Sonoma's Climate Action and Environmental Sustainability Accomplishments and 2020-2021 Work Plan

April 30, 2020

Prepared by Travis Wagner
Sustainability Coordinator
City of Sonoma

CONTENTS

1. INTRODUCTION

The City of Sonoma is committed to striking a balance between economic development, social responsibility, and environmental well-being by partnering with our organizations, businesses, and the community to ensure we leave a healthy and sustainable environment for future generations.

The purpose of this document is twofold: (1) present information and available data regarding the numerous initiatives that have occurred throughout the Sonoma community (i.e., city operations and the residential, institutional, and commercial sectors) that directly and indirectly address climate change and support environmental sustainability and (2) present a draft environmental sustainability work plan for the City of Sonoma (See Appendix 1).

1.1 Climate Action Efforts

While the City's jurisdiction is small, as a major part of the Sonoma Valley and Sonoma County, the City of Sonoma has historically been committed to environmental sustainability and been a leader in many areas. As discussed below, Sonoma has taken numerous steps to combat climate change and to improve the environmental sustainability of the City. Major efforts have included the City Council's adoption in 2016 of the 22 local climate measures recommended by the Regional Climate Protection Authority. An integral partner has been the City's Community Services and Environment Commission (CSEC), which has advised the City on actions to take and has served as an important conduit of information, reports, and data produced by area volunteers and non-profit groups. With advice from the CSEC, in 2019, the City developed a Sustainability Work Plan focusing on climate action, solid waste reduction, and increasing the number of electrical vehicle charging stations. These efforts culminated in the hiring of the City's first ever Sustainability Coordinator in December 2019 as a fixed-length, 2-year part-time position.

With a professional Sustainability Coordinator hired, the City Manager directed that a report of the City's environmental sustainability work to date be compiled to assist in preparing an updated work plan for the next two year. The initial focus for the Sustainability Coordinator was on three major components: implement climate actions, minimize waste, and increase the number of installed electric vehicle charging stations. However, this initial scope needs further refinement which is the purpose of this staff report and Council discussion.

The Climate Action component was connected to the 22 measures identified in the Regional Climate Action Authority in its CAP2020. These local measures were subsequently adopted in 2016 by the City (Resolution 40-2016). In January 2020, the City's new Sustainability Coordinator conducted a review of the 22 local measures. The assessment focused on whether these local measures identified in 2016, which were specified courses of action, were still the best actions to achieve significant reductions in the City's climate footprint compared to other potential innovative approaches. That is, while some of the local measures have merit, others will take significant staff resources to adopt and yet, appear to have minimal positive impact. Meaning, if all 22 local measures were pursued, the opportunity costs of not exploring bigger, more innovative actions may be significant with regards to GHG emission reductions.

The first step to assess the validity of not limiting climate actions to the 22 measures was to prepare a comprehensive status report on the community's environmental sustainability and climate actions. The assessment was based on the following five goals:

1. Identify and assess what has been undertaken and what is being done in the community, including the City government, in addressing climate action and environmental sustainability;

2. Identify which actions have worked, which ones are working, and what needs work;

3. Use this information to set priorities on climate actions to achieve the overall goal of GHG reductions in support of a 2020-2021 Sustainability Work plan;

4. Help establish a common operational concept for the City as to what is climate action and environmental sustainability; and

5. Based on direction forward, overhaul the City's sustainability website for more robust information, resources and outlined initiatives.

Based on the preliminary results of this status report, there are some interesting observations that warrant further consideration. For example:

– The installation of Solar PVs appears to be driven primarily by economic incentives and not streamlined permitting or education.

– The number of low-carbon vehicles registered is lower than expected.

– The forthcoming installation of an Advanced Metering Infrastructure will have a significant impact on water conservation thereby reducing energy.

- Great strides have been taken to minimize waste disposal.
- Yet, in spite of it being on average 7% more expensive and producing more carbon, 13.1% of customers have opted out of Clean Power Sonoma and gone with PG&E.
- There are many free opportunities for energy, water, and solar consultations and workshops, which are not fully being taken advantage of by the community.
- There is no readily identifiable opportunity for residents, businesses, or visitors to offset their GHG emissions that support local carbon sequestration or climate readiness projects.

The City's Sustainability Coordinator also spent some initial time exploring potentially innovative actions that could be implemented that would result in significant GHG reductions.

1.2 Greenhouse Gas Emissions

In 2015, total greenhouse gas (GHG) emissions in the City of Sonoma generated by community activities were 105,000 metric tons of CO2 equivalent (MTCO2e[*]), which was approximately 2.9% of countywide GHG emissions.[1] (In 2018, the City's municipal operations generated an estimated 312.7 MTCO2e or about 0.29% of the total community activities in 2015.[2]) Between 2010 and 2015, the City's total GHG emissions increased by 1.94% while the City's population increased 2.3% indicating a slight reduction in per capita GHG emissions.[3] Figures 1 and 2 depict a comparison of Sonoma's GHG inventory by source in 2010 and 2015. Figure 3 presents a 2010 to 2015 comparison of GHG emissions for each category.

Sonoma's *carbon footprint* is the total greenhouse gas (GHG) emissions created by its residents, businesses, organizations, government, and visitors.

Based on this comparison, between 2010 and 2015, GHGs from transportation *increased* by 16.68% (9,284 MTCO2e), GHGs from building energy *decreased* by 33.62% (15,533 MTCO2e), and GHGs from solid waste *increased* by 63.82% (5,586 MTCO2e). Thus, while the transportation and solid waste increases were significant, these were mostly offset by the decrease in building energy use.

[*] The unit CO2e is a commonly used metric measure used to compare emissions from different greenhouse gases based upon their global warming potential that has been standardized to that of one unit mass of carbon dioxide (CO2).

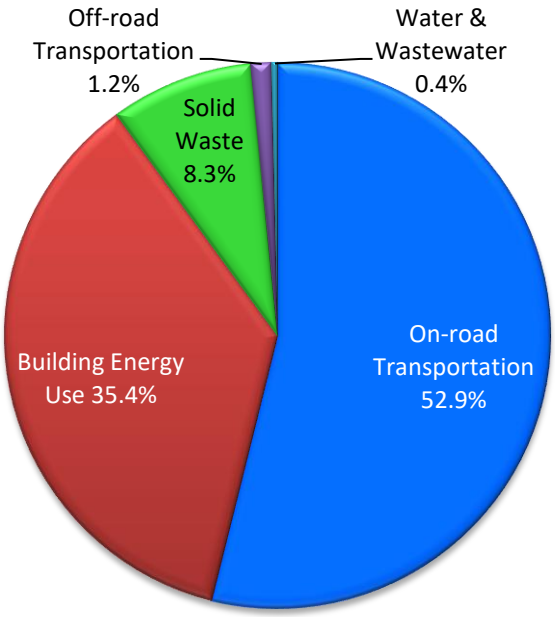

Figure 1. Estimated GHG emissions by category for 2010. City of Sonoma.[4]

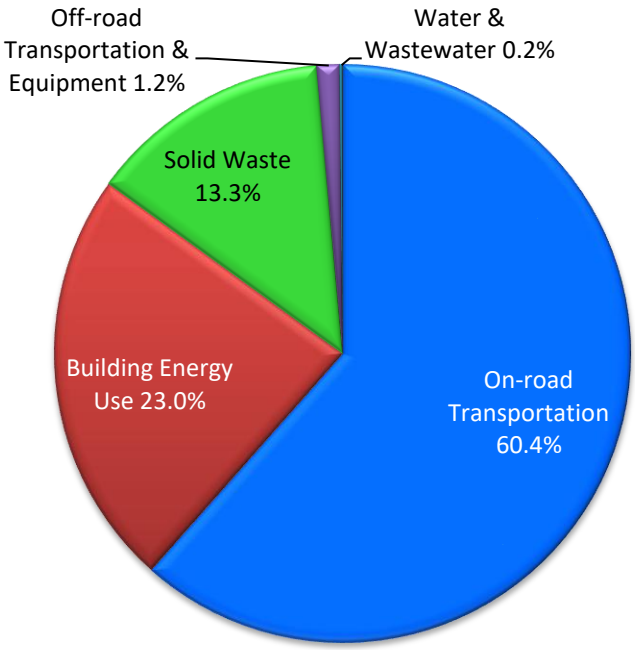

Figure 2. Estimated GHG emissions by category for 2015. City of Sonoma.[5]

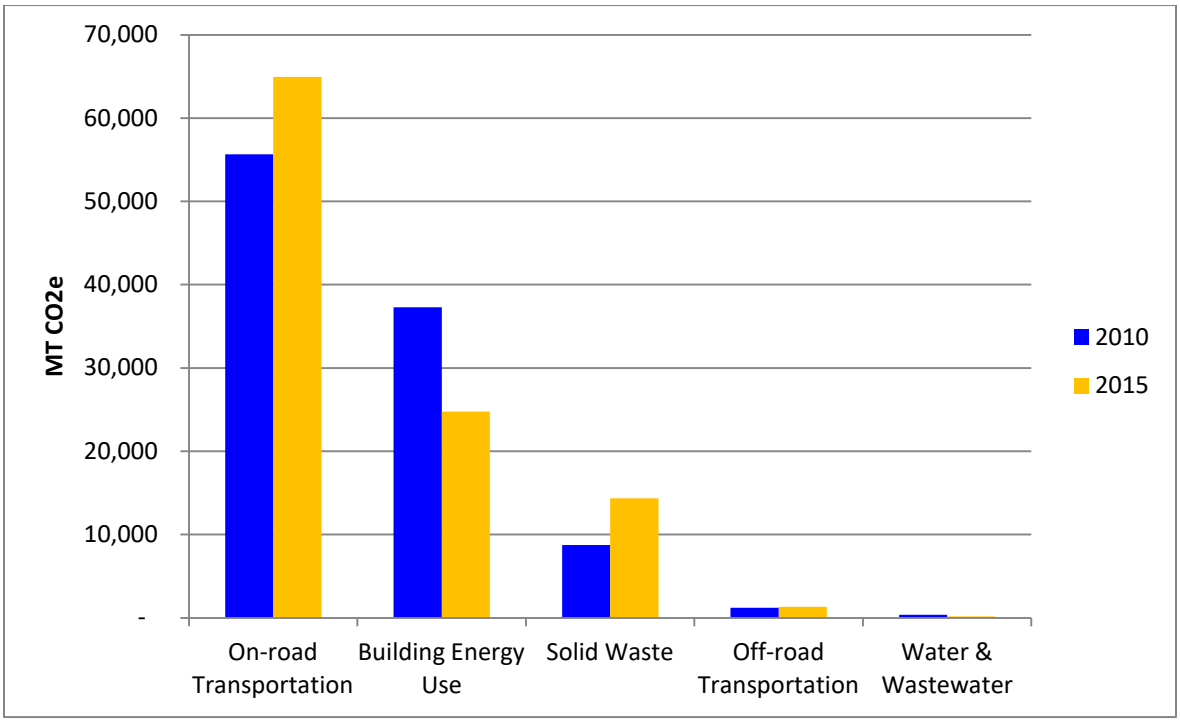

Figure 3. Comparison of 2010 to 2015 GHG emissions for each category.[6]

1.3 Presentation of Accomplishments and Associated Data

The various accomplishments and associated data are presented in the following major GHG categories:

a. **Energy**
b. **Water Resources**
c. **Transportation**
d. **Waste Reduction**
e. **Miscellaneous**

Under each of the five categories, information is presented in tables that lists the climate/sustainability action, provides a very brief description of the item, presents available results and data, and identifies the appropriate climate action relationship with regards to regional goals and local measures. (It should be noted that not all of the presented actions have associated goals or measures as identified in RCPA Climate Action 2020. Yet some of the actions represent significant reductions in GHGs, which is the overarching goal of climate action.) This latter component is intended to connect the item with the Regional Goals and/or Local Measures published by the Regional Climate

Protection Authority in its Climate Action 2020. These goals and measures are presented in Appendix 2. At the end of each section a brief summary of accomplishments is presented, which is followed by a discussion of proposed Work Plan actions designed to further decrease Sonoma's community-generated carbon footprint.

2. ENERGY

Building energy represents the second largest (23% in 2015) source of GHGs generated by the Sonoma community.[7] Reducing the consumption of energy though conservation and improved efficiency, while simultaneously increasing the generation of alternative energy (non-fossil fuel), are both essential to reducing the community's carbon footprint.

2.1. Overall Goal

The overall goal with energy is to reduce energy consumption through conservation and efficiency actions, increase the sequestration of carbon, and increase the use and production of reduced or carbon-free energy.

2.2 List of Energy Items, Description, and Results

The following table presents a list of energy items, their description, available results and data, and the associated CAP2020 regional goals and/or local measures.

Energy Item	Description	Results/Data	Associated Climate Action Goal/Measure
1. Renewable Power	In July 2013, Sonoma joined the Sonoma Clean Power (SCP) consortium, a Community Choice Aggregation program. The default choice for customers is CleanStart; customers can opt-out to purchase the PG&E option.	Sonoma (zip code 95476) has 5,530 electrical power meters: 4,578 (82.8%) Residential and 949 (17.2%) Commercial & Industrial Meters. Of total eligible meters, 86.9% use SCP (CleanStart and Evergreen) while only 13.1% have opted-out. Sonoma is 8th among the 13 jurisdictions in SCPs service area with opt-outs.[8]	2-R1

Energy Item	Description	Results/Data	Associated Climate Action Goal/Measure
2. Low Carbon Energy	CleanStart is 91% carbon free (renewable and hydro) producing 98.81 lb CO_2/MWh whereas the PG&E option is 69% carbon free (33% renewable, 24% nuclear, 12% large hydro).[9]	The vast majority of the 86.9% customers not opting out of SCP subscribe to the CleanStart option.	2-R1
3. Local, Low Carbon Energy	The EverGreen option is 100% local renewable power (geothermal and solar) producing 46.02 lb CO_2/MWh[10]	City operations switched to the EverGreen program—the first jurisdiction in the county to do so. A total of 80 (1.4%) meters in zip code 95476 have signed up for the EverGreen option. Sonoma ranks 3rd out of 13 jurisdictions in the county for its total percentage of EverGreen accounts/meters.[11]	2-R1
4. Street Lighting Efficiency	Replace inefficient streetlights with high efficiency LED lights.	In 2015, the City replaced 1,100 streetlights with energy efficient LED fixtures reducing annual CO_2 emissions by 180,000 lbs.	1-L2
5. Traffic Light Efficiency	Replace traffic (safety) lights with high efficiency LED lights.	In 2012, CalTrans converted 25 traffic/safety lights (100%) at 9 intersections in the City. Each LED conversion saves up to 615 kWh of energy. Conversion to the 25 LEDs results in an approximate annual GHG reduction of 11,600 lbs of CO_2. Each LED is designed to last up to 15 years compared to a 5-year life span of earlier generation lighting.[12]	1-L2

Energy Item	Description	Results/Data	Associated Climate Action Goal/Measure
6. Residential Solar PV Installations	Installation of roof-top photovoltaic (PV) solar arrays on residential buildings.	Between 2002 and 2019, 1,364 residential accounts in zip code 95476 installed PV solar units with 8,466.75 kW DC installed capacity; an average of 6.2 kW DC per installation.[13] In the City limits, the estimated PV installation rate for homes is a minimum of 14%[14]	RG-2 2-L1 2-L2
7. Commercial Solar PV Installations	Installation of roof-top PV solar arrays on commercial buildings.	Between 2002 and 2019, 83 commercial accounts in zip code 95476 installed PV solar units with 4,067.33 kW DC installed capacity; at an average of 49 kW DC per installation.[15]	RG-2 2-L3 2-L4
8. Industrial Solar PV Installations	Installation of roof-top PV solar arrays on industrial buildings.	Between 2011 and 2012, 2 industrial accounts in zip code 95476 installed PV solar units with 1,108.45 kW DC installed capacity.[16]	RG-2 2-L3 2-L4
9. Non-profit Solar PV Installations	Installation of roof-top PV solar arrays on non-profit buildings.	Between 2016 and 2017, 3 non-profit accounts in zip code 95476 installed PV solar units with 92.94 kW DC installed capacity.[17]	RG-2 2-L3 2-L4
10. City Government Solar PV Installations	Installation of PV solar arrays on city government buildings.	A PV solar array was installed on the Police Facility in 2010 with an output of 52.4 kW. A PV array was installed on the Public Works Building at the Corporation Yard in 2011 with an output of 20.2 kW.	RG-2 2-L4

Energy Item	Description	Results/Data	Associated Climate Action Goal/Measure
11. Expedited Solar PV Permitting	Sonoma's Building Department offers expedited PV solar permitting (1 to 3 days) for single- and dual unit residential buildings.	City implemented the expedited PV solar permitting program in 2015. Between 2015 and February 2020, 215 permits were issued for PV solar installations.	RG-2 2-L2
12. Solar PV Requirements for New Construction	Starting in 2020, updated state building efficiency standards require all new low-rise single-family and multifamily buildings to install a rooftop PV solar system or to use an offsite community solar system.	City adopted the state solar mandate code.	RG-2 2-L1
13. Expedited Battery Storage Systems	Sonoma's Building Department offers expedited permitting (2 to 4 days) for Battery Energy Storage Systems.	City implemented the expedited battery storage permitting program in 2019. In 2017 and 2018, 3 permits were issued for battery storage installations.	RG-2 2-L1 2-L2 2-L3 2-L4
14. Solar on Multifamily Affordable Housing	Solar on Multifamily Affordable Housing (SOMAH) program provides financial incentives for installing solar PV energy systems on multifamily affordable housing.	Under the Solar on Multifamily Affordable Housing (SOMAH) program, between 2012 - 2016, 14 rooftop solar PV projects were completed in zip code 95476 saving 6,790 therms of natural gas annually.[18]	RG-2 2-L1 2-L2
15. New Solar Homes Partnership	The New Solar Homes Partnership program provides incentives for new solar homes.	Under the New Solar Homes Partnership program, between 2014 - 2018, 8 solar projects with 105.23 kW capacity were completed in zip code 95476.[19]	RG-2 2-L1

Energy Item	Description	Results/Data	Associated Climate Action Goal/Measure
16. Solar Consultations	The Sonoma County General Services, Energy and Sustainability Division, provides free, unbiased consultations on of PV Solar potential for residential structures.	Between June 2019 and January 2020, six Solar PV consultations were completed for individuals in zip code 95476.[20]	RG-2 2-L2
17. Sonoma County Energy Independence Program	The Sonoma County Energy Independence Program (SCEIP) offers Property Assessed Clean Energy (PACE) financing for energy and water efficient improvements through the property tax system for residential, commercial, industrial, agricultural, multifamily and certain non-profit projects.	Between 2009 and 2019, SCEIP financed 38 projects and 87 improvements in Sonoma funded at a value of $1.11 million.[21]	RG-2 2-L1 2-L2 2-L3 2-L4
18. Home Energy and Water Workshops	The Sonoma County General Services, Energy and Sustainability Division, provides free workshops onsite and in communities to reduce energy and water consumption for residential structures.	Between 2017 and 2019, two workshops were held in Sonoma.[22]	RG-1
19. DIY Energy Audit Kits	Do it yourself energy audit kits are provided that includes weather stripping, kill-o-watt meter, IR thermometers, and other tools and equipment to reduce energy loss.	A DIY Energy Audit Kit is available for checkout at the Sonoma County Regional Library in Sonoma.	RG-1

2.2 Summary of Energy Accomplishments and Next Steps

2.2.1 Summary of Accomplishments

Based on the above list of 19 programs, initiatives, and actions, Sonoma (i.e., zip code 95476) has made significant achievements in reducing building energy consumption. Between 2010 and 2015, the GHG emissions from building energy decreased by 33.62% in spite of a population increase of 2.3% primarily due to the inception of Sonoma Clean Power in 2014 and its opt-out program designed to encourage the use of low carbon energy delivered through the PG&E grid.[23] In addition, significant energy and cost savings were realized by increasing the energy efficiency of street and safety lights. Finally, the continued expansion of PV solar units installed on residential, commercial, industrial, and government buildings, which has been driven primarily by the availability of tax credits. As a result, a minimum of 14% of all homes in the City limits now has PV solar installed. The installation of PV solar will expand on existing structures, as the new state solar PV mandate rule is now required for new structures, which has been adopted by the City.

2.2.2 Recommended Work Plan Actions

The recommended City of Sonoma Sustainability Work Plan actions for 2020-2021 relating to energy resources, in order of priority, are:

1. Increase percentage of customers using CleanStart and Evergreen energy
2. Identify or develop local carbon offset program
3. Assess viability of implementing Bay Area Sunshares Program for city residents
4. Increase number of county-sponsored free PV solar consultations for all sectors

The selection of reduced carbon energy options from Sonoma Clean Power continues to represent a measurable reduction in Sonoma's carbon footprint. While it is not possible to identify Sonoma-specific customers, as opposed to non-Sonoma customers in the 95476 zip code, improvements can be made in adopting CleanStart and Evergreen. At this point, it is not clear why 13.1% of customers in zip code 95476 opted out of CleanStart to the more expensive and higher GHG producing energy option from PG&E. This requires further investigation and analysis to determine the reasons and identify actions to potentially overcome any barriers. According to Sonoma Clean Power, the primary reason for not upgrading to the Evergreen from the CleanStart is the cost, which is about 7% more per month.

Increasingly, climate action plans, in addition to calling for a reduction of carbon emissions, are advocating for actions to sequester carbon, which is the process of capturing and storing atmospheric CO_2. There is at least one regional carbon sequestration project (e.g., Marin Land Trust) that employs carbon farming (Regional Measure 19-R1), which removes carbon from the atmosphere and converts it to plant and/or soil organic matter. Traditionally, carbon offset programs encourage individuals and companies to donate to specific environmental projects to offset their carbon emissions. This has been used at large events and for air travel. These carbon offset programs are rarely local. Thus, this area deserves focus--the identification and partnering with local or regional carbon offset programs for Sonoma's residential, commercial, and institutional sectors in addition to visitors.

While the price of residential solar PV units has decreased (down 63% since 2010 and down 10.6% since 2016[24]), the federal tax credits are being phased out. The purchase of PV solar units likely presents a barrier. One approach to decrease the cost of solar is through group purchase discounting, which allows, for example, multiple houses to pool together to receive a discount similar in concept to bulk purchasing. One area program that supports group purchasing of PV solar is the Bay Area SunShares (www.bayareasunshares.org). Group purchasing could reduce the costs of installing PV solar thereby resulting in more units being installed. The group purchasing aspect needs to be researched as no information or examples of their use have yet been found in the county.

As noted, only six free, non-biased solar PV consultations have been conducted by the county, which suggests that more work can be done to provide building owners with non-biased, solar PV information and data.

3. WATER RESOURCES

Water is a finite resource that all life depends on. Conserving water also reduces energy consumption and thus, the community's carbon footprint.

3.1 Overall Goal

The overall goal regarding water resources is to reduce water consumption through efficiency and conservation. A significant co-benefit of reduced water consumption is a corresponding reduction in the energy consumed to pump, treat, and deliver the water while also reducing the pumping, delivering, treating, and discharging of the subsequent wastewater.

3.2 List of Water Resource Items, Description, and Results

The following table presents a list of water resource items, their description, available results and data, and the associated CAP2020 regional goals and/or local measures.

Water Resources Item	Description	Results/Data	Associated Climate Action Goal/Measure
1. Advanced Metering Infrastructure	Advanced Metering Infrastructure (AMI) uses new generation meters that provide remote, real time access to water usage allowing customers to monitor water usage before seeing the water bill. In addition, notification alarms can be set to identify usage spikes or possible leaks and provide for early leak detection for quicker repairs.	All water meters in Sonoma are scheduled to be replaced with new AMI meters, which should reduce per capita water consumption by 9-15%.	RG-11
2. Leak Letters	When a continuous flow is detected in a household, Sonoma Water sends a “leak letter” to the building owner. This letter is often followed up with education and outreach to identify the leak and recommend water conservation actions/items.	Between July 2016 and January 2020, 6,755 leak letters were sent.	RG-11
3. Turf Removal Rebate Program	Cash rebates are provided for the removal of turf thereby reducing the need for irrigation	Since 2014, 125,589 square feet of turf has been removed under this program.	RG-11

Water Resources Item	Description	Results/Data	Associated Climate Action Goal/Measure
4. Water Conservation Devices	The City provides customers with free low-flow shower heads, faucet aerators, and automatic hose shutoffs.	Annually, between 2009 and 2019, the City has provided, free of charge, approximately 500 of each of the three water conservation devices. In addition, a container with all these devices is located in the front entrance of City Hall for individuals to take free of charge.	RG-11
5. Low Flow and Automatic Shut-Off Faucets	Devices designed to conserve water.	The Sonoma Plaza public restrooms have low-flow faucets; restrooms in the Police Department/City Council Chambers also have automatic shut-off faucets.	RG-11
6. High-Efficiency Water Rebate Program	The Sonoma-Marin Saving Water Partnership provides rebates for the purchase of high-efficiency residential washing machines and commercial dishwashers, ice machines, lavatory faucets, pre-rinse spray valves, and steam cookers	Since June 2014, 52 washing machine rebates were processed for Sonoma residents.	RG-11
7. Water-Efficient Landscaping	New construction projects with landscape areas of 500 ft^2 and rehabilitated construction projects with landscape areas of 2,500 ft^2 requiring city building permits must assess and plan for water-efficient landscaping.	Sonoma adopted the enhanced requirements for water-efficient landscaping in 2017.	RG-11
8. Recycled Water Use at Sonoma Valley High School	Recycled water for irrigation of athletic fields to off-set consumption of potable water.	Starting in 2020, SVHS will replace 50 acre ft of potable water with recycled water for irrigation of athletic fields.[25]	12-R1

Water Resources Item	Description	Results/Data	Associated Climate Action Goal/Measure
9. Low Impact Design Landscaping Demonstration	Demonstration of low impact water design features including rain water harvesting, drought resistant plantings, porous surfaces.	A low-impact demonstration garden is located at the Sonoma Garden Park.	RG-11

3.2 Summary of Water Resource Accomplishments and Next Steps

3.2.1 Summary

Based on the above list of 9 programs, initiatives, and actions, the City has developed and supported multiple programs and technologies designed to increase the conservation of water. The forthcoming installation of the Advanced Metering Infrastructure (AMI) will have the potential for significant reductions in water and thus energy consumption. Two studies on the effects of installing advanced water metering found that water consumption decreased by an average of 9% and 15% respectively.[26] AMI provides timely notification of leaks so they are easier and faster to find while reducing the need for the City to rely on leak letters to notify customers. AMI also provides immediate information to customers on their water usage allowing them to track and quickly adjust their water usage.

3.2.2 Recommended Work Plan Actions

The recommended City of Sonoma Sustainability Work Plan actions for 2020-2021 relating to water resources, in order of priority, are:

1. Continue Public Work's efforts to install Advance Metering Infrastructure
2. Develop and implement education and outreach plan to increase Turf Removal Rebate Program

As noted above, the installation of the Advanced Metering Infrastructure is one of the most significant actions that would reduce water consumption and thus energy consumption.

The Turf Removal Rebate Program has been successful in reducing irrigation for lawns. This area, however, deserves additional study to identify any potential barriers to removing more turf to reduce water consumption.

4. TRANSPORTATION

Transportation is the largest (60.4% in 2015) source of GHGs generated by the community of Sonoma.[27] Reducing the reliance on the fossil-fuel powered personal automobile is perhaps the biggest, but most important challenge to overcome.

4.1 Overall Goal

The overall goal with transportation is to reduce reliance on single-occupancy, internal combustion vehicles. The most significant reduction in the community's carbon footprint could occur if we increase the use of alternative and public transportation, reduce trips and vehicle miles traveled by single-occupancy vehicles, and increase the use of low carbon (e.g., electric vehicles).

4.2 List of Transportation Items, Description, and Results

The following table presents a list of transportation items, their description, available results and data, and the associated CAP2020 regional goals and/or local measures.

Transportation Item	Description	Results/Data	Associated Climate Action Goal/Measure
1. Alternative Motor Vehicles	As of October 2018, there were 30,720 vehicles (cars, light trucks, SUVs, and heavy trucks) registered in zip code 95476[28].	Vehicles not exclusively gasoline fueled as of October 2018 in zip code 95476[29]: – Diesel/Diesel Hybrid = 1,708 (5.56%) – Hybrid = 1,498 (4.88%) – Plug-in Hybrid = 306 (1.0%) – Electric (EV) = 289 (0.94%) – Natural Gas = 7 (0.02%) – Hydrogen Fuel Cell = 5 (0.02%)	RG-5

Transportation Item	Description	Results/Data	Associated Climate Action Goal/Measure
2. Public Transit	City-subsidized "Fare-Free" Sonoma Shuttle rides (Route 32).	In 2019, the first year of the program, there was a 55.39% (16,763 rides) increase in ridership. Youth = +142.4% Adult = +65.4% Senior = +46.7% Child = +25.1% Disabled = -15.6% Transfers = -99.6% Among the five fare-free routes in the county, Sonoma had the 2nd highest ridership increase.[30]	5-R1 5-R6
3. Electrical Vehicle Charging Stations	Stations designed to charge electric vehicles (EVs).	There are 4 stations in Sonoma: 3 private stations connected to lodging and 1 station in the City public parking lot at 152 East Napa Street.	RG-5 7-L1
4. EV Charger Permitting	Sonoma's Building Department offers expedited permitting (1 to 3 days) for EV Charging Stations.	City adopted this program in 2017.	RG-5 7-L1
5. Electrical Vehicle Charging Capability	In 2010, Green (CA Green Building Code) required EV charging infrastructure requirements (conduit and circuit sizing) for new construction.	City adopted the code in 2010.	RG-5 7-L1
6. Pedestrian Network	Features to improve movement by pedestrians.	Sonoma has created 30 marked crosswalks.[31]	5-L4

Transportation Item	Description	Results/Data	Associated Climate Action Goal/Measure
7. Enhanced Pedestrian Safety and Accessibility	Improve the safety and accessibility for pedestrians.	CalTrans has multiple pedestrian safety enhancements planned for the City to be completed in 2022 including: – Install pedestrian crosswalk signs – Restripe pedestrian crossings with high visibility crosswalk markings – Pedestrian-activated crosswalk lights – Upgrade ADA curb ramps.[32]	5-L4
8. Bicycling Opportunities	Dedicated bike paths, bike lanes, and mapped bike routes.	Sonoma has created: – Class I pathway, 3.91 miles – Class II bike lanes, 1.99 miles – Class III bike routes, 2.41 miles[33]	5-L4
9. Bicycle Parking	Designated parking to support bicycling infrastructure.	There are 70 spaces available for bicycle parking at 55 locations on public and private property including 49 bike racks, 4 bollards, 1 post, and 1 cement slot.[34]	5-L4
10. Bicycle Rentals	Bicycle rental opportunities in Sonoma	There are 3 companies in Sonoma that rent bicycles in addition to area lodgings that offer or rent bicycles for guests.	5-L4
11. Enhanced Bicycle Safety and Accessibility Enhancements	Improve the safety and accessibility of bicycle transportation in the City.	CalTrans has plans to accommodate additional Class II Bikeways in limited portions of SR-12 (Broadway Street) through a repaving project by 2022.[35]	5-L4

Transportation Item	Description	Results/Data	Associated Climate Action Goal/Measure
12. Safe Routes to School	Sonoma County Bicycle Coalition offers bicycle safety education and bicycling skill/safety practice to promote bicycling to school.	Adele Harrison Middle School, Prestwood Elementary School, and St. Francis Solano School are enrolled in the Safe Routes to School program.	5-R8
13. Anti-Idling Ordinance	Limitations on commercial vehicle idling	SMC 9.56.080 limits idling of commercial vehicles when parked within 100 feet of residential zoning district to 5 consecutive minutes of idling except when vehicles is loading/unloading in which idling is limited to 30 minutes.	8-L1

4.2 Summary of Transportation Accomplishments and Next Steps

4.2.1 Summary

Based on the above list of 13 programs, initiatives, and actions, some progress has been made; however, the single largest producer of GHG emissions in Sonoma is single-occupancy motor vehicles, which is comparable to other jurisdictions in the county. Between 2010 and 2015, the per capita daily vehicle miles driven increased by 3.57% (28 to 29 miles per day) with 70% of the community driving to work alone.[36] The reality is that the US is a car-based culture and changing culture is a formidable task. However, improvements have been made to increase the attraction of alternative and low-carbon transportation. The 55% increase in ridership on the Free Fare Sonoma Shuttle and the increase in electric vehicle registrations are positive signs.

4.2.2 Recommended Work Plan Actions

The recommended City of Sonoma Sustainability Work Plan actions for 2020-2021 to increase use of alternative transportation and use of low-carbon transportation, in order of priority, are:

1. Increase installation of EV charging stations
2. Support creation of a local non-profit that focuses on creating bike and pedestrian trails

3. Improve bicycle and pedestrian safety

Recognizing that motor vehicles will likely continue to be the foundation of the county's transportation system, the upcoming electrification of vehicles has the potential for a net reduction in carbon emissions from the transportation sector. Sales of longer range EVs are projected to increase by 578% over the next 30 years[37]. This, of course, requires infrastructure, namely, EV charging stations. Currently, the City has one public EV charging station with two ports. Although only about 2% of currently registered vehicles in zip code 95476 are EV or plug-in hybrid, this number will increase. Moreover, tourism is an essential component of the local economy and given that public transportation is not currently a viable option for tourists, and the number of EVs registered statewide increases, expectations for EV charging stations at tourist destinations will increase. Consequently additional EV charging stations need to be sited and installed. Such efforts should focus on private/public partnerships and seeking funding opportunities.

For bicyclists and pedestrians, the safest and most attractive options are dedicated paths. Sonoma has 3.91 miles of dedicated paths available for bicycles, but the City is limited in its ability and resources to create more dedicated paths. A model adopted by some jurisdictions has been the creation of dedicated land trusts focusing on developing people-powered transportation, conservation, and recreation by creating a network of trails and green spaces that connect people with places. Such an organization in Sonoma could have a profound effect on expanding paths and trails for commuting and recreation. This potential option deserves examination.

The City, on its own and in partnership with CalTrans, is increasing the safety access for pedestrians and bicyclists through bike lanes, marked crossings, and crossing lights. This should continue to be a priority.

5. WASTE MINIMIZATION

The generation and management of solid waste is the third largest (13.3% in 2015) source of GHGs generated by the community of Sonoma.[38] Reducing the generation and the disposal of waste, especially methane-producing organic wastes, are crucial to conserving finite resources, protecting the environment, and reducing Sonoma's carbon footprint.

5.1 Overall Goal

The overall goal of waste minimization is to apply the zero waste hierarchy to reduce the upstream consumption of materials and the associated environmental impacts and GHGs and the end-of-life (or downstream) environmental impacts and GHGs:

- Avoid
- Reduce
- Reuse
- Recycle/Compost
- Disposal

5.2 List of Waste Minimization Items, Description, and Results

The following table presents a list of waste minimization items, their description, available results and data, and the associated CAP2020 regional goals and/or local measures.

Waste Minimization Item	Description	Results/Data	Associated Climate Action Goal/Measure
1. Free Residential Curbside Recycling	Not charging for recycling collection to reduce the disposal of trash.	Sonoma Garbage offers free curbside recycling collection.	R9-R1 Supports compliance with SB1383[39]
2. Free Residential Curbside Green & Vegetative Waste Collection	Not charging for green waste collection to increase the recovery of organics while reducing the disposal of trash.	Sonoma Garbage offers free curbside green and vegetative waste collection.	R9-R1 Supports compliance with SB1383
3. Tier-based Pricing for Residential Curbside Trash Collection	Using economic incentives to reduce the generation and disposal of trash.	Sonoma Garbage offers 3 different sized trash containers and fees, which is an economic nudge to reduce trash generation.	R9-R1
4. Free Commercial Food Waste Collection	Not charging for commercial food waste collection to increase recovery of food waste and thereby reducing disposal of trash.	Sonoma Garbage offers its commercial customers free food waste collection	R9-R1 Supports compliance with SB1383

Waste Minimization Item	Description	Results/Data	Associated Climate Action Goal/Measure
5. Food Recovery	Recovering edible food from grocery stores that would otherwise go to the landfill and instead distributed through local emergency food programs	The non-profit organization Friends in Sonoma Helping (F.I.S.H.) and Redwood Empire Foodbank collects and distributes tons of food each month from Whole Foods, Safeway, and the Sonoma Market.	R9-R1 Supports compliance with SB1383
6. Composting Workshops	Zero Waste Sonoma and UC Master Gardener Program of Sonoma County hold free home composting workshops	In 2018 and 2019, 4 workshops were held: 2 in English (28 participants) and 2 in Spanish (14 participants).	R9-R1 Supports compliance with SB1383
7. Free Mulch and Compost Program	Local mulch provided to residents.	Sonoma Garbage offers customers free mulch of up to 1 yd	R9-R1 Supports compliance with SB1383
8. Christmas Tree Recycling	Sonoma Girl Scouts offers curbside collection of Christmas Trees for composting with a suggested donation	Christmas Trees collected and composted from Sonoma Valley: 2013-2014 = 1,429 2014-2015 = 1,274 2015-2016 = 1,368 2016-2017 = 1,316 2017-2018 = 1,103 2018-2019 = 1,130	R9-R1 Supports compliance with SB1383
9. Ban on Single-Use Plastics at City Events	Reducing the generation of disposable plastics to encourage the use of environmentally preferable alternatives.	Starting in 2019, single-use plastics and compostable plastics are banned at permitted events held on the Plaza and Deport Park. This model has been adopted by Windsor and Sebastopol and is being considered by Cloverdale	R9-R1

Waste Minimization Item	Description	Results/Data	Associated Climate Action Goal/Measure
10. Public Space Trash and Recycling	Improved design of public space trash and recycling can increase recycling while decreasing the generation and disposal of trash. Improvements include improved signage, weather protection, and trash/recyclables segregation.	In 2020, 27 new public space trash stations with 81 new containers are proposed to be installed on the Sonoma Plaza.	R9-R1
11. Water Bottle Filling Stations	Water bottle filling stations for reusable containers decrease the generation and disposal of single-use plastics.	Sonoma Plaza = 1 station, 2 more are planned for installation in 2020 Sonoma Valley High School = 3 stations	R9-R1
12. Construction & Demolition Waste Management	Building contractors provide a construction waste management plan for City inspector to review and approve, which includes invoices and other documentation to demonstrate the diversion rates were met.	This requirement is a component of CALGreen, which has been adopted by the City.	L9-L1
13. Electronic Waste Collection Events	Periodically, Zero Waste Sonoma offers free electronics collection events to increase recovery and reduce disposal.	Between March 2017 and November 2019, 5 electronic collection events were held in Sonoma with 952 participants, 60,199 lbs were collected.[40]	R9-R1
14. Electronic Waste Drop off	Free electronic waste drop-off at Staples on W. Napa Street and the Sonoma Transfer Station	Between 2017 and 2019, 803,805 lbs of electronic waste was dropped off at the Sonoma Transfer Station.[41]	R9-R1

Waste Minimization Item	Description	Results/Data	Associated Climate Action Goal/Measure
15. Mattress Collection Events	Periodically, Zero Waste Sonoma offers free mattresses collection events to increase their recovery and thus reduce their disposal.	In 2017, 24 mattresses were collected and in 2019, 44 mattresses were collected.[42]	R9-R1
16. Used Ink Cartridge Drop-off	Free used ink cartridge drop-off at Staples	Collection point at Staples, W. Napa Street.	R9-R1
17. Used Rechargeable Battery Drop-off	Free used rechargeable battery waste drop-off	Collection points at Friedman's and Staples, W. Napa Street	R9-R1
18. Household Hazardous Waste Collection Events	Periodically, Zero Waste Sonoma offers free household hazardous waste collection events	Between January 2017 and November 2019, 655 participants dropped off 46,901 lbs of household hazardous waste at collection events in Sonoma.[43]	R9-R1
19. Curbside Used Oil Collection	Sonoma Garbage Collectors conducts free, curbside collection of used oil	Between 2017 and 2019, 245 gallons (1,838 lbs) of used oil was collected.[44]	R9-R1
20. Cork Recycling	Free collection for natural corks	Collection point located at Whole Foods in Sonoma	R9-R1
21. Reuse Shops	Retail and non-profit shops that focus on reuse--reselling used goods—reduce the amount of waste generated and disposed.	There are 3 thrift stores and 1 consignment shop in Sonoma	R9-R1 Supports compliance with SB1383
22. Curbside Collection for Reusable Clothes and Goods	Non-profit and for profit services conduct periodic curbside collections of reusable goods, electronic waste, and bulky waste	Redwood Gospel Mission of Santa Rosa and United Cerebral Palsy conduct periodic curbside collections.	R9-R1 Supports compliance with SB1383

Waste Minimization Item	Description	Results/Data	Associated Climate Action Goal/Measure
23. Textile Recovery: Reusable Clothes and Household Goods	Non-profit organization that maintains donation boxes at host sites where reusable goods, clothes, and small household items in working order.	Recycle for Change has 4 locations in Sonoma: – 19425 Sonoma Hwy – 195 W. Napa St – 925 Broadway – 20580 Broadway	R9-R1 Supports compliance with SB1383
24. Drug/Pharmaceutical Drop off	Collection of unwanted and expired drugs/pharmaceuticals and vaping cartridges for safe and proper disposal.	The pharmaceutical/drug drop off is located inside the Sonoma Police Department.	R9-R1
25. Electric Hand Dryers	Electric hand dryers eliminate the generation of paper towel waste.	Electric hand dryers were installed at the Plaza public restroom.	R9-R1
26. Paint Take back	Unwanted, leftover paint is accepted for recovery and recycling operated by the Paint Stewardship Council.	There currently is no paint collection site in the City limits, but Kelly-Moore at 18506 CA-12 in the Springs has collected paint since 2012: 2013-14 = 37,523 lbs 2014-15 = 40,331 lbs 2015-16 = 53,113 lbs 2016-17 = 60,305 lbs 2017-18 = 58,875 lbs 2018-19 = 67,934 lbs 2019-Date = 33,495 lbs Total = 351,576 lbs[45]	R9-R1
27. Online Business License Renewal	Paperless applications for City businesses licenses reduce the generation of paper waste.	In 2020, Sonoma adopted an online paperless application program for its current 2,328 licensees to replace the single page, doubled-sided paper application.	R9-R1

5.2 Summary of Waste Minimization Accomplishments and Next Steps

5.2.1 Summary

The above list contains 27 programs, initiatives, and actions intended to reduce the generation and disposal of solid and household hazardous waste. For example, between 2014 and 2019, Sonoma residents decreased their disposal of solid waste by 6% from 3.34 lbs per person per day to 3.14 lbs per person per day. Moreover, the opportunities throughout the community and throughout the year dedicated to collect and manage more difficult-to-recycle wastes have increased. While these many efforts are essential to reduce the overall consumption of materials and disposal of waste, from a GHG emissions perspective, there is room for improvement. While comparatively much lower than transportation or building energy, between 2010 and 2015, the GHG emissions from solid waste in Sonoma increased by 63.82%. The primary reason for this increase is the landfilling of organic wastes (especially food waste) that when landfilled, creates methane gas, which is about 25 times more potent than CO2 in its global warming impact. As discussed below, a recent state law, SB1383, is designed to tackle the problem of organic waste disposal statewide

5.2.2 Recommended Work Plan Actions

The recommended City of Sonoma Sustainability Work Plan actions for 2020-2021 relating to solid waste, in order of priority, are:

1. Assess and support compliance with SB 1383
2. Adopt a zero waste resolution and a disposable polystyrene reduction ordinance
3. Develop and implement an education and outreach plan to improve recycling and organics collection
4. Increase/improve Plaza solid waste reduction initiatives

The area that necessitates the most attention is to ensure compliance with the new state law, SB 1383 *Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions*. This law establishes requirements to achieve a 50% reduction in statewide disposal of organic waste from the 2014 level by 2020 and a 75% reduction by 2025, which means residential, commercial, and institutional sectors. In essence, the law requires a reduction in the amount of food waste generated by improving and increasing the capture and distribution of recoverable, edible food and the reduction of food waste disposed of as trash by the commercial and residential sectors through improved segregation and composting. A unique aspect of SB 1383 is that it mandates

shared compliance responsibility for the City. That is, jurisdictions can be held liable for compliance of the community. Although the program is new, and final regulations have not yet been promulgated, in partnership with Zero Waste Sonoma,. actions have begun to understand the City's obligations. The regulations will need further analysis to ensure all sectors in the City are meeting and will meet the mandated reduction targets and if not, to indentify supportive actions needed to help our community meet the goals.

Two important solid waste reduction actions for the City to consider: (1) adopting a zero waste resolution that would establish zero waste principles (e.g., avoid, reduce, reuse, and recycle/compost) in planning and policy and (2) adopting a disposable polystyrene food service ware prohibition that would expand the City's current ban on disposable polystyrene food service ware at government operations and the Special Event's policy that bans disposable plastics at permitted events on the Plaza and Depot Park. Both of these efforts are in progress and will be rescheduled with the community and City Council in the next few months.

An area for improvement is better education and outreach to the community on the many reuse options, recycling options, and proper recycling and organics collection. This can be accomplished by updating and improving the user friendliness of the City's sustainability website. It would also entail periodic community updates, reminders, and actions on waste minimization, reuse, and recycling opportunities.

The planned solid waste reduction initiatives for the Plaza will help to ensure a visible and marked improvement to public space waste and recycling collection. These initiatives include the installation of additional water-bottle filling stations to reduce single-use plastic waste and the installation of improved public space trash/recycling receptacles to facilitate proper use/segregation and thereby reducing contamination.

6. MISCELLANEOUS

There are a variety of other direct and indirect actions and initiatives that have co-benefits with regards to sustainability and reducing GHGs, which are collectively categorized as miscellaneous items.

6.1 Overall Goal

This section lists other actions, programs, and education initiatives that foster community environmental sustainability. The direct or indirect outcomes of each of these are a reduced carbon footprint. In addition, many of these also provide various co-

benefits such as improved recreation opportunities, sustainable tourism, improved wildlife habitat, access to local fresh food, and supporting our local economy.

6.2 List of Miscellaneous Items, Description, and Results

The following table presents a list of miscellaneous items, their description, available results and data, and the associated CAP2020 regional goals and/or local measures.

Miscellaneous Item	Description	Results/Data	Associated Climate Action Goal/Measure
1. Parks and Conserved Open Space	Open and conserved space is critical for healthy natural habitat and for recreation.	Sonoma has 16 parks encompassing 79.15 acres and 2 open space preserves encompassing 98.75 acres.[46]	17-R1
2. Farmer's Markets	Fresh local food sales	Sonoma has two seasonal (Sonoma Garden Park and the Plaza) and one year-round (Depot Park) weekly farmer's markets with a total of approximately 100 farmer market days per year (there is also a seasonal weekly market in the Springs).	18-R2
3. Tree Protection Ordinance	All trees on public property and existing significant trees on private property are protected from unnecessary damage, removal, or destruction	This ordinance is codified in SMC chp. 12.08	1-L3
4. Green Purchasing Policy	State guidelines exist on the purchase of recycled products - State of California Public Contract Code	In 2011, the City approved a green purchasing policy by adopting the state guidelines codified in SMC chp. 3.04.060.	
5. Community Gardens	Community gardens are collectively gardened plots on public land to produce local fruit, vegetables, and/or plants.	Sonoma has approximately 35 community garden plots available at Sonoma Garden Park.	18-R3

Miscellaneous Item	Description	Results/Data	Associated Climate Action Goal/Measure
6. Sustainability Coordinator	Position supporting the implementation of climate actions, waste minimization, and EV charging stations	Sonoma's part-time Sustainability Coordinator was hired in December 2019.	
7. Sustainability-based Education	Sustainability-based education programs are organized and conducted by the Sonoma Ecology Center at the Sonoma Garden Park.	Programs offered: – Sustainable gardening demonstrations and workshops – EnviroLeader Internship Program in sustainable agriculture and habitat restoration – K-12 watershed education – Summer Science Camps – Field trips including every 4th grader in Sonoma	
8. Certified Green Businesses	The Sonoma County General Services, Energy and Sustainability Division, provides assistance to small to medium sized businesses to become a Sonoma County Green Business Certified company	Sonoma currently has 4 certified green businesses and 5 pending applications for certification.[47]	
9. Wood Burning Devices Ban	Wood-burning appliances release CO_2 and can degrade air quality.	City adopted a ban on certain wood burning devices in 2005.	
10. Gasoline-Powered Leaf Blower Ban	Gasoline-powered leaf blowers produce comparatively high levels of emissions that can degrade air quality while also contributing to noise pollution.	In 2016 the use of gasoline-powered leaf blowers was banned.	3-R1

Miscellaneous Item	Description	Results/Data	Associated Climate Action Goal/Measure
11. Pesticide Use Restriction	Restricting or banning the use and application of problematic pesticides can improve ecological habitat and non-targeted species.	In May 2019, the City approved a ban on the application of glyphosate-based herbicides on City property	

6.2 Summary of Miscellaneous Accomplishments and Next Steps

6.2.1 Summary

The above list contains 11 programs, initiatives, and actions that directly and indirectly have a positive effect on improving environmental sustainability and/or reducing Sonoma's carbon footprint.

6.2.2 Recommended Work Plan Actions

The recommended City of Sonoma Sustainability Work Plan actions for 2020-2021, in order of priority, are:

1. Update City's sustainability website with focus on available tools and resources
2. Increase the number of Certified Green Businesses
3. Continue to support and work with the Chamber of Commerce's Shop Local Sonoma Program

The City's sustainability website needs to be updated. This was identified as a priority by the Community Services and Environment Commission (CSEC) in its 2019 work plan. The CSEC provided helpful draft revisions and content. The website would still include information on climate action and sustainability accomplishments (i.e., a copy of this report), but its focus should be to provide tools and information to support community efforts in fostering sustainability.

One of the items, Certified Green Businesses, is a positive trend in the local economy. It is also an area where with some effort could be expanded to increase the number of Certified Green Businesses in the City. This program warrants further study to identify barriers to becoming certified and trying to address these barriers.

Finally, many jurisdictions throughout the country have adopted ”Shop Local” programs to help support the local economy in addition to reducing shopping driven, transportation-related GHGs. Investigating the creation and adoption of this type of program specifically for Sonoma may be appropriate.

APPENDIX 1 – PROPOSED ENVIRONMENTAL SUSTAINABILITY WORK PLAN – CITY OF SONOMA

CATEGORY	GOALS	PRIORITIZED ACTIONS
Energy	Reduce energy consumption through conservation and efficiency actions, increase use and production of reduced-carbon energy, sequester carbon.	**1.** Increase percentage of customers using CleanStart and Evergreen energy **2.** Identify or develop local carbon offset program **3.** Assess viability of implementing Bay Area Sunshares Program for city residents **4.** Increase number of county-sponsored free PV solar consultations for all sectors
Water Resources	Reduce water consumption through efficiency and conservation thereby reducing energy consumption.	**1.** Install Advance Metering Infrastructure **2.** Develop and implement education and outreach plan to increase Turf Removal Rebate Program
Transportation	Increase use of alternative and public transportation while reducing reliance and VMT of single-occupancy vehicles.	**1.** Increase installation of EV charging stations **2.** Support creation of local non-profit focusing on creating bike and pedestrian trails **3.** Improve bicycle and pedestrian safety
Waste Minimization	Reduce generation of solid & food waste while simultaneously decreasing disposal of generated solid & food waste.	**1.** Assess and support compliance with SB 1383 **2.** Adopt Zero Waste Goal resolution and disposable polystyrene reduction ordinance **3.** Develop and implement education and outreach plan to improve recycling and organics collection **4.** Increase/improve Plaza solid waste reduction initiatives
Miscellaneous Actions	Identify other actions, programs, and education that foster community environmental sustainability.	**1.** Update revised sustainability website with focus on available tools and resources **2.** Increase the number of Certified Green Businesses **3.** Launch a Shop Local Sonoma Program

APPENDIX 2 – LIST OF RELEVANT CLIMATE ACTION 2020 REGIONAL AND LOCAL GOALS AND MEASURES

Goal/Measure Number	Name	Description
Regional Goal 1: Increase building energy efficiency		
1-R1	Community Energy Efficiency Retrofits for Existing Buildings	Includes all existing programs to improve the energy efficiency of community buildings (including homes and businesses) through retrofits such as Energy Upgrade California, PACE Financing, utility incentives, and technical assistance.
1-R2	Expand Community Energy Efficiency Retrofits Program	Expand programs to promote energy efficiency in existing residential buildings and commercial buildings, and remove barriers for energy efficiency improvements. Includes accelerating participation in existing programs and pursuing innovation through efficiency efforts including: on-bill repayment programs like Windsor PAYS, energy disclosure programs like Home Energy Score, community based campaigns, and others.
Regional Goal 2: Increase renewable energy use		
2-R1	Community Choice Aggregation	SCP is a community choice aggregation program and electricity provider that works with PG&E to provide their customers between 33% and 100% renewable energy. SCP also supports local renewable energy generation (e.g., solar or wind) through its *NetGreen* program.
Regional Goal 3: Switch Equipment from fossil fuel to electricity		
3-R1	Stationary Fuel Switching Incentives	Will provide incentives and financing options for fuel switching from fossil fuel use to electricity.
Regional Goal 5: Encourage a shift toward low-carbon transportation options		
5-R1	Improve and Increase Transit Service	Increase bus service, implement bus preferential treatments, implement bus rapid transit and/or express service, improve transit marketing, and improve transit amenities.
5-R2	Supporting Transit Measures	Implement measures designed to improve the county's transit system
5-R3	Sonoma-Marin Area Rapid Transit (SMART)	Ensure policies support planned SMART corridor, such as transit-oriented development at planned SMART stations, future local transit planning for SMART, and pedestrian and bicycle facilities to connect to SMART stations.
5-R4	Trip Reduction Ordinance (TRO)	Develop and implement a mandatory TRO for employers with 50+ employees by offering pre-tax transit expenses, transit or vanpool subsidy, free or low-cost shuttle, or an alternate trip reduction benefit. The TRO will also include a non-trip reduction alternative, in the form of purchase of an

Goal/Measure Number	Name	Description
		equivalent amount of GHG offsets, for employers choosing not to implement trip reductions.
5-R5	Supporting measures for the Transportation Demand Management (TDM) Program	Implement TDM measures to support the TRO.
5-R6	Reduced Cost Transit Passes	Provide reduced cost transit passes to encourage commuters to take transit. If this measure is made mandatory by a jurisdiction, then the measure will also include a non-trip reduction alternative in the form of purchase of an equivalent amount of GHG offsets.
5-R7	Alternative Travel Marketing and Optimize Online Service	Conduct countywide marketing efforts (and consistent community-wide efforts) to provide information on alternate travel modes.
5-R8	Safe Routes to School	Create safe routes to school programs for communities where they currently do not exist.
5-R9	Car-sharing Program	Build on the work that the Sonoma County Spare-the-Air Resources Team has already conducted to implement a car-sharing program.
5-R10	Bike Sharing Program	Create a countywide Public Bike Share Program to encourage a shift from automobiles to bicycle use.
Regional Goal 7: Encourage a shift toward low-carbon fuels in vehicles and equipment		
7-R1	Shift Sonoma County (Electric Vehicles [EV])	Countywide EV promotion program, in partnership with SCP.
7-R2	Alternative Fuels for Transit Vehicles	Replace diesel and gasoline buses with hybrid buses, compressed natural gas buses, or electric buses.
Regional Goal 9: Increase solid waste diversion		
9-R1	Waste Diversion Goal	Increase the diversion rate of the total solid waste stream.
Regional Goal 10: Increase capture and use of methane from landfills		
10-R1	Increase Landfill Methane Capture and Use for Energy	Develop new waste-to-energy projects at landfills.
Regional Goal 11: Reduce Water Consumption		
11-R1	Countywide Water Conservation Support and Incentives	Sonoma County Water Agency (SCWA) will continue to work with its water contractors and others to incentivize local water conservation and water-use efficiency measures.
Regional Goal 12: Increase Recycled Water and Greywater Use		
12-R1	Recycled Water	Use recycled water instead of potable water

Goal/Measure Number	Name	Description
Regional Goal 13: Increase water and wastewater infrastructure efficiency		
13-R1	Infrastructure and Water Supply Improvements	Reduce energy demand from water supply infrastructure, investigate new water supply sources, and increase local water production.
13-R2	Wastewater Treatment Equipment Efficiency	Reduce energy demand from wastewater treatment operations
Regional Goal 14: Increase use of Renewable Energy in Water and Wastewater Systems		
14-R1	Sonoma County Water Agency Carbon-Free Water by 2015	SCWA has contracted to procure 100% of its electricity needs through renewable and carbon-free resources, thus achieving a carbon-neutral electricity supply.
Regional Goal 17: Protect and Enhance the Value of Open and Working Lands		
17-R1	Conserve Open Space and Working Lands	Preserve natural open space and working lands to prevent loss of carbon stock due to conversion of such lands to urban uses or other land use changes that also drive increased vehicle miles traveled.
17-R2	Enhance Natural Resources on Open and Working Lands through Climate Beneficial Management Practices	Continue to work to enhance the natural resources of open and working lands, including agricultural and timber lands.
Regional Goal 18: Promote Sustainable Agriculture		
18-R1	Sustainable Agriculture Certification Programs	Support sustainable agriculture certification programs that reduce GHG emissions and/or enhance carbon stocks or increase sequestration.
18-R2	Promote Local, Sustainable Food and Ag Products	Support local farmer's markets to provide communities with sustainable local food.
18-R3	Urban Agriculture	Amend zoning codes to allow urban farming and gardens in appropriate areas.
Regional Goal 19: Increase Carbon Sequestration		
19-R1	Carbon Farming	Increase carbon sequestration on croplands and working rangelands by adding soil organic material and other measures. Support increasing availability of local compost.
19-R2	Establish a Target for Increased Carbon Sequestration	Work with local partners to establish short-and long-term targets for increasing carbon sequestration throughout the County.
Regional Goal 20: Reduce Emissions from Consumption of Goods and Services		
20-R1	Measure and Track Consumption-based Emissions	Develop metrics and tools to analyze and track carbon intensity of goods and services consumed in Sonoma County.
20-R2	Educate Consumers	Provide information to residents and businesses about the carbon content of goods and services consumed in Sonoma County with emphasis on options that will reduce GHG

Goal/Measure Number	Name	Description
		emissions.
20-R3	Encourage and Promote Sustainable Consumption	Develop and provide resources that help residents get the goods and services they need with the least full life-cycle GHG emissions.
20-R4	Reduce Carbon Intensity of Product Supply Chains	Explore partnerships and seek opportunities to support local businesses reducing the carbon intensity of their supply chain.
Local Goal 1: Increase Building Energy Efficiency		
1-L2	Outdoor Lighting	80% of outdoor lighting to participate
1-L3	Shade Tree Planting	50 shade trees planted
Local Goal 2: Increase Renewable Energy Use		
2-L1	Solar in New Residential Development	8% of new houses to participate
2-L2	Solar in Existing Residential Building	11% of existing homes with solar
2-L3	Solar in New Non-Residential Developments	2% of new non-residential development to participate
2-L4	Solar in Existing Non-Residential buildings	2% of existing non-residential development with solar
Local Goal 4: Reduce Travel Demand Through Focused Growth		
4-L1	Mixed-Use Development in City Centers and Along Transit Corridors	50% of growth to result in mixed use
4-L2	Increase Transit Accessibility	15% of growth to be 25+ units
4-L3	Supporting Land Use Measures	Yes
4-L4	Affordable Housing Linked to Transit	20% of new development to be affordable
Local Goal 5: Encourage a Shift Toward Low-Carbon Transportation Options		

Goal/Measure Number	Name	Description
5-L4	Supporting Bicycle/Pedestrian Measures	Yes
5-L5	Traffic Calming	80% of trips affected
5-L7	Supporting Parking Policy Measures	Yes
Local Goal 7: Encourage a Shift Toward Low-Carbon Fuels in Vehicles and Equipment		
7-L1	Electric Vehicle Charging Station Program	3 charging stations installed
7-L2	Electrify Construction Equipment	5% of equipment
7-L3	Reduce Fossil Fuel Use in Equipment through Efficiency or Fuel Switching	Yes
Local Goal 8: Reduce Idling		
8-L1	Idling Ordinance	2 minutes below state law
Local Goal 9: Increase Solid Waste Diversion		
9-L1	Develop and Implement a Construction and Demolition Reuse and Recycling Ordinance	Participation, 3% beyond baseline
Local Goal 11: Reduce Water Consumption		
11-L1	Senate Bill SB X7-7 -Water Conservation Act of 2009	10% Reduction in per capita water use
11-L2	Water Conservation for New Construction	50% of new residential/50% new nonresidential
11-L3	Water Conservation for Existing Buildings	25% of new residential/10% new nonresidential

Goal/Measure Number	Name	Description
Local Goal 12: Increase Recycled Water and Greywater Use		
12-L1	Greywater Use	2% greywater goal

End Notes

[1] Climate Action 2020: Sonoma County Regional Climate Action Plan and Beyond (2016). Sonoma County Regional Climate Protection Authority.

[2] Leland, D. & Conlon, T. (2020). Inventory of Greenhouse Gas Emissions from City of Sonoma Municipal Operations for 2018, Sonoma Valley Climate Coalition.

[3] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[4] Climate Action 2020: Sonoma County Regional Climate Action Plan and Beyond (2016). Sonoma County Regional Climate Protection Authority.

[5] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[6] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[7] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[8] Personal communication, Nathan Kinsey. Commercial Accounts Mangier, Sonoma Clean Power, January 31, 2020.

[9] https://sonomacleanpower.org/uploads/documents/Power-Content-Label-2018-Web.pdf

[10] https://sonomacleanpower.org/uploads/documents/Power-Content-Label-2018-Web.pdf

[11] Personal communication, Nathan Kinsey. Commercial Accounts Mangier, Sonoma Clean Power, January 31, 2020.

[12] Personal communication, Phillip Rodriguez**,** District 4 Sustainability Manager, California Department of Transportation, January 31, 2020.

[13] Go Solar California--California Energy Commission & California Public Utilities Commission, 2020

[14] There are 1,714 parcels in the City of Sonoma with single family residences or duplexes. Since 2015, 242 building permits have been issued for residential PV solar systems. Building permits for PV units were issued prior to 2015, but exist in paper form and thus have not yet been tracked.

[15] Go Solar California--California Energy Commission & California Public Utilities Commission, 2020

[16] Go Solar California--California Energy Commission & California Public Utilities Commission, 2020

[17] Go Solar California--California Energy Commission & California Public Utilities Commission, 2020

[18]Go Solar California--California Energy Commission & California Public Utilities Commission: https://www.californiadgstats.ca.gov/downloads/

[19] Go Solar California--California Energy Commission & California Public Utilities Commission, 2020

[20] Personal communication, B.C. Capps, Energy and Sustainability Analyst, Energy and Sustainability Division, Sonoma County General Services Department, January 31, 2020.

[21] Personal communication, B.C. Capps, Energy and Sustainability Analyst, Energy and Sustainability Division, Sonoma County General Services Department, January 31, 2020.

[22] Personal communication, B.C. Capps, Energy and Sustainability Analyst, Energy and Sustainability Division, Sonoma County General Services Department, January 31, 2020.

[23] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[24] National Renewable Energy Laboratory, Costs Continue to Decline for Residential and Commercial Photovoltaics in 2018, https://www.nrel.gov/news/program/2018/costs-continue-to-decline-for-residential-and-commercial-photovoltaics-in-2018.html

[25] Personal communication, Kevin Booker, P.E., WA Principal Engineer, Sonoma Water, February 11, 2020.

[26] Ernest Orlando Lawrence Berkeley National Laboratory, Exploring the Energy Benefits of Advanced Water Metering, 2006. https://www.energy.gov/sites/prod/files/2017/01/f34/Exploring%20the%20Energy%20Benefits%20of%20Advanced%20Water%20Metering.pdf

[27]Climate Action 2020: Sonoma County Regional Climate Action Plan and Beyond (2016). Sonoma County Regional Climate Protection Authority.

[28]California Department of Motor Vehicles, https://www.dmv.ca.gov/portal/dmv/detail/pubs/media_center/statistics

[29]California Department of Motor Vehicles, https://www.dmv.ca.gov/portal/dmv/detail/pubs/media_center/statistics

[30] Personal communication, Bryan Albee, Transit Systems Manager, Sonoma County Transit, January 13, 2020.

[31] Sonoma Bicycle & Pedestrian Master Plan (2008, updated 2014). pg. 25.

[32] Personal communication, Phillip Rodriguez**,** District 4 Sustainability Manager, California Department of Transportation, January 31, 2020.

[33] Sonoma Bicycle & Pedestrian Master Plan (2008, updated 2014).

[34] Sonoma Bicycle & Pedestrian Master Plan (2008, updated 2014).

[35] Personal communication, Phillip Rodriguez**,** District 4 Sustainability Manager, California Department of Transportation, January 31, 2020.

[36] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[37] Annual Energy Outlook 2020, U.S. Energy Information Administration, www.eia.gov/outlooks/aeo/pdf/AEO2020%20Transportation.pdf.

[38] Greenhouse Gas Inventory Report: Sonoma County 2015 Update (2018). Sonoma County Regional Climate Protection Authority.

[39] SB 1383, Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions, establishes targets to achieve a 50% reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75% reduction by 2025.

[40] Personal communication, Courtney Scott, Household Hazardous Waste Program Manager, Zero Waste Sonoma, January 27, 2020.

[41] Personal communication, Courtney Scott, Household Hazardous Waste Program Manager, Zero Waste Sonoma, January 27, 2020.

[42] Personal communication, Sloane Pagel, Zero Waste Program Manager, Zero Waste Sonoma, April 13, 2020.

[43] Personal communication, Courtney Scott, Household Hazardous Waste Program Manager, Zero Waste Sonoma, January 27, 2020.

[44] Personal communication, Courtney Scott, Household Hazardous Waste Program Manager, Zero Waste Sonoma, January 27, 2020.

[45] Personal communication, Daria Kent, Northern California Regional Coordinator, Paint Care, February 12, 2020.

[46] Sonoma Bicycle & Pedestrian Master Plan (2008, updated 2 014). pg. 25.

[47] Personal communication, B.C. Capps, Energy and Sustainability Analyst, Energy and Sustainability Division, Sonoma County General Services Department, January 31, 2020.