,171

- **Down 57%** compared to 1990
- Support from Zero Waste Specialist position with Recology
- City working with Zero Waste Sonoma to implement SB 1383 (reduce organic waste and rescue surplus food)
- Countertop compost bins recently provided to residents
- Reductions largely attributed to State level actions and improved local access to recycling and composting.

Questions

