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RICAPS
Regionally Integrated Climate Action Planning Suite

Updated RICAPS template and tools - 2020
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Executive Summary

Cities are on the front lines when it comes to climate change. Cities are also leading the world in reducing carbon emissions through aggressive policies and adoption of clean technologies. Redwood City’s Climate Action Plan (CAP) establishes the goal of reducing carbon emissions 50 percent below 2005 levels by 2030, an interim step toward the ultimate goal of achieving carbon neutrality well before 2045.

Redwood City has already made significant progress in its climate action efforts. Between 2005 and 2015, Redwood City reduced its emissions by 167,688 metric tons (MT) of carbon dioxide equivalents (mtCO2e) to achieve 22.7 percent below 2005 levels.

Since the adoption of the first CAP in 2013, some of our major accomplishments include:

- Implementation of over 25 City energy efficiency projects with utility incentives and grants between 2013 and 2018.
- Upgrade of our public EV charging stations in 2014 to support transportation electrification in our community.
- Installation of a solar system at Red Morton Community Center in 2015 with no capital outlay.
- Provide education, outreach, and incentive programs to businesses and residents.
  - Resulting in almost $4MM in utility incentives claimed by community members
- Adoption of Peninsula Clean Energy (PCE) in 2016.
  - Moving City accounts to 100% renewable and carbon free electricity.
  - Achieving an over 97% opt-in rate communitywide.
- Saving businesses and residents in utility cost through PCE while providing cleaner energy with fewer emissions.
  - Over $2 MM in utility costs in 2017
  - Over $1.8 MM in 2018
  - $2.4 MM in 2019

In order to achieve a 50 percent reduction by 2030, Redwood City would need to reduce total emissions by about 350,562 mtCO2e, significantly increasing the scale and speed of reductions. This “bending of the carbon curve” is essential to meeting the goal of carbon neutrality well before 2045 and avoiding worsened climate change impacts.
To meet this goal, the City has identified 4 sectors to reduce Greenhouse Gas (GHG) emissions to achieve the 2030 and 2045 targets:

The CAP identifies key actions that need to be accomplished within the next decade to stay on pace with achieving our goals. In the next two years, the City plans to implement the following actions:

- Environmentally Preferred Purchasing Policy
  - Building & transportation decarbonization with municipal electrification and EV First!
  - Energy efficient & water saving products

- Electric Leaf Blower Incentive Program
  - Address noise and air pollution in residential areas
  - Increase community awareness of air quality issues

- Incentive Program Collaboration with Peninsula Clean Energy
  - Heat pump water heaters
  - Solar installation
  - Battery storage

This CAP also focuses on our municipal operations as well as issues and activities in the community, including how residents, organizations, and businesses can contribute to Redwood City’s emission reduction goals. It provides an ambitious, community-focused platform to advance policies that enhance quality of life and wellbeing, embrace smart city innovation and improve social equity. We engaged experts and community leaders to plan the best path forward for Redwood City, and we hope you will join us on this journey. On the following pages is a table of the GHG reduction strategies developed for 2020 – 2030.
## GHG Reduction Strategies, 2020 - 2030

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-1</td>
<td>Community Choice Aggregation: Municipality</td>
<td>Continue to provide 100% renewable electricity to municipal facilities.</td>
<td>1,142</td>
</tr>
<tr>
<td>EM-2</td>
<td>Solar on Municipal Facilities</td>
<td>Identify new or existing municipal facilities that are well suited for solar PV or solar hot water systems. Install systems where feasible. Use group purchasing power or purchase power agreements (PPAs) to lower cost.</td>
<td>146</td>
</tr>
<tr>
<td>EM-4</td>
<td>Energy Efficiency in Municipal Buildings</td>
<td>Audit city facilities for energy efficiency opportunities and implement EE retrofits. Participate in San Mateo County Energy Watch and leverage benchmarking to identify opportunities for EE upgrades and track energy performance. Leverage other programs that provide funding.</td>
<td>373</td>
</tr>
<tr>
<td>EM-6</td>
<td>Energy Efficient Street Lighting</td>
<td>Continue LED street light replacement program and replacement of parks and parking lot lighting.</td>
<td>112</td>
</tr>
<tr>
<td>EM-7</td>
<td>Environmentally Preferred Purchasing Policy: Energy</td>
<td>Implement a sustainable purchasing policy that emphasizes the purchase of ENERGY STAR certified equipment – appliances, electronics, etc.</td>
<td>8</td>
</tr>
<tr>
<td>EC-1</td>
<td>Community Choice Aggregation: Community</td>
<td>Continue to provide renewable electricity and promote &quot;opting up&quot; to PCE’s ECO100 (100% renewable) service.</td>
<td>55,042</td>
</tr>
<tr>
<td>EC-2</td>
<td>Solar Incentives</td>
<td>Provide incentives for solar installation through Bay Area SunShares Program or others.</td>
<td>5,778</td>
</tr>
<tr>
<td>EC-5</td>
<td>Commercial Energy Efficiency Programs</td>
<td>Promote participation in commercial energy efficiency programs and demand response programs offered by SMC Energy Watch and PG&amp;E. Encourage commercial energy audits.</td>
<td>491</td>
</tr>
<tr>
<td>EC-6</td>
<td>Residential Energy Efficiency Programs</td>
<td>Promote participation in residential energy efficiency programs, including BayREN’s Home Upgrade program and PG&amp;E’s efficient appliance rebates. Encourage residential energy audits.</td>
<td>860</td>
</tr>
<tr>
<td>EC-8</td>
<td>Commercial Energy Conservation Program</td>
<td>Establish a voluntary commercial energy conservation program, encouraging minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments and reporting by registered energy assessors.</td>
<td>997</td>
</tr>
<tr>
<td>EC-9</td>
<td>Residential Energy Conservation Program</td>
<td>Establish a voluntary residential energy conservation program, encouraging minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments and reporting by registered energy assessors.</td>
<td>696</td>
</tr>
<tr>
<td>EC-10</td>
<td>Green Building Policy: All Electric</td>
<td>Update building code to require proposed new buildings to be all-electric, as specified (Adopted September 21, 2020).</td>
<td>21,006</td>
</tr>
<tr>
<td>EC-11</td>
<td>Electric Panel Upgrade Incentives</td>
<td>Leverage incentives provided by PCE for residents to upgrade electric panels to accommodate all-electric technologies including solar, battery storage, heat pump water heaters, electric stoves and electric vehicles.</td>
<td>17,930</td>
</tr>
<tr>
<td>EC-12</td>
<td>Microgrid Demonstration Projects</td>
<td>Identify microgrid demonstration project site. Provide education and outreach to stakeholders on the multiple benefits of microgrids, including reliability, cleaner energy and cost savings.</td>
<td>107</td>
</tr>
<tr>
<td>EC-13</td>
<td>Solar + Battery Storage Promotion</td>
<td>Provide education, outreach, and incentives to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.</td>
<td>3,451</td>
</tr>
<tr>
<td>A-1</td>
<td>Green Business Program</td>
<td>Promote San Mateo County Green Business program and set goals for participation.</td>
<td>294</td>
</tr>
</tbody>
</table>
### GHG Reduction Strategies, 2020-2030

<table>
<thead>
<tr>
<th>EW-1</th>
<th>Water Conservation Programs</th>
<th>Promote BAWSCA residential water conservation rebate programs for items including high efficiency appliances, rain barrels, sprinkler nozzles, irrigation controls and Lawn Be Gone (drought tolerant landscapes).</th>
<th>403</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW-2</td>
<td>Water Efficient Landscape Ordinance</td>
<td>Enforce existing Water Efficient Landscape Ordinance.</td>
<td>172</td>
</tr>
<tr>
<td>TM-1</td>
<td>Municipal Fleet Electrification Policy</td>
<td>Establish policy requiring the prioritization of electric vehicles and mobile equipment.</td>
<td>109</td>
</tr>
<tr>
<td>TM-3</td>
<td>Commute Alternatives Program: Municipal</td>
<td>Continue commute alternatives program including pre-tax commuter benefits, transit subsidies, and carpool program.</td>
<td>4</td>
</tr>
<tr>
<td>TL-1</td>
<td>Smart Growth Development Policy</td>
<td>Continue smart growth policy that prioritizes infill, higher density, transportation-oriented and mixed-use development. Continue focusing new growth in Priority Development Areas (Downtown and transit corridors), encourage orderly growth with a jobs/housing balance, and consider precise plans for transit corridors to implement the goals and policies of the Built Environment element of the General Plan.</td>
<td>4,228</td>
</tr>
<tr>
<td>TL-2</td>
<td>Walkable/Bikeable Streets</td>
<td>Modify landscape to make walking and biking more desirable. Integrate the Citywide Transportation Plan and Green infrastructure Plan projects to form a network throughout the City that prioritizes connected active transportation and a healthy ecology. Develop a Vision Zero Strategic Plan per the Citywide Transportation Plan.</td>
<td>5,212</td>
</tr>
<tr>
<td>TL-4</td>
<td>Parking Policies Promoting Public Transit, Biking, and Walking</td>
<td>Continue parking policies such as metered parking, reduced parking requirements for new development, and “unbundling” sales/leases of parking space to increase public transit use, biking, and walking.</td>
<td>9,695</td>
</tr>
<tr>
<td>TL-5</td>
<td>Safe Routes to School Program</td>
<td>Support the City's Safe Route to Schools program by investing in enhancing bike trails and safe pedestrian routes to local schools and by continuing to integrate Safe Routes to Schools goals, policies, and programs into the Citywide Transportation Plan and the City's Green Infrastructure work plans.</td>
<td>197</td>
</tr>
<tr>
<td>TL-3</td>
<td>Car/Bike Share Promotion</td>
<td>Develop policies and incentives that attract bike and car sharing companies to establish service.</td>
<td>810</td>
</tr>
<tr>
<td>TL-6</td>
<td>Expand Local Shuttle Service</td>
<td>Encourage the expansion of local shuttle service routes and/or frequency of service within city limits to connect areas not covered by public transit.</td>
<td>178</td>
</tr>
<tr>
<td>TL-7</td>
<td>Local Farmers’ Markets Promotion</td>
<td>Encourage community farmers’ markets with locally-grown food and community gardens to reduce associated VMT.</td>
<td>23</td>
</tr>
<tr>
<td>TL-8</td>
<td>Electric Vehicle Ownership Programs</td>
<td>Establish community target for adoption rate of electric vehicles and explore strategies to reduce off-road and mobile equipment emissions.</td>
<td>2,321</td>
</tr>
<tr>
<td>TL-9</td>
<td>Expand EV Charging Infrastructure</td>
<td>Leverage partnerships and incentives to expand EV charging infrastructure in public properties, multi-unit dwellings and workplaces.</td>
<td>32,522</td>
</tr>
<tr>
<td>TL-10</td>
<td>Green Building Policy: EV charging</td>
<td>Update building code during code adoption cycle to increase the mandated percentage of parking spaces accommodating EV charging equipment and of parking spaces devoted to clean air vehicles.</td>
<td>3,650</td>
</tr>
<tr>
<td>TL-11</td>
<td>Electric Bikes/Scooter Share Promotion</td>
<td>Consider allowing dockless e-scooter and e-bikes to operate in the City. Modify existing city infrastructure to accommodate e-scooter and e-bikes.</td>
<td>3,281</td>
</tr>
<tr>
<td>WM-1</td>
<td>Municipal Zero Waste Policy</td>
<td>Establish a policy to achieve 95% waste diversion rate in city operations. Provide appropriate bins and signage, organics recycling and education to public employees.</td>
<td>20</td>
</tr>
<tr>
<td>WC-1</td>
<td>Increase Waste Diversion Rate</td>
<td>Achieve 90% waste diversion rate through promotion of traditional and new recycling and organics recycling programs, local enforcement of requirements, and sustainable vendors policy for public events.</td>
<td>631</td>
</tr>
</tbody>
</table>
Redwood City is committing to a 50 percent reduction in emissions below 2005 levels by 2030. Through this commitment, Redwood City will be doing its part in helping California achieve the statewide target of a 49 percent reduction below 2005 levels by 2030 and will place Redwood City on the path to achieving the statewide target of carbon neutrality well before 2045.

Even if all emissions were eliminated today, we would still see climate change impacts in the future, including sea-level rise, hotter temperatures, and increased fire risk. Redwood City understands the importance of laying out a framework for enhancing Redwood City’s resilience to these impacts. This CAP describes the process Redwood City will embark on to develop a climate change resiliency plan moving forward.

The community’s investment to support the CAP will be many times greater than Redwood City’s own costs. Redwood City will need to support residents’ and businesses’ efforts to find funding to decarbonize their buildings, vehicles, and lifestyles. At the same time, Redwood City should discourage carbon-emitting activities through fee-based systems or carbon taxes to shift community investment away from fossil fuels to clean technologies.

In order to ensure full implementation of the CAP, an interdepartmental team of City staff, in collaboration with civic and business leaders, must be assembled to maintain momentum and ensure accountability. Staff will provide annual progress reports, including GHG inventories, and will prepare an update to the CAP after five years.

This CAP provides a pathway to accelerate our historical success. It is also a call to action to residents, community organizations, and businesses to take an active part in our transition to a low-carbon future and clean economy. In this process, we will foster a vibrant economy, increase our resiliency, and support Redwood City’s vision for a livable and sustainable community for all generations to come.
INTRODUCTION
Introduction

Why a Climate Action Plan?

This update to our Climate Action Plan (CAP) is designed to be a blueprint of our community’s response to challenges posed by climate change, is a living document that reflects the ongoing efforts and challenges our community faces as the impacts from climate change grow more frequent, severe, and urgent. Our city cannot solve the climate crisis alone. This CAP documents how Redwood City plans to collaborate with our partners in county, state, and federal government, along with community organizations and local businesses, to create new programs, services, and policies that will support our community in taking actions that reduce greenhouse gas (GHG) emissions. All recommendations, goals, and requirements are subject to environmental review and, if applicable, requirements set forth in the General Plan, Zoning Ordinance, City Code, and State law. This CAP does not require any updates to the General Plan or Zoning Ordinance.

Building on a Foundation

Vision for a Better Future

If the year was currently 2045, here’s what we’d like to be able to say: We have reduced our carbon emissions 50% below 2005 levels. All of our energy comes from renewable sources and are reliable. Mobility options are zero carbon, shared and active, and congestion and air pollution are greatly reduced. Nearly all of our waste is reused, repurposed, or recycled. All community members have reliable access to affordable, clean water.

We have created a culture of awareness and action. We utilize smart city technology and principles to advance efficiency in our energy, water, waste, and transportation systems and infrastructure.

Environmental, economic, and social needs are considered and are in balance. Our prosperous economy and quality of life have benefited from this transformation. We are now connected, equitable, and resilient.
Benefits of Climate Action

Beyond the direct benefit of a more stable climate, many climate actions generate additional benefits, such as the ones listed below.

Public Health

Actions to mitigate climate change can improve air quality and physical and mental health, as well as access to healthy food.

Research suggests that living within 50 to 200 meters of major roadways can trigger asthma symptoms among adults and children and contribute to the development of asthma in children. Consequently, actions aimed at reducing traffic congestion, taking vehicles off the road, and transitioning to an all-electric City vehicle fleet can reduce risk of cardiovascular disease, chronic and acute respiratory illnesses, cancer, and preterm births for those located near busy roads.

Actions that encourage active modes of transportation can reduce obesity and the risk of non-communicable diseases, improve mental health, and diminish the cost of public health services. Green infrastructure projects have been shown to increase recreational opportunities and physical fitness exercises such as dog walking or jogging.

Denser, transit-oriented neighborhoods increase local access to essential services and nutritious food sources. Increased intake of more climate-friendly foods, such as whole grains and vegetables, can reduce the risk of chronic diseases. Adaptation actions that mitigate urban heat island effects, such as planting shade trees, lessen potential health risks to sensitive populations.

Health benefits from climate action bring tangible healthcare savings as well. The cost of reducing CO2 emissions is less than the medical costs of treating the health effects of climate change.

Enhanced Resilience

Actions that address climate change can also bolster resilience to other hazards.

A microgrid resiliency project at the Miller Community Center in Seattle is an early example of what are expected to be many upcoming projects that leverage solar and battery storage to provide relief during emergencies. The local energy utility (Seattle City Light) is partnering with the Seattle Parks and Recreation to install a battery energy storage system, solar panels, and microgrid controls. When the project is complete in mid-2020, the microgrid will generate power and provide backup power storage for the community center when the grid is down, such as unplanned power outages and emergency events.

Climate actions also can enhance community cohesion – the networks of formal and informal relationships among neighbors that foster a mutually supporting community.

- One study showed a direct link between increased vegetation and use of outdoor spaces for social activity.
- Another study found that even small amounts of greenery increased the safety of urban areas.
- A survey of residents in many different types of neighborhoods found that the more that neighborhoods were walkable and neighbors knew each other, the more likely neighborhood residents were to participate politically, trust others, and be socially engaged.
Reduced Traffic Congestion

Climate actions can reduce traffic congestion.

Cities such as New York, Stockholm, and London have implemented congestion pricing—charging tolls to travel in designated urban areas during peak travel times to reduce the volume of traffic. Locally, the City/County Association of Governments of San Mateo County and the San Mateo County Transportation Authority are partnering to build the San Mateo 101 Express Lanes Project—22 miles of express lanes on U.S.101 from the San Mateo County/Santa Clara County line to I-380 in South San Francisco. Slated to be complete in 2022, the project is designed to reduce traffic congestion and encourage carpooling and transit use on U.S. 101 in San Mateo County.8

Equity and Inclusion

Climate actions can foster a more equitable and inclusive community.

City-driven climate action approaches have the potential to increase equity and inclusion in both the planning process as well as in long-term outcomes. To realize this promise, planners need to begin by considering how to integrate equity and inclusion from the very beginning of determining the CAP planning process. This should include partnering with socially vulnerable communities.

In Buffalo, N.Y., People United for Sustainable Housing (PUSH) used a Community Congress model to meaningfully engage residents in local planning efforts. This advanced their vision, priorities, and solutions. The collective work of multiple partners resulted in development of a Green Development Zone that features green infrastructure, local food systems, affordable housing, and energy-efficient buildings.9

In San Mateo County, Peninsula Clean Energy partnered with Peninsula Family Service to offer increased incentives to enable low-income residents to cost effectively purchase used electric vehicles with low mileage through the DriveForward10 program. Plug-in hybrid electric vehicles save owners money on fueling and maintenance costs and reduce GHG emissions. The program is helping to increase EV ownership across the socioeconomic spectrum in San Mateo County.

Economic Stability and Growth

Climate actions can boost the local economy through local projects, programs, and jobs.

Investments in the construction, manufacturing, clean technology, green infrastructure, and civil engineering sectors not only provide businesses with opportunities for growth. They also create skilled, well-paying “green” jobs for the community. For example, many jobs in the renewable energy and energy efficiency sector are in installation, maintenance, and construction—making them inherently local and influential to the local economy. Cities can partner with workforce development organizations, business incubators, B-corporations, and green businesses to build a diverse workforce pipeline for these fields.

Studies have shown that energy efficiency investments create more jobs than those in fossil fuel industries—the estimate is approximately eight jobs per $1 million invested, compared to approximately three jobs per $1 million invested in fossil fuel industries.11 Investments in climate actions can also save Redwood City money. A study by the University of California Transportation Center estimated that maintenance of electric vehicles (EVs) would cost only 50 percent to 75 percent of the average maintenance cost of a conventional vehicle.12

The sectors most likely to benefit from climate actions and policies are those related to household spending, such as housing, wholesale, and retail. Manufacturers of energy efficiency equipment and appliances and renewable energy generation equipment also benefit.13
Carbon Sequestration

Many actions that address climate vulnerability and risk also reverse emissions of GHGs into the atmosphere.

Shade trees absorb, or sequester, carbon dioxide from the atmosphere. Studies show that a young tree sapling can sequester anywhere from 1.0 to 1.3 pounds of carbon each year, while a 50-year-old tree can sequester over 100 pounds annually. Restoration of wetlands can both sequester carbon and be implemented in a way that may protect shoreline communities and habitats from sea-level rise and storm surge. Healthy soils on farmland also play an important role in absorbing carbon.

Actions to sequester carbon in trees, soils, and vegetation can minimize stormwater runoff and increase biodiversity of plants and animals. Biodiversity is critical to the health of City parks and other open spaces. Natural area conservation protects natural resources and environmental features that sequester carbon, reduce stormwater runoff, promote infiltration, prevent soil erosion, and increase ecosystem biodiversity.

Municipalities with urban forests should consider end-of-life practices for trees to ensure the carbon embedded in the tree is maintained after a tree is cut down. As outlined in Chapter 6: Strategies & Actions, in the Carbon Sequestration section, some options include: using the tree for lumber for local construction, upcycling a dead tree into park benches or furniture, or converting it into biochar.

CityTrees Partnership

In 2019, CityTrees was awarded a $42,300 ReLeaf grant by Cal Fire to plant and maintain 129 trees in Redwood City to reduce greenhouse gas emissions and combat climate change. Redwood City Public Works Services Department partners with CityTrees every year to assist volunteers with identifying planting sites, planting trees throughout the community, and restoring native species to the area. Since 2000, CityTrees has planted over 3,400 trees in our community. For more information on the organization, go to: https://www.citytrees.org/citytrees
City of Redwood City Climate Action Plan

2

CAP OVERVIEW
CAP Overview

Highlights of this CAP - What’s New

Since our first Climate Action Plan (CAP) was adopted in 2013, much has changed related to climate protection. Consequently, this CAP includes the following updates and additions:

- Incorporates **new global, state, and local policies** and climate targets, including **carbon neutrality**.
- Documents **climate change impacts here in San Mateo County** and previews what we need to plan for.
- Documents our **community partners** and how we plan to work together to achieve our goals.
- Addresses **emissions from what we buy and consume** in addition to emissions we generate here.
- Provides more ways **individuals, community groups, and businesses** can get involved.
- Focuses on equity, or how to **make sure everyone benefits**, especially the most vulnerable members of our community.

The Role of Equity

We cannot address climate change without also addressing equity.

Commonly, climate change disproportionately threatens those who are the least responsible for generating pollution, the most vulnerable to its impacts, and the least able to adapt. This is true globally, and it is also true in Redwood City. Many climate change impacts, such as health impacts, will disproportionately affect socially vulnerable populations. (See sidebar for the definition of “social vulnerability.”) That’s why the San Mateo County Board of Supervisors emphasized the need to take health, socio-economic, and racial equity into account in policymaking and climate solutions at all levels in their 2019 climate emergency declaration.¹⁵

According to Local Governments for Sustainability (ICLEI), an international organization of local and regional governments, climate equity ensures that all people have the opportunity to benefit equally from climate solutions, while not taking on an unequal burden of climate impacts.¹⁶ Since greenhouse gas contribution typically increases with income¹⁷ — this CAP asks those more responsible for contributing GHG emissions to do more to reduce those emissions. Simultaneously, the CAP outlines ways to assist low-income community members in accessing carbon-free energy and technologies. When all community members have the same ability to plan for and shape their futures, the result is a healthier and more resilient community.

However, achieving this vision requires hard work and intention. Redwood City recognizes the importance of proactively including socially vulnerable groups and those who have traditionally been underrepresented in planning processes to participate in the development of this CAP. Redwood City is working on partnering with our community organizations to ensure that the planning process is accessible and welcoming to our full community.

As Redwood City implements the programs and policies that result from this CAP, we will continue to seek support and feedback from the diverse group of community stakeholders. Moving forward, Redwood City will evaluate programs and policies using key performance metrics that encourage equitable engagement and impact.
What is “Social Vulnerability”?  
This term refers to populations with greater vulnerability to climate impacts because of their social inequities, physical characteristics, or baseline conditions. These include, but aren’t limited to:

- Children and the elderly
- People with limited English proficiency
- Low-income communities
- Communities of color
- LGBTI and/or gender non-conforming community members
- Undocumented immigrants
- Women
- Community members who practice a minority religion
- Community members with limited education or literacy
- Residents with unstable economic or housing situations
- People with disabilities or physical and mental health conditions
- Outdoor workers and others whose workplace conditions expose them to disproportionate risk, including people in the informal workforce
- People whose housing conditions expose them to disproportionate risk
- People who are disproportionately exposed to pollution and toxic hazards or natural hazards
- Community members without access to the internet or phone service
- Transit-dependent populations
- Community members who face multiple areas of vulnerability or intersectional vulnerability

How the CAP Came Together

This Climate Action Plan (CAP) was developed in partnership with the City/County Association of Governments of San Mateo County (C/CAG) and the County of San Mateo Office of Sustainability through the San Mateo County Energy Watch program and its Regionally Integrated Climate Action Planning Suite (RICAPS) initiative. The RICAPS initiative brings cities and the County together to work collaboratively on climate action planning and implementation. It is co-funded by C/CAG and PG&E.

RICAPS assists member jurisdictions and other interested local governments to develop climate action plans that are consistent with California Environmental Quality Act (CEQA) guidelines, including both the CEQA Guidelines Amendments effective December 28, 2018, and the Bay Area Air Quality Management District (BAAQMD)’s CEQA Air Quality Guidelines (updated May 2017). RICAPS tools include a Menu of Measures, forecasting tool, climate action plan template, and technical assistance from DNV GL, an environmental consultant. By combining resources, RICAPS promotes high-quality climate action plans that can be used to support planning efforts to reduce GHG emissions and to meet regulatory requirements, should cities choose to adopt plans for the specific purpose of tiering and streamlining analysis of GHG emissions for subsequent projects that are consistent with the plans. (More information about these partners is found in Appendix E.)

The template and Redwood City’s climate strategy is based on the ICLEI — Local Governments for Sustainability (ICLEI) 5-Milestone process. To ensure equity when developing the CAP, Redwood City used the Equitable, Community-Driven Climate Preparedness Planning framework from the Urban Sustainability Directors Network as well as resources in Appendix D: “Best Practices for Community Collaboration and Sustainability Planning” as a guide.
The diagram below shows the steps Redwood City has taken so far to develop this CAP (Steps 1 through 4). Steps 5 and 6 will follow once the CAP is adopted. (See details in Chapter 7: Implementation, Monitoring & Implementation section.)

- **STEP 1 PROJECT INITIATION**
  Co-create a project plan with the community. Strategies include involving community (or representatives of the community) in stakeholder meetings which determine the goals and actions of the plan.

- **STEP 2 DATA COLLECTION & ANALYSIS**
  Collaborate with community to identify neighborhood strengths, assets, and climate hazards, including an assessment of social and environmental vulnerabilities, adaptive capacity, climate risks, and the underlying causes of increased climate risks.

- **STEP 3 VISIONING & ALTERNATIVES**
  Collaborate with community to determine the guiding principles and vision for the plan’s development. Include an understanding of unintended consequences of actions and potential impacts on equity in the alternatives analysis (i.e., creation of new inequities, or worsening, improvement, or neutral impacts on existing inequities).

- **STEP 4 PLAN DEVELOPMENT**
  Design and prioritize strategies to benefit communities and populations impacted by climate change and mitigate potential negative impacts. Consider opportunities for enhancing co-benefits across sectors.

- **STEP 5 PLAN & PROJECT IMPLEMENTATION**
  Partner with community during implementation to reduce the risk of creating new inequities or worsening existing ones. Prioritize actions that focus on communities and populations with the greatest climate risk and geared towards addressing the contributing causes of increased climate risk. Involve community in the implementation and communication of the plan.

- **STEP 6 MONITORING & REVIEW**
  Monitor and review plan implementation to ensure that actions are implemented as planned and with the desired outcomes. Engage community in monitoring to help maintain accountability. Update strategies in collaboration with the community based on information gathered regarding implementation, outcomes, and feedback from stakeholders. Share data and information regarding ongoing monitoring of the plan’s implementation and outcomes with the community.
## Strategies and Focus

### Energy & Water
This includes energy that is used in community and public facilities, as well as in water treatment and transportation. This strategy addresses opportunities to reduce energy use, shift from natural gas to electricity, and reduce water consumption.

### Transportation
This includes public transit, commuting, and how we use land. Opportunities to reduce GHG emissions include reducing the number of miles we drive alone in cars, and increasing housing near transit.

### Waste
This includes emissions from solid waste generation and disposal. The primary goal is to reduce emissions by encouraging the community to reduce waste. The secondary goal is to divert it from the landfill through recycling and composting.

### Food & Consumption
This includes the goods and services we buy from outside San Mateo County. This strategy explores how to reduce food waste, shop local, and curb unnecessary air travel.
City of Redwood City Climate Action Plan

3. Impacts of Climate Change
Impacts of Climate Change on Redwood City

Climate Science 101

Climate change presents one of the most significant challenges of our time. As levels of greenhouse gas (GHG) emissions increase in the atmosphere, the Earth’s climate system is being destabilized. GHG emissions are invisible, and include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and three man-made gasses: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

As more greenhouse gasses are trapped inside the Earth’s atmosphere, more of the sun’s energy is trapped as heat, which means temperatures keep getting hotter. In fact, the world has already become nearly 1°F warmer since 1880, and we’re seeing extreme consequences because of it, including more intense storms, greater wildfire risk, and rising sea levels.

Although we’re already seeing impacts of climate change, there’s a range of how relatively mild or devastating the future impacts might be, depending on how aggressively we take action to address it (see Chapter 3: Impacts of Climate Change, Future Projections section). Scientists have laid out four pathways, or scenarios, based on future levels of GHG emissions. The pathways range from the very optimistic to the highly pessimistic. The strategies laid out in this CAP are in alignment with the most optimistic pathway. For more information about the four pathways, see Appendix B.4.

The Earth Has a Fever

Atmospheric scientist Dr. Katharine Hayhoe has a simple way to explain the impact of rising global temperatures: “When we say the planet is warming by one or two or three degrees Celsius, often we think, ‘Well, that’s nothing.’ But if our body’s temperature goes up one and a half to three or even four degrees Fahrenheit, we are running a fever. We go to the doctor. If it was three or four degrees, we go to the hospital. And that’s what’s happening to our planet. It is running a fever. And that fever is affecting us.”

—Dr. Katharine Hayhoe, Professor and Director, Climate Science Center, Texas Tech University
What’s Already Being Experienced

Climate change has already affected and will continue to affect San Mateo County.

Climate change will have many different effects on society and on the natural world. Plant and animal species are adapting to changing environments by migrating to new areas. As species move, they bring diseases with them to farms and human populations. Some species become extinct due to either human-caused climate change or to human activities such as habitat destruction or toxic pollution.

The region’s annual maximum temperature increased 1.7°F from 1950-2005.

Coastal fog, which is critical to the region’s climate and ecosystems, is less frequent than ever before.

Sea level has risen over 8 inches in the last century.

The forceful 2015-2016 El Niño weather pattern, which was one of the three largest in history, resulted in unprecedented outer coast beach erosion due to winter wave energy that was more than 50% greater than a typical winter.

The 2012-2016 statewide drought led to the most drastic moisture shortages in the last 1,200 years, resulting in a 1-in-500-year low in Sierra snowpack. This drastically reduced snowpack resulted in $2.1 billion in economic losses, 21,000 jobs lost statewide in agricultural and recreational sectors, and a continuing exhaustion of groundwater sources.

Future Projections

Even if considerable efforts to reduce greenhouse gas (GHG) emissions are conducted, San Mateo County will likely see substantial temperature increases by 2050. By 2100, temperature rise will be dependent on the emissions scenario. (For more information about the four emissions scenarios, see Appendix B.4.)

Precipitation in San Mateo County will continue to vary each year. The differences between wet and dry years are projected to become more extreme and damaging in the coming decades. If no action is taken to combat climate change, the Sierra snowpack, a critical source of water for the State, will decrease by an average of 64 percent by the end of the century.

As temperature continues to increase, it is anticipated to cause longer and more intense California droughts, posing major problems for government operations, water supplies, ecosystems, agriculture, and recreation.

Studies suggest that even with significant emissions reductions, it is inevitable that there will be at least 6 feet of sea-level rise over the next several centuries due to the delayed effects of climate change.
Impacts in San Mateo County

Following are some of the key climate impacts that San Mateo County has already seen and will likely see in the future.

**Rising Temperatures**

The Bay Area's average annual maximum temperature increased by 1.7°F (0.95°C) from 1950 to 2005. Even with significant efforts to mitigate climate change, the Bay Area will likely see annual mean warming of approximately 3.3°F by mid-century and as much as 4.4°F under the high-emissions scenario. By the end of the century, temperatures could rise by 4.2°F to 7.2°F.²²

Extreme heat events occur when air temperatures reach or exceed 100°F. Across San Mateo County, air temperatures are expected to increase by an average of 5°F between 1995 and 2070 due to climate change. In the baseline year of 1995, approximately nine percent of the people in vulnerable communities in the county were at risk from the impacts of more than two high heat days per year. By 2030, nearly three times as many people will be at risk. By 2070, four times as many will be at risk. The greatest increases in the number of high heat days from 1995 to 2070 are projected to occur in Atherton, East Palo Alto, Foster City, Menlo Park, North Fair Oaks, and Redwood City.

The Climate Ready SMC Web Visualization Tool is an interactive website designed to provide an enhanced understanding of how a changing climate will impact our community (https://www.smcsustainability.org/climate-ready). The maps below demonstrate how the tool can be used to identify how projected high heat events in 2030 and 2070 could impact areas in Redwood City.

**Impact of Heat on People**

In a heat wave, the most dangerous places can be the ones where people spend the most time: inside houses and apartments. In poorly insulated buildings, heat can build up and not even dissipate at night. In 2018, a KQED investigation found that bay area homes without air conditioning were as much as 15 to 20 degrees hotter inside than outside overnight.²¹

These risks are compounded for low-income communities. A September 2017 bay area heat wave overwhelmed the protective and social infrastructure in San Francisco, resulting in 6 deaths and 38 hospitalizations. Members of socially vulnerable communities may not be able to afford to cool their work or living spaces or may be forced to choose between air conditioning and paying for basic necessities (e.g., food and rent).
Only 10 percent of homes in the Bay Area currently have air conditioning. Warming trends across San Mateo County are expected to cause more people to install and use air conditioning, resulting in an increase in GHG emissions. The largest increase in summer energy demand is expected in coastal cities as air conditioning adoption grows.

The amount and location of new air conditioning needed can be predicted through a metric called “cooling degree days” (CDD). This value quantifies how much the air temperature exceeds 65°F on a single day or period of days. As the temperature rises above 65°F outside, occupants inside get increasingly uncomfortable and will typically turn on air conditioning if it is available, so a larger CDD indicates a higher likelihood of increased energy consumption to cool homes and businesses.

In some San Mateo County communities, CDDs are projected to double or triple between present day and 2070. It is projected that the southeast, central-east, and coastal areas of the county will be impacted most dramatically, with the greatest percentage increases expected to occur in Pacifica, Daly City, and Brisbane Quarry.
The map above illustrates the projected average number of CDDs throughout San Mateo County in 2070.
Sea-Level Rise

The San Francisco Bay Area is one of the top hotspots for sea-level rise in the nation. Average sea level in the Bay Area has risen 8 inches in the past 100 years, based on the San Francisco tide gauge.25

In 2018, the County of San Mateo finalized a *Sea-Level Rise Vulnerability Assessment*26 for the County in coordination with cities, agencies, businesses, community groups, and others. Sea-level rise impacts include flooding, increased wave action, rising groundwater tables and saltwater intrusion, increased erosion (i.e., landward shoreline retreat) and changes in sediment supply.

The economic value of San Mateo County property at risk from sea-level rise exceeds that of any other county in the Bay Area. The assessed value of parcels in the study area exposed to near-term (present-day) flooding exceeds $1 billion, and the assessed value of parcels exposed to erosion and flooding in the long term (50 to 100 years) totals roughly $39.1 billion. In addition, the built and natural infrastructure meant to protect people and properties from flooding could be lost or severely affected, including more than 7,000 acres of wetlands (over 80 percent of all wetlands assessed) and as much as 24 miles of floodwalls and levees.

When population projections are taken into account, San Mateo County is one of six counties with more than 100,000 people in the nation (and the only one on the West Coast) that will be affected by three feet of sea-level rise.

The model projects that a flood with a one percent chance of occurring will affect a slightly greater area in 2070 than in 2030. The impacts of flooding will worsen over time and have substantial impacts on public transit infrastructure and therefore, the communities that rely on it.

In addition to directly affecting properties, sea-level rise can also have a substantial impact on mobility due to delays in travel times and risks to transportation infrastructure such as electrical transfer stations and EV charging areas. El Niño events have the potential to exacerbate the effects of sea-level rise by increasing water levels by as much as one foot above normal, and, on average create 30 percent larger winter wave energy.

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**Impact of Sea-Level Rise and Flooding on People**

Sea-level rise will have consequences for public health because health facilities will be affected and access to emergency medical services could be impaired. Flood events can lead to physical injury, illness, or disease (e.g., vector-borne diseases such as west Nile virus), and they can also cause loss of income and disruption of employment.

Flooding will impact people who rely on public transportation. Of the 1,979 bus stops in the county, 252 bus stops are currently located within the 1 percent flood zone. In 2030, 1,536 of the bus stops located within the county boundaries would be within the 1 percent flood zone, which is a 500 percent increase from present conditions. In 2070, 1,592 of the bus stops located within county boundaries would be within the 1 percent flood zone, which is an increase of about 4 percent from 2030.24
In 2018 the California Ocean Protection Council (OPC) released updated Sea-Level Rise Guidance, which uses “probabilistic-based” projections and lays out an approach for developing adaptation strategies. The OPC recommends using the projections included in Figure 5, below. Low-risk projections should be used for short-lived infrastructure that is readily adaptable, such as trails. Medium-risk projections should be used for less adaptive, more vulnerable projects such as housing developments. Extreme risk projections should be used for larger and more complex infrastructure projects such as roads, wastewater treatment plants, and hazardous waste sites.

*Probabilistic-based projections “associate a likelihood of occurrence (or probability) with sea-level rise heights and rates and are directly tied to a range of emissions scenarios.”18
Redwood City is one of the most vulnerable cities in California to sea level rise. With 3.3 feet of sea level rise, 59% (8,308 of the City’s 14,043 land acres) of the City’s land would be vulnerable to flooding. This area currently houses 21,000 people, contains 568 commercial parcels, and nearly has $9 billion in assessed value. From the Port of Redwood City, to Oracle, to Kaiser Permanente, it is imperative for the City to plan for and try to prevent this cataclysmic damage. Most of this endangered acreage was historically natural wetlands. While a sizable portion of wetlands have been preserved, notably Bair Island, the low-lying areas are vulnerable to sea level rise and enhanced flooding.

Redwood City is not alone in its vulnerability to sea level rise. A coalition of local governments, public agencies, non-profit organizations, and private companies have partnered with San Mateo County’s Office of Sustainability to launch the Sea Change SMC initiative. Redwood City is more likely to successfully adapt to sea level rise in this coalition because any realistic solution will need cross-jurisdictional cooperation. Sea Change SMC has already completed a countywide Sea Level Rise Vulnerability Assessment, which projected scenarios for Redwood City. In 2019, as a result of the Sea Change convenings, the cities and County of San Mateo came together and formed a Flood and Sea Level Rise Resiliency District to address sea level rise, flooding, coastal erosion, and large-scale storm water infrastructure improvements through integrated regional planning, investment, and project implementation. To address the risk of sea level rise, and other climate change impacts, this Plan proposes that the City develop a vulnerability assessment and a Climate Adaptation Plan consistent with the specific actions identified in Appendix G: increasing public awareness; assessing vulnerability; establishing goals, criteria, and planning principles; developing an Adaptation Plan, and conducting ongoing monitoring and adaptive management.

### Increased Fire Risk

Fire risk is a reflection of accumulation of wood or fuels in a forest combined with changes in the length and frequency of the fire season due to warmer climate, changing precipitation, lower humidity, higher winds, and soil drying from droughts. Fire suppression in the area has increased as fuel reserves have built up in unmanaged forests and woodlands. While wildfires in San Mateo County have not historically been extensive, recent models of wildfire risk and climate change show hotspots in the middle of the county.

Climate change is expected to increase the frequency, intensity, and duration of wildfire events impacting San Mateo County. Wildfires can claim lives, destroy property, force mass evacuations, and expose large populations to unhealthy levels of smoke for days to weeks at a time. Between 1995 and 2030, the model projects an increased risk of wildfire in San Mateo County from nine to 13.4 percent. In addition, by 2070, the projected burn area nearly doubles to 25 percent. Simulations of large wildfires using statistical models developed for the Fourth California State Climate Assessment show that the probability of a large fire—which burns more than 1,000 acres—in San Mateo County increases rapidly with a warming climate, with an eight-fold increase in the probability of a large wildfire by 2070. By 2070, the chance that large wildfires or those over 1,000 acres will occur increases to 4 percent per year.

Figure 6 shows the areas that are most at risk of wildfire in the future. The “average percent burned area” is the percentage of a designated area that is projected to burn over two 30-year periods centered around 2030 and 2070.
Redwood City’s Farm Hill district was built in woodland that is vulnerable to wildfire. Some of the landmarks vulnerable to wildfire in the Farm Hill district include Canada College, Easter Cross, Edgewood Park, Canyon Inn and the City’s Fire Station 12 located on Jefferson Avenue. CalFire has designated much of the district as a Very High Fire Hazard Severity Zone (VHFHSZ). In this zone, Redwood City has 4,877 people, 1,174 buildings and an assessed $1,815,748,914 at risk of wildfire.

While a wildfire in the Farm Hill district has a high chance of occurring in any given year, predicting when a wildfire will occur isn’t possible. Some of the factors that could cause a wildfire are: equipment use, power lines/electric power, and other factors as small as cigarette butts. Drought or high winds could radically enhance a wildfire’s destructive potential as well. Redwood City recognizes the severity of this problem and coordinating with the County and other agencies under the San Mateo County Local Hazard Mitigation Plan so that in the event of a wildfire, Redwood City residents are as safe as possible. The City has also been conducting public outreach on wildfire risk, the wildland-urban interface, and defensible space. Included in this Plan is a measure for a microgrid demonstration project to promote community resilience in response to the threat of wildfires and power shutdowns.

Increased Frequency and Intensity of Storms

The Bay Area’s largest winter storms will likely become more intense, and potentially more damaging, in the coming decades. Flooding is a substantial threat in San Mateo County and is expected to increase as a result of climate change. According to flood modeling that integrates the impacts of sea-level rise and inland flooding throughout the County, a flood with a one percent chance of occurring in 2030 would increase to a two percent chance of occurring under 2070 climate conditions. The higher probability of extreme flooding means that creeks and municipal storm sewers are more likely to be overwhelmed, potentially resulting in damage to infrastructure and even loss of life. The largest individual storms are becoming more intense with climate change. In addition, more frequent “whiplash” events that swing from extremely dry to extremely wet conditions in California could become the new normal.
Decreased Availability and Quality of Water

The 2012-2016 California drought led to the most severe moisture deficits in the last 1,200 years and a 1-in-500-year low in Sierra snowpack. The record low snowpack resulted in $2.1 billion in economic losses and exacerbated an ongoing trend of ground water overdraft. While the total amount of precipitation in the Bay Area is not projected to change significantly (models project an additional 2 to 5 inches), the amount and timing of water available as drinking water may change. Under a high emissions scenario, average Sierra Nevada snowpack is projected to decline by nearly 20 percent in the next two to three decades, 30 percent to 60 percent in mid-century and by over 80 percent in late century. Rising bay water and groundwater levels will also increase salinity intrusion and subsurface flooding inland. Climate change will require improved storm water management in the Bay Area as extreme storm events increase in size and frequency.

Redwood City purchases all of its potable water from the San Francisco Public Utilities Commission (SFPUC), which collects 85% of its water from the Hetch Hetchy watersheds and 15% from various Alameda County and San Mateo County watersheds. In wet years, SFPUC will sell Redwood City all of its needed drinking water. However, in drought years, SFPUC reserves the right to cut the water deliveries to its customers like Redwood City.

In 2000, Redwood City launched a wide variety of water conservation and water recycling programs to restrict water demand and boost supply. The City’s recycled water program pilot was launched, successfully delivering “tertiary” grade water to Redwood Shores customers. In 2003, the City Council approved the recycled water project, successfully delivering water today and designed to accommodate future water demand as well. Redwood City also has a goal for water storage within City borders in the event of a disaster. If Redwood City cannot access water sources outside of its jurisdiction, the City needs to have enough water stored within its jurisdiction to have one full day’s worth of water as well as the water needed for “fire flow” to put out fires. The City has completed connecting its various water tanks with pumping stations so water can be transported from one section of the City to another as needed. Redwood City continues to plan for future water needs and enhance the resiliency of our water system.

Increased Impact on Energy Systems

The Bay Area electrical grid is vulnerable to power outages during wind and wildfire events such as Public Safety Power Shutoffs (PSPS) – planned power outages to prevent occurrences of electrical equipment starting wildfires. Many of our natural gas pipelines are located along waterways and will be impacted by flooding from sea-level rise and extreme storm events. California’s transportation fuel sector, which distributes oil from refineries to end users, will be increasingly exposed to extreme weather events such as flooding and wildfire.
Financial Impact of Climate Change

As climate-related natural disasters become more frequent and intense, costs for disaster response and relief are anticipated to increase. With flooding, storms, droughts, wildfires, and other climate-related natural disasters becoming more common, flood insurance and flood prevention costs will grow.33

Climate change is anticipated to impact public buildings, storm water infrastructure, transportation infrastructure, community services, and land-use planning and development. Climate damage to homes and businesses could negatively impact the economy and reduce Redwood City’s income from property and sales taxes, not to mention damage the quality of life for all community members.

If Redwood City allocates resources and invests in climate-protecting strategies now, it will be insurance against some of the most costly effects of a hotter planet in the future.

Working with the San Mateo County Health System

The San Mateo County Health System, in accordance with the Centers for Disease Control, serves a number of functions to reduce health risks related to climate change. These include informing cities about the risk to public health from climate change, creating tools that support decision-making and capacity building related to mitigating adverse health outcomes from climate change, and serving as a credible leader in planning for the public health impacts of climate change. Redwood City intends to work with the San Mateo County Health System to mitigate public health dangers and maintain or improve long-term health by encouraging residents and workers to be part of the solution.

Research shows that individuals who live in mixed-use and walkable communities have a 35 percent lower risk of obesity.34 Another study estimates that the walking associated with transit use saves an individual $5,500 over the course of their life by reducing obesity-related medical costs.35 Redwood City and the San Mateo County Health System will support programs that promote more walkable and bikeable cities, which not only promote healthier lifestyles, but also decrease reliance on vehicles that contribute to climate change.
GOALS AND TARGETS
Goals and Targets

The Goal

To put California on the path to a low-carbon future, the California Air Resources Board (CARB) approved the *Climate Change Scoping Plan* in 2008. The plan directed the State to reach 1990 emissions levels by 2020. Municipal governments were asked to reduce their emissions by at least 15 percent by 2020 compared with current levels (2008 levels or earlier). This prompted many cities to adopt community-wide emissions reduction targets of at least 15 percent below 2005 levels.

In 2015, Governor Brown issued Executive Order B-30-15 to set the 2030 emissions target (40 percent less than 1990 levels by 2030). It was codified by California Senate Bill 32 (SB 32). CARB followed up with an updated *California's 2017 Climate Change Scoping Plan.* In response, Redwood City is joining other municipalities in adopting community-wide emissions reduction targets of 50 percent below 2005 levels by 2030.

In September 2018, Governor Brown issued California Executive Order B-55-18, setting the goal of achieving carbon neutrality as soon as possible (by 2045 at the latest), and maintaining net negative net emissions from that point forward. The following year, the San Mateo County Board of Supervisors committed to achieving carbon neutrality well before 2045. With this CAP, Redwood City commits to working with the County of San Mateo and other local governments in San Mateo County to reach the goal of carbon neutrality well before 2045.

Carbon Neutrality

The basic definition of carbon neutrality is taking action to reduce greenhouse gas (GHG) emissions to zero – and then “offsetting” an equivalent amount of any remaining emissions. This carbon neutrality target is based on the *Paris Agreement* which calls for preventing average global temperature from rising more than 2°C (3.6°F) above pre-industrial levels and pursuing efforts to keep warming below 1.5°C (2.7°F). According to the Intergovernmental Panel on Climate Change (IPCC), holding temperature rise below 1.5°C will mean global emissions of CO2 will need to decline 45 percent from 2010 levels by 2030 and reach net zero by 2050. U.S. cities that have adopted aggressive targets of reducing emissions by 80 to 100 percent by 2050 or sooner include Boulder, Minneapolis, New York City, Portland, San Francisco, and Washington D.C.

Governor Brown’s 2018 executive order called on the California Air Resources Board (CARB) to develop an implementation framework and accounting to track progress over time. In particular, this framework needs to address how to account for the embodied emissions in the food, goods, and services we purchase that aren’t covered by generation-based GHG inventories. (See Chapter 5: Greenhouse Gas (GHG) Emissions Inventories for more information.) While Redwood City will await State guidance on how to account for these emissions reductions, we will work to reduce consumption-based emissions in the meantime. (See Chapter 6: Strategies & Actions, Food and Consumption section for specific strategies.)
5 GREENHOUSE GAS (GHG) EMISSIONS
Greenhouse Gas (GHG) Emissions Inventories

In this CAP, we used two types of GHG emissions inventories to inform the proposed climate action strategies:

1. **Generation-based GHG inventory** – This measurement method helps us understand the level of emissions based on energy use. It includes 1) direct consumption of energy, 2) consumption of energy via the electrical grid, and 3) emissions from the treatment/decomposition of waste. This is the industry-accepted methodology for quantifying community GHG emissions, with emissions reported by emission source category.

2. **Consumption-based GHG inventory** – This measurement method helps us understand the level of emissions based on consumption. It offers an alternative, more holistic, approach for quantifying emissions within a community, quantifying consumption of goods and services (including food, clothing, electronic equipment, etc.) by residents of a city, with emissions reported by consumption category.

This CAP discusses using both of these inventory methods, which are reviewed in the following sections.

Figure 7: Overlap Between Generation-based and Consumption-based GHG Inventories
Generation-based GHG Inventory

Redwood City’s first generation-based inventory was completed for 2005 (the baseline year). Beginning in 2010, new community GHG inventories are completed annually, enabling Redwood City to track progress over time.

In 2017, Redwood City emitted an estimated 494,944 metric tons (MT) of carbon dioxide equivalent (CO₂e) from the residential, commercial, industrial, transportation, waste, and municipal sectors. In comparison to the base year of 2005, that is a 22.7% decrease in total community emissions.

As shown in Figure 8 and Table 1, the two largest categories of emissions are transportation (including highway travel, local travel, and off-road equipment) and building energy use (including residential and commercial/industrial).

The residential and commercial/industrial sectors represent emissions that result from electricity and natural gas used in both private and public sector buildings and facilities. The transportation sector includes emissions from private, commercial, and fleet vehicles driven within the City’s geographical boundaries, as well as the emissions from public transit vehicles and the City-owned fleet. Off-road equipment includes lawn, garden, construction, industrial, and commercial equipment. Figure 8 shows the proportion of Redwood City’s total GHG emissions from all major sources for 2017.

**Figure 8: Community Emissions by Sector: 2017**

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b Carbon dioxide equivalent is a unit of measure that normalizes the varying climate warming potencies of all six GHG emissions, which are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). For example, one metric ton of methane is equivalent to 21 metric tons of CO₂e. One metric ton of nitrous oxide is 210 metric tons of CO₂e.
Table 1: 2005 vs. 2017 Community Emissions by Sector

<table>
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<tr>
<th>Sector</th>
<th>2005 GHG EMISSIONS (MT CO2E)</th>
<th>2017 GHG EMISSIONS (MT CO2E)</th>
<th>Percent Change in Emissions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>99,144</td>
<td>68,032</td>
<td>-31.4%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>189,166</td>
<td>132,994</td>
<td>-42.2%</td>
</tr>
<tr>
<td>Transportation – Local Roads</td>
<td>114,370</td>
<td>80,191</td>
<td>-29.9%</td>
</tr>
<tr>
<td>Transportation – State Highways</td>
<td>175,367</td>
<td>142,810</td>
<td>-18.6%</td>
</tr>
<tr>
<td>Transportation – Off-road Equipment</td>
<td>39,758</td>
<td>54,332</td>
<td>36.7%</td>
</tr>
<tr>
<td>Caltrain and Freight Trains</td>
<td>*not included in inventory</td>
<td>1,754</td>
<td>NA</td>
</tr>
<tr>
<td>Generated Waste</td>
<td>20,833</td>
<td>11,924</td>
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<tr>
<td>Wastewater and Water</td>
<td>1,523</td>
<td>2,908</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>640,161</strong></td>
<td><strong>494,944</strong></td>
<td><strong>-22.7%</strong></td>
</tr>
</tbody>
</table>

As shown in Table 1, Redwood City’s GHG emissions have declined over time—22.7 percent since 2005. Major contributors of this decline include a 42.2 percent reduction in Commercial and Industrial energy and a 31.4 percent reduction in Residential energy. This 22.7 percent reduction is a good start, but Redwood City will have to greatly increase its emission reduction rate in order to achieve its 50 percent by 2030 and carbon neutrality well before 2045 goals.

Emissions are described by category below.

**Electricity and Natural Gas Emissions**

In 2017, electricity and natural gas emissions accounted for 36.5 percent of total 2017 GHG emissions in Redwood City. Redwood City’s total stationary energy consumption (electricity and natural gas consumed by residential, commercial, and industrial buildings) was 145,143,176 kilowatt-hours (kWh) of electricity and 10,821,023 therms of natural gas, including municipal operations and direct access electricity customers. Direct access is when an end-use customer buys electricity on the wholesale electricity market, rather than from Pacific Gas and Electric Company (PG&E) or Peninsula Clean Energy (PCE).

Of the total 201,026 MT CO₂e emitted due to energy use in buildings, natural gas accounts for a greater portion (67.5 percent) of total emissions than electricity (32.5 percent).
The emissions per kWh of electricity generated (the emission factor) can vary considerably from year to year and can depend on the provider of electricity (e.g., PCE, PG&E, and direct access providers). For example, in 2017, PG&E’s emission factor was 210 lbs CO2/MWh, PCE’s ECOplus (50 percent renewable) emission factor was 142 lbs CO2/MWh, and PCE’s ECO100 (100 percent renewable) emission factor was 0 lbs CO2/MWh.

**Transportation Emissions**

In 2017, transportation emissions accounted for 56 percent of total 2017 GHG emissions in Redwood City. Travel on local roads accounted for 16.2 percent of transportation emissions; travel on state highways within city limits accounted for 28.9 percent; and emissions from off-road equipment, such as lawn, garden, and construction equipment, accounted for 11 percent.

**Figure 10: On-road Transportation Emissions by Road Type**
Solid Waste Emissions

In 2017, waste sector emissions accounted for 11 percent of total 2017 GHG emissions in Redwood City. Over 73,360 tons of solid waste were sent to landfills. Waste emissions result from organic material decomposing in the anaerobic conditions present in a landfill and releasing methane (CH4) – a GHG 28 times more potent than CO2. Organic materials (e.g., paper, plant debris, food waste, etc.) generate methane within the anaerobic environment of a landfill while non-organic materials (e.g., metal, glass, etc.) do not. Table 2 shows the approximate breakdown of the materials Redwood City sent to landfills in 2017. Materials that do not release GHGs as they decompose are included in the “Non-organic Material” category.

Table 2: Estimated Waste Composition

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Waste Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-organic Material</td>
<td>56.9%</td>
</tr>
<tr>
<td>Organic Material</td>
<td>43.1%</td>
</tr>
<tr>
<td>Food Scraps</td>
<td>15.5%</td>
</tr>
<tr>
<td>Dimensional Lumber</td>
<td>14.5%</td>
</tr>
<tr>
<td>Corrugated Containers</td>
<td>4.8%</td>
</tr>
<tr>
<td>Officer Paper</td>
<td>1.9%</td>
</tr>
<tr>
<td>Grass</td>
<td>1.9%</td>
</tr>
<tr>
<td>Leaves</td>
<td>1.9%</td>
</tr>
<tr>
<td>Newspaper</td>
<td>1.3%</td>
</tr>
<tr>
<td>Magazines/Third Class Mail</td>
<td>0.7%</td>
</tr>
<tr>
<td>Branches</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Consumption-based GHG Inventory

In 2015, the Bay Area Air Quality Management District (BAAQMD) partnered with the Cool Climate Network at UC Berkeley to develop a consumption-based inventory of GHG emissions for cities and counties across the entire Bay Area. The inventory was developed through an economic model that estimates per-household consumption of goods and services based on economic indicators, such as household income. The consumption-based method results in about 35 percent higher emissions than a traditional generation-based approach for the region, largely due to higher emissions embedded in goods consumed within but produced outside of the county.41 Figure 11 shows the consumption-based inventory for households in San Mateo County.

Figure 11: Consumption-based Inventory for Households in San Mateo County, 201542

Because of a lack of data and the complexity and cost of the accounting required, consumption-based inventories are extremely difficult to accurately complete. Consequently, it isn’t realistic to develop this type of lifecycle emissions accounting at regular intervals, as with standard GHG inventories. Even so, Redwood City recognizes the importance of including measures and strategies to reduce consumption-based emissions in this CAP. In particular, considering the impact of consumption-based emissions helps Redwood City prioritize buying local and supporting community businesses and jobs.

In the future, there may be the opportunity and need to quantify GHG emissions associated with the goods and products procured by the community and its residents at more regular intervals. More information on this regional consumption-based inventory effort can be found online at: https://www.baaqmd.gov/about-air-quality/research-and-data/emission-inventory/consumption-based-ghg-emissions-inventory

Future Emissions

Redwood City developed a forecast of future emissions (Figure 12) to understand what reduction measures are needed to meet the 2030 and 2045 goals. The forecast starts from the 2015 community inventory, which was the most current available when the CAP update process was initiated.

The forecast illustrates the following:
• **“Business-as-usual” (BAU) emissions** – This projection represents the emissions expected if the 2015 patterns of travel, energy and water consumption, and waste generation/disposal were continued throughout time. This projection factors in the expected rate of City population and job growth through 2030. Under the BAU scenario, Redwood City emissions are projected to increase by 14.5 percent in 2030 (85,868 MTCO2e), relative to 2015.

• **Adjusted forecast (State measures plus PCE)** – This projection incorporates the same factors as the BAU, but also includes key State policies such as clean car standards, renewable portfolio standard, zero net energy building, and organics recycling. It also includes the effect of Peninsula Clean Energy (PCE) operating in San Mateo County. Switching from PG&E to PCE in 2017 gave Redwood City an initial 55,538 MTCO2e reduction in energy emissions by providing a cleaner fuel mix for energy generation than the State provided. By 2045, the Renewable Portfolio Standard will have closed that gap by forcing all electricity providers to offer a similarly clean mix of energy.

• **CAP reduction measures** – This is the reduction necessary to reach the 2030 goal. In this CAP, Redwood City is committing to take the actions need to meet this target. Those actions are described in Chapter 6: Strategies and Actions. Emissions are projected to decrease 51.4 percent (365,856 MTCO2e) by 2030.

Figure 12. Redwood City GHG Reduction Goal (50% below 2005 Levels by 2030)
Reductions from State-Level Actions

In addition to the actions outlined here, regulations aimed at reducing GHG emissions at the state and regional levels will also contribute to emissions reductions in Redwood City. For example, the California Renewable Portfolio Standard (RPS) mandates that 100 percent of the electricity sold by the State’s investor-owned utilities be generated from renewable resources by 2045, with an interim target of 60 percent by 2030. The impact of state-level actions on reducing local emissions is significant and is shown in relation to Redwood City’s emissions baseline, business-as-usual forecast, and reduction target in Figure 12.

A summary of the expected emission reductions from state programs is provided in Appendix C.3.

Table 3: Total Emission Reductions from State of California Policies and Programs

<table>
<thead>
<tr>
<th>State Initiative</th>
<th>Sector</th>
<th>% Emissions reduction from applicable sector in 2030</th>
<th>2030 reduction in Redwood City’s emissions (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Clean Cars Program</td>
<td>On-road Transportation</td>
<td>30.4%</td>
<td>88,292</td>
</tr>
<tr>
<td>Low Carbon Fuel Standards</td>
<td>Off-road Transportation</td>
<td>17.1%</td>
<td>9,251</td>
</tr>
<tr>
<td>Caltrain Electrification</td>
<td>Trains</td>
<td>89.1%</td>
<td>1,440</td>
</tr>
<tr>
<td>Renewable Portfolio Standard</td>
<td>Electricity (Energy)</td>
<td>20.5%</td>
<td>30,667</td>
</tr>
<tr>
<td>100% Zero Net Energy New Residential 2020</td>
<td>Residential Energy</td>
<td>4.7%</td>
<td>4,488</td>
</tr>
<tr>
<td>50% Zero Net Energy Existing Commercial 2030</td>
<td>Commercial Energy</td>
<td>23.0%</td>
<td>50,170</td>
</tr>
<tr>
<td>Organic Waste Diversion SB 1383</td>
<td>Disposed Waste</td>
<td>79.0%</td>
<td>9,663</td>
</tr>
<tr>
<td><strong>Total Statewide Initiative Emissions Reductions:</strong></td>
<td></td>
<td></td>
<td>193,970</td>
</tr>
</tbody>
</table>

Redwood City’s Contribution to the Goal

Redwood City aims to reduce emissions by 50 percent below 2005 levels by 2030. Through the strategies in the CAP, Redwood City will be doing its part in helping California achieve the statewide target of a 49 percent reduction below 2005 levels by 2030 and will place Redwood City on the path to achieving the statewide target of carbon neutrality well before 2045.

Table 4: GHG Emissions Projection and Reduction Target

<table>
<thead>
<tr>
<th>2005 EMISSIONS (MT CO2E)</th>
<th>TARGET EMISSIONS BY 2030 (MT CO2E)</th>
<th>2030 BAU EMISSIONS (MT CO2E)</th>
<th>EMISSIONS REDUCTIONS REQUIRED (MT CO2E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>640,161</td>
<td>326,482</td>
<td>677,044</td>
<td>350,562</td>
</tr>
</tbody>
</table>
6 STRATEGIES AND ACTIONS
Strategies and Actions

Introduction

This Climate Action Plan (CAP) is a beginning of a journey towards a more sustainable Redwood City. In these pages, the community members of Redwood City will find policies and programs that aim to reduce emissions, conserve energy, save money, and help Redwood City continue to be a beautiful and healthy place to live, work, and play as time goes on.

By adopting this CAP, Redwood City is committing to take action to reduce greenhouse gas (GHG) emissions. The programs and policies described give Redwood City a viable path towards reducing emissions that, combined with emissions reductions resulting from state and regional policies, will meet the emissions reduction goals established in Senate Bill 350 (SB 350) (see Appendix C.2 for more information).

Each section below outlines the specific actions (also known as "measures") to reduce GHG emissions in Redwood City. Some measures reduce emissions from the community at large, while others may specifically focus on the operations of Redwood City. Most measures lead to an estimated reduction in GHG emissions that is quantifiable. Some measures are not quantifiable and are consequently considered "supporting measures" because they support the achievement of related, quantifiable measures.

Strategies to Get Us There

The goals and actions presented in this CAP will work together towards achieving Redwood City’s goal to attain carbon neutrality well before 2045.

Energy & Water

What Are We Talking About?

In California, buildings account for 70 percent of total electricity use\(^\text{43}\) and 20 percent of total GHG emissions\(^\text{44}\). See Appendix B.3 for more information on trends in state emissions. In 2017, buildings in the residential and commercial/industrial sectors accounted for 36.5 percent of total emissions in Redwood City, with 67.5 percent of building emissions resulting from natural gas consumption and 32.5 percent resulting from electricity consumption.

Electricity and Natural Gas

Electricity and natural gas are the most common energy sources used in buildings. Electricity is primarily used in buildings to provide lighting, refrigeration, ventilation, cooling and to power things like computers, phones, and displays. Natural gas is primarily used in buildings to provide space heating, water heating, and cooking.

In order to reach the Redwood City’s 2030 emissions reduction target, natural gas consumption will need to decline significantly through a combination of energy efficiency and electrification. Energy efficiency is simply using less energy to perform the same task; for example, replacing a low-efficiency gas furnace with a high-efficiency gas furnace. Electrification is the practice of replacing equipment in buildings that is powered by natural gas, including gas furnaces and gas water heaters, with electric equipment, such as air source heat pumps and heat pump water heaters.
Connection between Energy and Water Use

Energy and water use are linked. Energy is needed to transport and to treat water, treat wastewater, and heat domestic hot water in homes and businesses across California. Approximately 20 percent of California’s electricity and approximately 30 percent of natural gas used by homes and businesses across the state is dedicated to pumping, treating, and heating water. Figure 13 indicates the 10 percent of energy used to transport and treat water; energy used to heat water is distributed among the various customers.

Figure 13: Energy (Electricity and Natural Gas) Used by the Water Sector in California

How Are We Doing?

Over time, emissions associated with each kilowatt hour of electricity generation in California have continued to decline as the grid relies less on fossil fuel power generation sources, including coal and natural gas, and more on renewable power generation sources, including solar, wind, and hydropower.

In Redwood City, natural gas accounted for 67.5 percent of building emissions in 2017, while electricity accounted for 32.5 percent of building emissions. Electricity emissions in Redwood City have decreased 65.4 percent since 2005 and natural gas emissions have increased 2.7 percent, but have been in a period of decline from 2010-2017.

With the launch of Peninsula Clean Energy, which has a stated target of all electricity sales being 100 percent GHG-free by 2021, and the State’s requirement through Senate Bill 100 (SB 100) that utilities procure 100 percent of electricity through renewable resources by 2045, the percent of building emissions associated with electricity will only continue to decline.

The State of California remains a leader in implementing policies aimed at reducing water consumption. Assembly Bill 1668 (AB 1668) and Senate Bill 606 (SB 606), adopted in 2018, require urban water providers to establish a
target for water use by 2022 and threatens fines for agencies failing to meet their goals beginning in 2027. Standards will be based on an allowance of 55 gallons per person per day for indoor water use, a to-be-determined amount of residential outdoor use, and a standard for water loss due to leak rates in water system pipes.

What Are We Trying to Achieve?

<table>
<thead>
<tr>
<th>#</th>
<th>Goal</th>
<th>2030 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW.1</td>
<td>Reduce energy emissions</td>
<td>50% reduction compared to 2005</td>
</tr>
<tr>
<td>EW.2</td>
<td>Electrify building stock</td>
<td>Adopt All-Electric Reach Code</td>
</tr>
<tr>
<td>EW.3</td>
<td>Reduce water consumption</td>
<td>20% reduction compared to 2005</td>
</tr>
</tbody>
</table>

How Do We Get There?

This emissions sector – the energy used in the built environment – typically has the most immediately achievable and affordable reduction opportunities, and energy efficiency is typically the most cost-effective measure for GHG reductions. Thus, a sensible energy policy has in the past sought to first maximize energy efficiency and then look to generating electricity with low-carbon fuels and renewable resources. This is referred to as the principle of “reduce, then produce.” However, Redwood City had the opportunity to adopt Community Choice Aggregation (CCA) in 2016 and began purchasing 100% clean, renewable electricity at competitive prices from Peninsula Clean Energy (PCE) for all City facilities. Over 97% of the community participates in PCE, and no other measure in this Plan has the emissions impact of Redwood City residents purchasing PCE’s renewable energy. By 2021, all of PCE’s energy will be GHG-free, making a deep impact on our communitywide emissions and helping us meet our 2030 reduction targets. Most recently, the City Council adopted all-electric building reach codes on September 21, 2020 to reduce or eliminate natural gas usage in new buildings.

Since 2001 Redwood City has participated in a number of energy efficiency programs that target municipal facilities for projects such as lighting and HVAC retrofits. The City has been participating in the San Mateo County Energy Watch Comprehensive Energy Audit Program since 2012-13, has completed a number of low- and no-cost projects over the years to improve energy efficiency in municipal facilities, and was awarded a $50,000 grant in 2018 to retrofit lighting in four City facilities. The City has at the same time been implementing a phased traffic signal and street light LED replacement program to reduce energy consumption and costs. To date, that program has reduced GHGs by 126 MTCO2e and saved $145,000-$155,000 annually in electricity costs. In 2015, the City installed solar at Red Morton Community Center with no capital costs through a multi-agency group procurement process. The City is also taking the lead on green building, entering into a public-private partnership for the development of the Veterans Memorial/Senior Center-YMCA project with a target of LEED Platinum certification.

In addition to participation in PCE, this Plan calls for continuing the audits and retrofits of municipal facilities through state, regional, county and utility programs and working toward a plan and target date for eliminating natural gas in City facilities. It further calls for identifying opportunities for additional solar and battery storage for City facilities. Along with these building-level measures, this Plan aims to introduce purchasing policies for energy efficient equipment and technology. By committing to energy efficiency in public facilities and day-to-day operations, the City creates a hedge against rising energy costs, positions itself to take advantage of renewable energy opportunities, and also acts as a model for community participation in similar residential and commercial energy efficiency programs.

Redwood City General Plan Goal (NR-4): Maximize energy conservation and renewable energy production to reduce consumption of natural resources and fossil fuels.
Community Choice Aggregation, Renewable Energy, and Energy Efficiency Measures

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-1</td>
<td>Community Choice Aggregation: Municipality</td>
<td>Continue to provide 100% renewable electricity to municipal facilities.</td>
<td>1,142</td>
</tr>
<tr>
<td>EM-2</td>
<td>Solar on Municipal Facilities</td>
<td>Identify new or existing municipal facilities that are well suited to the installation of solar PV or solar hot water systems. Install systems where feasible. Use group purchasing power or purchase power agreements (PPAs) to lower cost.</td>
<td>146</td>
</tr>
<tr>
<td>EM-4</td>
<td>Energy Efficiency in Municipal Buildings</td>
<td>Audit city facilities for energy efficiency opportunities and implement EE retrofits. Participate in San Mateo County Energy Watch and leverage benchmarking to identify opportunities for EE upgrades and track energy performance. Leverage other programs that provide funding.</td>
<td>373</td>
</tr>
<tr>
<td>EM-6</td>
<td>Energy Efficient Street Lighting</td>
<td>Continue LED street light replacement program and replacement of parks and parking lot lighting.</td>
<td>112</td>
</tr>
<tr>
<td>EM-7</td>
<td>Environmentally Preferred Purchasing Policy: Energy</td>
<td>Implement a sustainable purchasing policy that emphasizes the purchase of ENERGY STAR certified equipment – appliances, electronics, etc.</td>
<td>8</td>
</tr>
</tbody>
</table>

In the communitywide sector, as in the municipal sector, energy use in buildings and facilities provides the greatest opportunity for affordable emissions reductions. PCE plays a large role in reducing emissions in the community as well in municipal operations. Because of the relative affordability of energy efficiency measures and the fact that the same principle of “reduce, then produce” applies in the community as in municipal operations, there are a number of measures that focus on energy and water efficiency included along with renewable energy. Reducing energy use by implementing energy efficiency measures first means that renewable energy systems can be smaller and less expensive. Building electrification will also be a focus, i.e. moving away from natural gas and its associated emissions to all-electric construction.

One opportunity that looks promising is enacting a "Burnout" ordinance: Because a new gas furnace installed today is likely to still be functioning in 2045 (by which time the State is expected to be carbon neutral), it is critical for the City to begin considering policies that will prohibit new gas appliances from being installed in existing buildings, starting as quickly as possible. By 2045, natural gas appliances in Redwood City are very likely to become stranded assets, rendered unusable because natural gas is no longer flowing to homes. As partner agencies such as PCE, explore developing a model “burnout” ordinance, Redwood City will participate in the process with the aim of adopting such an ordinance when it becomes available.
Community Choice Aggregation and Local Renewable Energy

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-1</td>
<td>Community Choice Aggregation: Community</td>
<td>Continue to provide renewable electricity and promote “opting up” to PCE’s ECO100 (100% renewable) service.</td>
<td>55,042</td>
</tr>
<tr>
<td>EC-2</td>
<td>Solar Incentives</td>
<td>Provide incentives for solar installation through Bay Area SunShares Program or others.</td>
<td>5,778</td>
</tr>
</tbody>
</table>

This Plan calls for continuing participation in existing residential and commercial energy efficiency and demand response programs offered by utilities and other agencies and adding energy conservation programs for residential and commercial in the mid-term. It includes all-electric building reach codes, which were adopted by City Council on September 21, 2020, to promote building electrification and EV adoption. Along with reach codes, the Plan calls for providing incentives for electric panel upgrades and focusing outreach on solar and battery storage opportunities. Lastly, this Plan calls for a microgrid demonstration project to promote the importance of energy security and reliability especially with respect to climate change adaptation and resiliency.

Energy Efficiency and Conservation Programs, Reach Codes, Incentives and Outreach

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-5</td>
<td>Commercial Energy Efficiency Programs</td>
<td>Promote participation in commercial energy efficiency programs and demand response programs offered by SMC Energy Watch and PG&amp;E – including PGE’s appliance rebates, 0% energy efficiency financing and demand response programs. Encourage commercial energy audits.</td>
<td>491</td>
</tr>
<tr>
<td>EC-6</td>
<td>Residential Energy Efficiency Programs</td>
<td>Promote participation in residential energy efficiency programs, including BayREN’s Home Upgrade program and PG&amp;E’s efficient appliance rebates. Encourage residential energy audits.</td>
<td>860</td>
</tr>
<tr>
<td>EC-8</td>
<td>Commercial Energy Conservation Program</td>
<td>Establish a voluntary commercial energy conservation program, encouraging minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments and reporting by registered energy assessors.</td>
<td>997</td>
</tr>
<tr>
<td>EC-9</td>
<td>Residential Energy Conservation Program</td>
<td>Establish a voluntary residential energy conservation program, encouraging minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments and reporting by registered energy assessors.</td>
<td>696</td>
</tr>
<tr>
<td>EC-10</td>
<td>Green Building Policy: All Electric</td>
<td>Update building code to require proposed new buildings to be all-electric, as specified (Adopted September 21, 2020).</td>
<td>21,006</td>
</tr>
<tr>
<td>EC-11</td>
<td>Electric Panel Upgrade Incentives</td>
<td>Leverage incentives provided by PCE to assist residents in upgrading electric panels in order to accommodate all-electric technologies including solar PV, battery storage, air source heat pumps, heat pump water heaters, electric dryers, electric stoves and electric vehicles.</td>
<td>17,930</td>
</tr>
<tr>
<td>EC-12</td>
<td>Microgrid Demonstration Projects</td>
<td>Identify microgrid demonstration project site. Provide education and outreach to stakeholders on the multiple benefits of microgrids, including reliability, cleaner energy and cost savings.</td>
<td>107</td>
</tr>
<tr>
<td>EC-13</td>
<td>Solar + Battery Storage Promotion</td>
<td>Provide education, outreach, and incentives to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.</td>
<td>3,451</td>
</tr>
</tbody>
</table>
Along with the residential and commercial rebates, incentives, and programs offered by utilities, the City has also encouraged local businesses to conserve energy and water in their operations by participating in the San Mateo County Green Business Program. This program began as a six-month pilot program in 2007 and continues to be administered by the County today.

**Green Business Program**

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>Green Business Program</td>
<td>Promote San Mateo County Green Business program and set goals for participation.</td>
<td>294</td>
</tr>
</tbody>
</table>

**Increase Your Business’s Bottom Line**

Saving money through energy efficiency can enable businesses to reduce fixed costs and become more competitive. By tapping into publicly funded programs and special financing options, small business owners can save money on energy bills, increase profits, promote their businesses, and cut GHG emissions. In particular, BayREN’s Pay-for-Performance program (https://www.bayren.org/business) uses smart meter technology to help business owners find energy improvements that will pay for themselves over time – and provide incentives for long-term behavior and performance. The San Mateo County Green Business Program (https://www.smcsustainability.org/climate-change/green-business/) helps businesses learn how to integrate sustainable practices into their operations while saving money and improving employee and customer health. Certified businesses gain recognition and a marketing edge through promotional events, press coverage, and registry on the statewide Green Business directory.

Finally, a leader in water management, Redwood City successfully initiated a pilot water recycling project with South Bayside System Authority (SBSA) in 2000 to produce recycled water that meets health requirements and goals for distribution for specific uses. In addition in 2008, Redwood City adopted a Recycled Water Use Ordinance that requires recycled water use in internal separate plumbing for urinals and internal cooling towers; external...
landscaping on new apartments, townhouses, and condominiums and existing and remodeled commercial and industrial buildings; and on industrial, commercial, and governmental projects. This Plan accounts for water use reductions identified in the City’s Urban Water Management Plan and calls for continuing to participate in the existing water conservation programs while working on enforcement mechanisms for the Indoor and Outdoor Water Use Ordinances currently in effect.

**Redwood City General Plan Goal (NR-2): Reduce water consumption through aggressive implementation of conservation policies and programs**

### Indoor and Outdoor Water Use Programs and Ordinances

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW-1</td>
<td>Water Conservation Programs</td>
<td>Promote BAWSCA residential water conservation rebate programs for items including high efficiency washing machines and toilets, rain barrels, sprinkler nozzles, irrigation controls and Lawn Be Gone (drought tolerant landscapes).</td>
<td>403</td>
</tr>
<tr>
<td>EW-2</td>
<td>Water Efficient Landscape Ordinance</td>
<td>Enforce existing Water Efficient Landscape Ordinance.</td>
<td>172</td>
</tr>
</tbody>
</table>

**Dry Up Household Water Waste**

Did you know that the energy use related to water — transporting, cleaning, and heating it — consumes 19 percent of California’s electricity and 30 percent of its natural gas every year? We’ve all learned the importance of taking shorter showers, and installing low-flow shower heads, low-flow aerators on faucets, and low-flush toilets to save water. But don’t forget outside, too, since half of California’s residential water use goes toward landscaping46 and half of all water wasted in the United States is due to poorly managed and maintained irrigation systems.47 ReScape California ([https://rescapeca.org/](https://rescapeca.org/)) is a nonprofit that provides resources for selecting low-water plants, conserving water, and fostering soil health.
### Transportation and Land Use

#### What Are We Talking About?

In California, 41 percent of total GHG emissions stem from transportation. The vast majority of transportation emissions are from on-road vehicles, the cars and trucks that move people and goods through the state. In 2005, 51 percent of emissions in Redwood City came from transportation sector. By 2015, it was up to 54 percent. That same year, travel on local roads and state highways represented 17 percent and 29 percent of the City’s total emissions respectively. Thus, reducing transportation emissions is a critical component of the climate action strategy.

#### Carbon Intensity of Fuels, Vehicle Efficiency, and Vehicle Miles Travelled

Reducing emissions from the transportation sector requires addressing three constituent components: 1) reducing the carbon intensity of fuels, 2) increasing vehicle efficiency, and 3) reducing vehicle miles travelled (VMT). The two main fuels, gasoline and diesel, used to power vehicles across the state, have a very high carbon intensity. Transitioning to lower carbon intensity fuels, especially electricity, is key to reducing emissions in the transportation sector. Similar to electrification of fossil fuel equipment in buildings, as the electricity grid continues to rely more heavily on renewable energy sources for electricity generation, the emissions reduction potential of replacing gasoline and diesel vehicles with electric vehicles continues to increase.

#### The Challenges of Reducing VMT and Associated Co-benefits

Fully understanding the factors that lead to increased VMT is challenging, but the contributors include the following: economic growth, lack of affordable housing near urban cores, urban sprawl, lack of viable public transportation options, cheap gasoline, and streets that discourage pedestrian or bicycle access.

The benefits of integrated planning and sustainable development go far beyond simply reducing the GHG emissions that contribute to climate change and its damaging effects. Communities that are well designed provide housing options for all income and age groups and enable community members to use a range of transportation options that reduce congestion, improve air quality, and increase economic development.

#### How Are We Doing?

As of 2019, electric vehicles made up 7.8 percent of total new car sales in California. Efficiency of gasoline and diesel vehicles, in terms of miles per gallon (MPG), continues to increase. For model year 2017, the average fuel economy of new vehicles sold in the United States reached 24.9 MPG – a record high. However, addressing the third component, reducing VMT, is considerably more difficult than the previous two. Californians have driven more and more miles per year over the past five decades.

#### What Are We Trying to Achieve?

<table>
<thead>
<tr>
<th>#</th>
<th>Goal</th>
<th>2030 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.1</td>
<td>Reduce vehicle miles traveled</td>
<td>15% reduction compared to 2005</td>
</tr>
<tr>
<td>T.2</td>
<td>Increase housing in transit corridors</td>
<td>20% increase in housing communitywide</td>
</tr>
<tr>
<td>T.3</td>
<td>Increase walkability and bikeability</td>
<td>Improve streetscape and protected bike lanes</td>
</tr>
<tr>
<td>T.4</td>
<td>Decarbonize transportation</td>
<td>One-third of VMT from electric vehicles</td>
</tr>
</tbody>
</table>
How Do We Get There?

On the municipal side, transportation emissions largely come from either the municipal fleet or from employee commutes. The City of Redwood City has already adopted a number of municipal fleet and employee commute measures that reduce emissions, including adopting an efficient fleet policy, replacing gas-powered fleet passenger vehicles with hybrid vehicles and electric vehicles, and incentivizing commute alternatives for employees. The City has also begun switching out gas-powered mobile equipment to electric and battery-powered equipment to address off-road emissions.

The City has also taken advantage of past grants for Electric Vehicle (EV) charging infrastructure, installing 22 charging stations available to the public at City facilities including the Main Library, Redwood Shores Library, Red Morton Community Center, Jefferson Garage, and Marshall Street Garage. State and federal agencies are now beginning to focus on large-scale deployment of EV infrastructure and transition to EV fleets. This Plan calls for the City to consider an electric vehicle purchasing policy, focusing on the replacement of passenger vehicles and the installation of EV charging equipment in the short term, with heavier duty vehicles phased in over the long term as appropriate replacement models come to market.

Redwood City’s robust Employee Commute Program incentivizes alternative transportation to work by subsidizing employees’ transit commute costs and by providing incentives for having used alternative commutes. The program is popular and this Plan calls for refining the outreach program and developing ways to increase participation.

**Redwood City General Plan Goal (BE-31): Encourage development and implementation of strategies that minimize vehicle trips and vehicle miles traveled.**

**Electric Fleet Policy and Employee Commute Program**

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM-1</td>
<td>Municipal Fleet Electrification Policy</td>
<td>Establish policy requiring the prioritization of electric vehicles and mobile equipment.</td>
<td>109</td>
</tr>
<tr>
<td>TM-3</td>
<td>Commute Alternatives Program: Municipal</td>
<td>Continue commute alternatives program including pre-tax commuter benefits, transit subsidies, and carpool program.</td>
<td>4</td>
</tr>
</tbody>
</table>
While the municipal transportation section focused on vehicle fleet and employee commute measures, addressing communitywide transportation emissions is more complex. Not only does the City have limited control over the community’s transportation-related emissions, it is also technically difficult to collect data and attribute emissions to the correct jurisdictions in a region. For Redwood City’s part, the community transportation and land use measures are guided by the same General Plan goal as the municipal measures, but the emphasis is on smarter land use and development patterns, improved bicycle and pedestrian infrastructure, and innovative programs that promote alternative transportation modes, as well as incentivizing EVs and EV charging infrastructure.

Redwood City has been an area leader in developing infill, higher density, transportation-oriented and mixed-use development near transportation hubs and along transportation corridors. The award-winning 2010 General Plan, the Downtown Precise Plan, Stanford in Redwood City, the El Camino Real Corridor Plan, and the Zoning Ordinance include measures for increasing density and destination accessibility that result in decreased vehicle trips and vehicle miles traveled. This Plan accounts for the estimated emissions reductions associated with the existing General Plan, Downtown Precise Plan, and Zoning Ordinance and calls for the City to continue to implement, monitor, and evaluate the existing policies through 2030.

The City’s Transportation Advisory Committee (formerly the Complete Streets Committee) has assisted the City since 2015 on increasing bicycle and pedestrian safety. This plan accounts for the emissions associated with enhancing bicycle routes to Stanford in Redwood City, launching the Roosevelt Traffic Calming Project, constructing a Hopkins Avenue Neighborhood Traffic Calming Pilot Project, and developing a Transportation Demand Management policy to offset the impact of new developments among other improvements.

The Transportation Advisory Committee includes a Safe Routes to School Subcommittee to coordinate efforts across various agencies, a Vision Zero Committee to increase safety, and an East/West Bikeway Ad Hoc Committee to develop a roadmap for a new bikeway between Alameda de las Pulgas and downtown. The City has provided one-time funding for Redwood City schools that includes traffic calming measures for the east/west bikeway.

The Increase of Teleworking

Before March 2020, just 29 percent of college graduates worked from home at least some of the time.50 The coronavirus pandemic was the catalyst for workplaces to institutionalize more teleworking for full-time employees once the economy reopened. In April 2020, a survey showed that nearly 43 percent of full-time employees said they’d like to work remotely more often, and 20 percent said their workplace was actively discussing the option.51 Telework policies that previously allowed employees to work one or two days a week from home may get flipped around. Work groups may start discussing which one or two days everyone should come to the office for in-person meetings and activities, leaving the remainder of the week for teleworking. Since the majority of San Mateo County’s GHG emissions come from transportation, the climate benefit from this shift will be sizable.

Unfortunately, many jobs can’t be performed at home — think security guards, delivery personnel, and grocery store clerks. In addition, low-income households may not have access to computers or internet access at home.
In addition to promoting alternative modes of transportation, Redwood City has also developed parking standards and parking management policies which address transportation-related emissions by encouraging walking, biking, and public transit use. In 2005, the City created the Downtown Parking Management Plan which helps reduce parking demand impacts on local and regional traffic levels with demand-based parking supply and pricing. The City has parking requirements for new development in the Downtown area that allow for reduced parking ratios, parking maximums, unbundled parking, and shared parking. This Plan accounts for emissions reductions associated with refining and updating the Parking Management Plan to respond to current community needs and parking conditions. The Climate Action Plan calls for the City to consider additional parking management strategies such as bicycle infrastructure improvements, parking cash-outs, and parking credits for car-sharing.

### Smart Growth, Complete Streets, Parking Policies, and Safe Routes to School

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-1</td>
<td>Smart Growth Development Policy</td>
<td>Continue smart growth policy that prioritizes infill, higher density, transportation-oriented and mixed-use development. Continue focusing new growth in Priority Development Areas (Downtown and transit corridors), encourage orderly, new, high density mixed-use infill growth with a jobs/housing balance, and consider precise plans for transit corridors to implement the goals and policies of the Built Environment element of the Redwood City General Plan.</td>
<td>4,228</td>
</tr>
<tr>
<td>TL-2</td>
<td>Walkable/Bikeable Streets</td>
<td>Modify landscape to make walking and biking more desirable. Integrate the Citywide Transportation Plan and Green infrastructure Plan projects to form a network throughout the City that prioritizes connected active transportation and a healthy ecology. Develop a Vision Zero Strategic Plan per the Citywide Transportation Plan.</td>
<td>5,212</td>
</tr>
<tr>
<td>TL-4</td>
<td>Parking Policies Promoting Public Transit, Biking, and Walking</td>
<td>Continue parking policies such as metered parking, reduced parking requirements for new development, and “unbundling” sales/leases of parking space to increase public transit use, biking, and walking.</td>
<td>9,695</td>
</tr>
<tr>
<td>TL-5</td>
<td>Safe Routes to School Program</td>
<td>Support the City’s Safe Route to Schools program by investing in enhancing bike trails and safe pedestrian routes to local schools and by continuing to integrate Safe Routes to Schools goals, policies, and programs into the Citywide Transportation and the City’s Green Infrastructure work plans. Promote the program to increase volunteer participation.</td>
<td>197</td>
</tr>
</tbody>
</table>

Redwood City also supports and provides services to the community to encourage different modes of transportation and to reduce VMT associated with transporting products to the local market. The City was a pilot agency in the regional bicycle share program, Bay Area Bike Share, and currently participates in Connect Redwood City, an initiative to encourage more people to use alternative commutes, which rolled out in 2013-2014. Redwood City has three free shuttle services from the downtown Caltrain station and adopted a Transportation Demand Management Plan (TDM) which requires site-specific TDM programs to reduce project trips. The City also promotes a Farmers’ Market which encourages local purchasing and locally-grown food.

This Plan calls for the City to develop a Bike Share and Emerging Mobility Ordinance which will account for emissions reductions associated with implementation of current and future car and bike share programs in Redwood City and also explore additional shuttle services for major development projects and continue supporting its Downtown Farmers’ Market, buying locally, and locally-grown food.
## Car and Bike Share Programs, Shuttle Service, and Farmers’ Markets

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-3</td>
<td>Car/Bike Share Promotion</td>
<td>Develop policies and incentives that attract bike and car sharing companies to establish service.</td>
<td>810</td>
</tr>
<tr>
<td>TL-6</td>
<td>Expand Local Shuttle Service</td>
<td>Encourage the expansion of local shuttle service routes and/or frequency of service within city limits to connect areas not covered by public transit.</td>
<td>178</td>
</tr>
<tr>
<td>TL-7</td>
<td>Local Farmers’ Markets Promotion</td>
<td>Encourage community farmers’ markets with locally-grown food and community gardens to reduce associated VMT.</td>
<td>23</td>
</tr>
</tbody>
</table>

### What Would It Be Like?

Many of us drive our cars for short trips. We drive three blocks to work out at the local gym, we drop off our teenager at a friend’s house in the neighborhood, or we move our car to park near the entrance of the next store on our list of errands. Some short car trips are necessary, for example, health and mobility issues might limit our ability to walk. Other times, driving is convenient: when we’re in a hurry, if it’s cold or raining, or if we have a lot of groceries to carry. However, some short car trips might be easily made by foot or bike. What if we all chose to walk or bike for just half of our car trips of under a mile?

If we all chose to power half of these short trips with our feet instead of petroleum, assuming an average fuel economy of 22 mpg and an average fuel price of $2.50/gallon, we would save about $575 million in fuel costs and about 2 million metric tons of CO2 emissions per year. That’s like taking approximately 400,000 cars off the road each year. The total financial savings are even bigger — almost $900 million dollars — when you include savings on maintenance and tire replacement.52

Transportation and mobile emissions make up the majority of Redwood City’s emissions and these emissions are still growing in relative and absolute terms, as is the case statewide. To combat this, the State has set its sights on incentivizing the adoption of electric vehicles and electric vehicle charging infrastructure in order to meet the goal of getting 5 million EVs on the road by 2030. The City will continue working towards making EV ownership and shared electric modes of transportation as convenient as possible by participating in programs such as SunShares that leverage buying power to offer discounts for Bay Area residents and working with partners like Peninsula Clean Energy to expand the EV charging station network. In addition, the City will explore ways to reduce off-road emissions from mobile equipment.
<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-8</td>
<td>Electric Vehicle Ownership Programs</td>
<td>Establish community target for adoption rate of electric vehicles and explore strategies to reduce off-road and mobile equipment emissions.</td>
<td>2,321</td>
</tr>
<tr>
<td>TL-9</td>
<td>Expand EV Charging Infrastructure</td>
<td>Leverage partnerships and incentives to expand EV charging infrastructure in public properties, multi-unit dwellings and workplaces.</td>
<td>32,522</td>
</tr>
<tr>
<td>TL-10</td>
<td>Green Building Policy: EV charging</td>
<td>Update building code during code adoption cycle to increase the mandated percentage of parking spaces accommodating EV charging equipment and of parking spaces devoted to clean air vehicles.</td>
<td>3,650</td>
</tr>
<tr>
<td>TL-11</td>
<td>Electric Bikes/Scooter Share Promotion</td>
<td>Consider allowing dockless e-scooter and e-bikes to operate in the City. Modify existing city infrastructure to accommodate shared e-scooter and e-bikes.</td>
<td>3,281</td>
</tr>
</tbody>
</table>
Solid Waste

What Are We Talking About?
In California, 2 percent of total GHG emissions are generated from the disposal of waste. While it may not be immediately obvious, reducing the amount of waste deposited into the landfill through material reuse, reduction, and recycling is an important strategy Redwood City residents can take to reduce GHG emissions.

When organic material, including food and wood products, are sent to landfills they release methane as they slowly decay over time. While some landfills capture as much methane as possible and combust it for electricity generation, many landfills leak or “flare” methane, a potent GHG, directly into the atmosphere.

How Are We Doing?
Although composting programs have begun to decrease the amount of organic material sent to landfills, organic material still accounts for 37.4 percent of all materials sent to landfills in California. Because organic materials sent to landfills release methane directly into the atmosphere, increasing the percentage of organic materials that are sent to dedicated composting facilities is critical to reducing emissions in the waste sector.

What Are We Trying to Achieve?

<table>
<thead>
<tr>
<th>#</th>
<th>Goal</th>
<th>2030 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>W.1</td>
<td>Increase diversion of materials from landfills</td>
<td>90% reduction compared to 2005</td>
</tr>
</tbody>
</table>

How Do We Get There?
To address the issues of escalating waste production, Assembly Bill 341, requires local jurisdictions to meet a solid waste diversion goal of 75 percent and includes requirements for mandatory commercial recycling. Assembly Bill 1826 passed in 2014 required businesses and multi-family residences to recycle their organic waste. Senate Bill 1383, passed in 2016, requires a 50% reduction of organic waste by 2020, a 75% reduction of organic waste by 2025, and a 20% reduction of currently disposed edible food to be recovered for human consumption by 2025.

To meet State solid waste diversion mandates for local jurisdictions, the City will seek to raise the diversion rate over time by gradually implementing zero waste policies and programs for municipal operations in advance of communitywide programs and ordinances. Zero waste refers to an approach to minimizing solid waste through a variety of source reduction, reuse, recycling, and composting policies and programs. Actions would include, but are not limited to, establishing an Environmentally Preferred Purchasing Policy and a Zero Waste policy for municipal events, and continue requiring municipal recycling of construction and demolition debris.

In addition to using the gradual establishment of municipal zero waste policies to promote communitywide waste reduction, recycling, and diversion, the City will seek to coordinate with San Mateo County phasing in implementation of the upcoming disposable food ware ordinance and food recovery programs in the short term; commercial recycling requirements as programs, reporting, and evaluation methods develop over the midterm; and other measures such as yard waste ordinances, pay-as-you-throw tiered rate structures, and community outreach programs such as the Zero Waste Party Pack program over the long term.

While we may not be able to achieve a 90% reduction from the 2005 levels of waste going to landfills by 2030, the progress we make on our strategies will give us insight on strengthening our current measures and considering additional measures in future CAP updates.
Redwood City General Plan Goal (BE-45): Minimize the volume of solid waste that enters regional landfills.

## Solid Waste Diversion Target

<table>
<thead>
<tr>
<th>#</th>
<th>Measure</th>
<th>Description</th>
<th>Emissions Reduction (MT CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM.1</td>
<td>Municipal Zero Waste Policy</td>
<td>Establish a policy to achieve 95% waste diversion rate in city operations. Provide appropriate bins and signage, organics recycling and education to public employees.</td>
<td>20</td>
</tr>
<tr>
<td>WC.1</td>
<td>Increase Waste Diversion Rate</td>
<td>Achieve 90% waste diversion rate through promotion of traditional and new recycling and organics recycling programs, local enforcement of requirements, and sustainable vendors policy for public events.</td>
<td>631</td>
</tr>
</tbody>
</table>

### Be a Better Consumer
Did you know that the average American generates about 4.4 lbs of trash each day? To reduce the amount of trash you generate, follow these few easy steps. Use reusable coffee mugs and shopping bags. If you forget your mug or bag at the store, buy a new reusable one and keep the extra one in your purse or car for use the next time you are out. Alternatively, set aside $1 each time you forget your mug or bag; depending on your memory, you will have enough funds to purchase a reusable item sooner or later. Also, reuse as many things as possible and recycle at home, work, and school. Compost pick-up is now available in most parts of San Mateo County.

### Stop Unwanted Services
Did you know that junk mail production in the United States consumes as much energy as 2.8 million cars? Stop your junk mail at directmail.com/mail_preference. Stop unwanted catalogs at www.catalogchoice.org.
Food and Consumption

What Are We Talking About?

The strategies and actions listed in this section represent a starting place to address consumption-based emissions related to goods, food, and services.

The consumption-based inventory for San Mateo County found in Chapter 5: Greenhouse Gas (GHG) Emissions Inventories, Consumption-based Inventory section, includes emissions from the six categories in the chart below. Actions designed to reduce consumption-based emissions are intended to supplement actions already included in our generation-based inventories, not replace them.

<table>
<thead>
<tr>
<th>Category</th>
<th>Included in Generation-based Inventory</th>
<th>Not Included in Generation-based Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Vehicle fuel</td>
<td>Vehicle fuel production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Motor vehicle manufacturing and repairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air travel</td>
</tr>
<tr>
<td>Buildings</td>
<td>Electricity</td>
<td>Energy indirect</td>
</tr>
<tr>
<td></td>
<td>Natural gas</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste</td>
</tr>
<tr>
<td>Food</td>
<td>Grown and distributed within San Mateo County</td>
<td>Cereals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruits/vegetables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dairy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other food</td>
</tr>
<tr>
<td>Purchased goods</td>
<td>Manufactured in San Mateo County</td>
<td>Small appliances and entertainment equipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clothing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home furnishings and large appliances</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other goods</td>
</tr>
<tr>
<td>Services</td>
<td>Services accessed in San Mateo County</td>
<td>Healthcare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Entertainment and Recreation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information and Communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Waste</td>
<td>Composting</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Recycling</td>
<td></td>
</tr>
</tbody>
</table>

What Are We Trying to Achieve?

Addressing consumption-based emissions is a new category for Redwood City. Since we haven’t yet determined what kind of strategies we will develop, what kind of actions we will take and how we will quantify the emissions reductions from our actions, in the near term we plan to work on ways to track our progress using Key Performance Indicators (KPIs).

As we move forward, we will evolve our goals and develop strategies and performance measures based on lessons learned. We can use the Urban Sustainability Directors Network (USDN) Sustainable Consumption Toolkit as a resource.53
Shop Locally Grown and Produced

The shorter the distance your food travels to your plate or a product travels to your home, the fewer greenhouse gases are produced. Declare one day a week to be a "buy local day" and eat foods produced within 50 miles of your house. Participate in community-supported agriculture and community-supported fishery programs and shop at farmers markets.

To find certified green businesses in your area, download the “Shop Green” app or visit https://greenbusinessca.org/. To find other locally owned businesses, contact your local chamber of commerce.

Buy produce and fish labeled “As Fresh As It Gets,” signifying that it was grown or harvested in San Mateo County. Support restaurants and businesses accredited by the "As Fresh As It Gets" campaign, signifying that they use county-grown produce, fish, and other products. For a list of in-season produce and fish, farmers market locations, and accredited businesses and restaurants, visit https://smccvb.com/fresh-as-it-gets/.

<table>
<thead>
<tr>
<th>#</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.1</td>
<td>Transportation: Decrease unnecessary air travel</td>
</tr>
<tr>
<td>C.2</td>
<td>Buildings: Increase material utilization in the built environment</td>
</tr>
<tr>
<td>C.3</td>
<td>Food: Improve consumer use of food/reduce wasted food</td>
</tr>
<tr>
<td>C.4</td>
<td>Food: Reduce the emissions intensity of food consumed</td>
</tr>
<tr>
<td>C.5</td>
<td>Purchased goods: Increase the utilization rates of consumer goods produced and consumed</td>
</tr>
<tr>
<td>C.6</td>
<td>Purchased goods: Shift consumer spending from discretionary goods to local recreational activities</td>
</tr>
<tr>
<td>C.7</td>
<td>Purchased goods: Reduce the emissions intensity of consumer goods</td>
</tr>
<tr>
<td>C.8</td>
<td>Services: Investigate opportunities for emissions reductions in the following sectors: Healthcare, Education, Entertainment and Recreation, Financial Services, and Information and Communication</td>
</tr>
</tbody>
</table>
Carbon Sequestration

Our forests and oceans are natural carbon sinks, each absorbing 25 percent of the carbon dioxide that is released into the atmosphere. The process of capturing and storing this atmospheric carbon is known as carbon sequestration, and it is a strategy that – when combined with other efforts – can help combat climate change. A nonprofit organization called Project Drawdown specifically recommends 25 solutions based on using carbon sinks to reduce the impacts of climate change.

There are several processes that can capture and store carbon:

- **Biological Sequestration:** The process of planting trees and other vegetation in forests, grasslands, and rangelands. Reforestation is one of the cheapest sequestration processes and helps support biodiversity. In our cities, encouraging residents, businesses, and parks to maintain or plant new trees can help to pull carbon dioxide from the atmosphere.

- **Biochar:** This process involves the burning of organic materials to create biochar, a compound that can hold carbon for long periods, rather than releasing it into the atmosphere as it degrades. Research shows that biochar will not break down for at least 100 years and possibly up to 1,000 years. This type of carbon sequestration may be a solution for landfill and wastewater treatment applications.

- **Biogas:** A methane and carbon dioxide gas produced from anaerobic digestion of agriculture waste products, landfills, and wastewater systems. Biogas can be used for heating, electricity, or transportation fuel; it is currently widely used in wastewater treatment plants in California.

- **Carbon Capture and Storage (CCS):** CCS is a three-part process that involves capturing carbon dioxide, transporting the carbon dioxide, and storing it underground typically through geologic sequestration.

- **Geologic Sequestration:** Carbon is captured and injected into underground rock formations for long-term or permanent storage.

- **Technological Sequestration:** Scientists are working to develop new and innovative ways to capture carbon. Some technologies are looking at capturing carbon directly from the air. Other potential technologies include repurposing carbon for use in other technologies.

- **Trees End of Life Sequestration:** A portion of the carbon dioxide trapped in trees during growth is released after they are cut down during the decomposition process. In order to avoid releasing this carbon dioxide, carbon can be stored for longer timeframes by locking carbon into wood products, such as lumber or furniture, or creating biochar. When urban trees fall down or are purposefully removed, residents and local municipalities should consider these end-of-life use cases to prevent the carbon dioxide from being re-emitted into the atmosphere.

It’s not yet clear what role carbon sequestration will have in Redwood City’s climate action strategy, but it’s an important strategy Redwood City will evaluate and support moving forward.

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6 A healthy ocean has what is known as positive and negative “flux;” the former when CO2 from the ocean is released into the atmosphere, and the latter when CO2 is absorbed. Today, in large part due to human activity, the oceans absorb more CO2 than they release. It is projected that by 2100, the oceans will be a CO2 sink. The increase of CO2 from fossil fuels is significantly impacting the acidity of the ocean, ultimately affecting not only the sea life, but also the air we breathe.
Adaptation

As noted earlier, the climate is changing rapidly. According to the National Oceanic and Atmospheric Administration (NOAA):

“The globally averaged temperature departure from average over land and ocean surfaces for 2019 was the second highest since record keeping began in 1880, according to NOAA scientists. December’s combined global land and ocean surface temperature departure from average for 2019 was also second highest in the 140-year record. In a separate analysis of global temperature data, WMO, NASA and Copernicus scientists determined 2019 to also be the second warmest year on record. Analyses from the United Kingdom Met Office ranked 2019 among the top three warmest years on record.

For 2019, the average temperature across global land and ocean surfaces was 1.71°F (0.95°C) above the 20th century average. This was the second highest among all years in the 1880–2019 record and just 0.07°F (0.04°C) less than the record value set in 2016. The five warmest years have occurred since 2015; nine of the 10 warmest years have occurred since 2005. The year 1998 is the only 20th century year among the 10 warmest years on record.”

Even if we stopped emitting greenhouse gasses tomorrow, the climate would continue to change due to the length of the carbon cycle — the ability of the Earth to absorb excess carbon in the ocean and plants. Therefore, climate change is inevitable and our communities must plan to adapt to it.

Adaptation planning is most effective at the local level. To develop its adaptation strategy, Redwood City will refer to the following integrated set of policies and tools:

- Safeguarding California Plan: California’s Climate Adaptation Strategy (2018 Update)
- Cal-Adapt 2.0 (released October 2017 and updated regularly, most recently in January 2020)
- California’s Climate Change Assessment (most recently updated in 2018)
- State of California General Plan Guidelines (updated periodically, most recently updated in 2017)
- Adaptation Clearinghouse
- State Hazard Mitigation (2018 Update)

In addition, the County of San Mateo has embarked on a multi-sector adaptation strategy, Climate Ready SMC, to plan, assess, and implement strategies to address sea-level rise and flooding, changes in precipitation, extreme heat, and wildfires in San Mateo County. Redwood City plans to coordinate closely with the County on adaptation planning efforts.

For more information on adaptation planning, see Appendix D or visit the Climate Ready SMC website: https://www.smcsustainability.org/climate-ready.
7 IMPLEMENTATION
Implementation

The preceding chapters describe the principal sources of Redwood City’s GHG emissions and related goals and actions for achieving the community’s targets of reducing emissions 50 percent below 2005 levels by 2030. This section outlines the main components of the process for putting this CAP into action and identifies specific actions from earlier sections that are recommended for implementation.

Although significant GHG reduction policies and initiatives are already in place, the actions proposed in this CAP, by necessity, far surpass the scale of existing efforts. Implementing the CAP and ensuring that it results in real GHG emissions reductions will require increased coordination across sectors and institutionalized climate protection efforts across the community.

There are many measures and programs that Redwood City may implement to reduce GHG emissions. A cost-benefit analysis and prioritization methodology is presented below to assist the City in developing a phased implementation plan.

By the Numbers: Meeting the Emission Targets

Table 5: Meeting the 2030 Target

<table>
<thead>
<tr>
<th>STATE INITIATIVE</th>
<th>SECTOR IMPACTED</th>
<th>REDUCTION IN CITY’S EMISSIONS BY 2030 (MT CO2E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Clean Cars Program</td>
<td>Transportation</td>
<td>88,292</td>
</tr>
<tr>
<td>Low Carbon Fuel Standard (LCFS)</td>
<td>Transportation</td>
<td>9,251</td>
</tr>
<tr>
<td>Caltrain Electrification</td>
<td>Electricity (Energy)</td>
<td>1,440</td>
</tr>
<tr>
<td>Renewable Portfolio Standard (RPS)</td>
<td></td>
<td>30,667</td>
</tr>
<tr>
<td>Zero Net Energy (ZNE) Construction</td>
<td></td>
<td>54,658</td>
</tr>
<tr>
<td>SB 1383 Organic Waste Diversion</td>
<td></td>
<td>9,663</td>
</tr>
<tr>
<td>A. Total Expected Statewide Initiative Emissions Reductions</td>
<td></td>
<td>193,970</td>
</tr>
<tr>
<td>B. Total Expected Redwood City Climate Action Plan Reductions Measures</td>
<td></td>
<td>171,886</td>
</tr>
<tr>
<td>C. Total Expected Emissions Reductions by 2030 (A+B)</td>
<td></td>
<td>365,856</td>
</tr>
<tr>
<td>D. Redwood City Emissions Reduction Requirement for 2030</td>
<td></td>
<td>350,562</td>
</tr>
<tr>
<td>E. Meets/exceeds CAP goals? (C &gt; D)</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>
Getting It Done: Managing the Strategy

Support will be needed to direct the implementation of the CAP measures. This section details how the City will organize itself to put this CAP into action.

• **Support an Environmental Initiatives Coordinator** – The Environmental Initiatives Coordinator or similar position would have primary responsibility for implementation of this CAP. If insufficient city funds are available, an existing staff member can take on this role, and should spend at least 50 percent of his or her time on CAP-related business.

• **Maintain an Environmental Initiatives Subcommittee of the City Council** – The Subcommittee or similar body can study and develop recommendations for CAP updates and environmental and sustainability issues that arise such as sea-level rise and adaptation planning.

• **Initiate a Climate Change Adaptation Policy** – The City Council will consider a policy outlining procedural steps for conducting a vulnerability assessment and developing a multi-year SLR and adaptation implementation plan, which may be referenced in the Safety Element of the City’s General Plan.

Better Together

Climate change is an issue that crosses geographic and sector boundaries. Redwood City recognizes the value of collaborating with other public agencies, businesses, and community-based organizations to accelerate climate action. Everyone has a part to play and Redwood City cannot do it alone. Redwood City plans to coordinate efforts with the sectors listed below. More potential partners are listed in Appendix E.

Public Agencies

Redwood City leverages existing climate protection programs funded by public agencies such as the State of California, Peninsula Clean Energy, City/County Association of Governments of San Mateo County, Association of Bay Area Governments, County of San Mateo Office of Sustainability, South Bayside Waste Management Authority (RethinkWaste), and Bay Area Regional Energy Network (BayREN), among others. Collaboration with these organizations helps Redwood City increase the sustainability of our own operations, as well as supports community efforts to improve energy efficiency, install renewable energy technologies, facilitate transit/biking/walking initiatives, and take other actions. A more extensive list of public agencies can be found in Appendix E.1.

Nonprofits

Redwood City plans to work through existing networks of community-based and faith-based organizations that serve diverse cultural communities. Some organizations may not have the economic capacity to participate and may need to have their participation expenses defrayed. Many nonprofits already provide programming that is in alignment with the goals in this CAP; those efforts are listed in Chapter 6: Strategies and Actions, Strategies to Get Us There section. In addition, these collaborations will help Redwood City engage community members who ordinarily aren’t aware of climate action efforts. (See next section.) Some community members may not be able to afford childcare or other expenses to participate and may not have a car to drive to meeting locations not accessible by public transportation. A list of local nonprofits is in Appendix E.2.
Communities of Concern

Communities of color and low-income populations have been under-represented in policy-making and often are not consulted about programs and services intended to benefit them, frequently resulting in ineffective programs. A variety of factors, such as lack of trusted relationships with government, language barriers, and lack of inclusion in planning and policy-development processes have all served as barriers to involvement. Leadership and membership of mainstream environmental organizations have also tended to be white and well off, despite evidence that environmental concerns, including climate change, are broadly held by people of color and low-income populations.59

It’s important for Redwood City to invest in long-term, reciprocal relationships with socially vulnerable communities. Redwood City understands the need to consider how individuals who have not had access to educational opportunities or who do not speak English can participate in the conversation. Redwood City is committed to listening and responding to diverse concerns and assisting community partners in participatory planning processes.

In implementing this CAP, the City plans to foster relationships and deepen involvement with communities of color and low-income populations regarding the challenges of and solutions to climate change. Engagement strategies will take into account existing barriers and attempt to mitigate them. Ensuring that education and outreach are culturally and linguistically appropriate, as well as taking into account diverse educational attainment will be critical for success.

Redwood City and the County will seek to support community needs and priorities by working with community-based organizations to engage these traditionally under-represented and under-served populations and businesses. In addition, Redwood City will look for opportunities to support diverse community organizations to implement actions outlined in this CAP, including grants such as the one that enabled community-based organizations in Half Moon Bay to engage socially vulnerable communities in participating in planning processes (see box).

Private Sector

For Redwood City to succeed in achieving its CAP goals, we need support from the private sector. Markets need to shift. The goods and services available to our community should support our efforts to build a sustainable, resilient economy that doesn’t threaten the stability of the climate.

In particular, Redwood City’s ongoing engagement in programs to decrease energy use and shift from natural gas to electricity use is crucial to our efforts to decarbonize our energy system and transportation system.

Some businesses already put resource conservation at the core of their business models. Several businesses are Certified B Corporations, which are legally required to consider the impact of their decisions on their workers, customers, suppliers, community, and the environment. More than 30 businesses in San Mateo County are certified as Green Businesses through the California Green Business Program. A complete list of these businesses is available at https://greenbusinessca.org/find-green-business/.
In addition, Redwood City intends to partner with the County of San Mateo Office of Sustainability to help small and medium-sized businesses learn about programs and incentives that will help them save money while also being good environmental stewards.

San Mateo County is home to many multi-national corporations with global supply chains, and employees that live in Redwood City. Moving forward, Redwood City will look for opportunities to help residents, employees, and business leaders understand how they can bring climate action principles to their workplaces. (See “Four Levels of Action” box in Chapter 7: Implementation, Multi-Section and Regional Collaboration section.)

**Internal Departments**

Redwood City’s collaborative mindset extends to our internal management. Departments and teams across the City are responsible for leading and implementing the strategies outlined in this CAP, including Public Works Services, Community Development and Transportation, and Parks, Recreation and Community Services.

**External Communication**

Redwood City plans to widely distribute information on programs and funding opportunities for residents and local businesses. This may include participating in a countywide or regional online engagement platform such as Climate Solutions Net or Sustainable Future, if possible.

Specific actions that community members are encouraged to take today are included in boxes throughout Chapter 6: Strategies and Actions, Strategies to Get Us There section. Funding opportunities are listed in Appendix F.

Redwood City will also look for opportunities to partner with organizations listed in this CAP to bring workshops and trainings to the community. Overall, the goal is to increase community awareness about climate change to influence everyday consumer behavior and purchasing decisions. Redwood City’s messaging can encourage community members to take action not just at home, but also at work, and with community organizations of which they’re members. (See “Four Levels of Action” box in Chapter 7: Implementation, Multi-Section and Regional Collaboration section.)

**Multi-sector and Regional Collaboration**

To ensure full implementation of the CAP and accelerate climate action efforts, an interdepartmental team of City staff, in collaboration with civic leaders from the public, nonprofit, and private sectors, must be assembled to ensure sustainability and accountability. In addition, [will aim to participate in countywide and/or regional convenings that bring the three sectors together to identify shared goals and collaboration opportunities.

Two areas in particular are good candidates for regional collaboration:

1. Electrification of buildings
2. Electrification of transportation

In addition, multi-sector collaborations could address the need for financial products that enable more community members and businesses to upgrade their homes, businesses, and transportation.
**Workforce Development**

To meet our climate action goals, the workforce needs to be ready to implement projects that will result in less energy consumption, fewer vehicle miles traveled, less solid waste, and reduced municipal emissions. It’s estimated that an increase of 64,000 to 100,000 local workers will be required to electrify California’s building stock.\(^{61}\)

Training workers to deliver the services required by this CAP is a critical step in the process. Organizations like BayREN and PG&E have already been training local contractors, designers, and architects in energy efficiency for over a decade through contractor trainings and specific workforce development programs. Local plumbing and electrical unions also provide extensive trainings for their members. Grid Alternatives has been offering training programs for solar installations in California and the rest of the United States by utilizing grant funds to install solar panels on low-income housing, and training workers on site in a style similar to the Habitat for Humanity model. Rising Sun Center for Opportunity runs Climate Careers, a summer youth employment and residential water and energy efficiency program in the Bay Area. It provides youth with opportunities for training and meaningful employment in the clean economy, educates about eco-literacy issues such as climate change, and offers continued professional development opportunities after employment.
Since 2019, Peninsula Clean Energy has started to offer similar programs to supplement BayREN and PG&E’s existing work, and all three organizations have expanded to include contractor trainings on building electrification and EV charging station deployment. Since building electrification projects require contractors skilled in both plumbing and electricity trades, Redwood City will collaborate with the County of San Mateo Office of Sustainability to provide opportunities for these contractors to connect with each other and potentially form implementation teams.

Supporting these workforce development programs and ensuring they help develop the expertise of our local workforce, will be critical to ensuring we meet our climate goals, and will help community members gain employment in the growing green jobs sector.

**Timeline**

The following timeline lists the major milestones in the CAP implementation process. Progress and updates to this schedule should be submitted to the City Council and the public as part of an annual Plan Implementation Report.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG Inventory Completed</td>
<td>12/2017</td>
</tr>
<tr>
<td>GHG Reduction Target Established</td>
<td>10/2018</td>
</tr>
<tr>
<td>Draft CAP Published</td>
<td>10/2020</td>
</tr>
<tr>
<td>Community Comment Period</td>
<td>08/2018 - 07/2020</td>
</tr>
<tr>
<td>Council Review</td>
<td>10/2020</td>
</tr>
<tr>
<td>CAP Adoption</td>
<td>11/2020</td>
</tr>
<tr>
<td>Begins CAP Implementation</td>
<td>11/2020</td>
</tr>
<tr>
<td>1st Annual CAP Implementation Report</td>
<td>11/2021</td>
</tr>
<tr>
<td>Community Comment Period</td>
<td>11/2021 - 12/2021</td>
</tr>
<tr>
<td>2nd GHG Inventory Completed</td>
<td>12/2020</td>
</tr>
<tr>
<td>1st CAP Update</td>
<td>11/2025</td>
</tr>
</tbody>
</table>

**Implementation Budget**

Some of the actions in this Plan will be absorbed and integrated into existing departmental operating or projects budgets. Additional resources will be needed over the next 10 years in one-time costs, which includes consultant services, temporary staffing, and infrastructure needs, and in ongoing costs, which includes staff positions and augmenting the City’s ongoing budget for CAP implementation. Resources allocated to implementing the CAP will be refined and finalized as part of the annual process for budget development and approval by the City Council.

The City’s strategy to finance implementation of current and future actions will evolve over time. Strategies the City may consider could include:

- Leveraging partnerships and collaborative projects, particularly through Peninsula Clean Energy and Office of Sustainability programs
- Developing a differential utility use tax (UUT) to incentivize electrification
- Charging carbon impact fees for development projects
Implementation

- Implementing user fees for selected activities and services
- Implementing paid parking in selected locations
- Adding transportation impact fees to requirements for new construction projects

Monitoring and Improvement

To ensure that the emissions targets described in this CAP are met, ongoing monitoring is necessary. If it’s determined that CAP efforts are falling short of the goals, the City will consider adding additional voluntary and mandatory measures to the CAP. This process is necessary for this CAP to maintain its status as a “GHG Reduction Strategy.”

Generation-based inventories provide a consistent way to track progress over time. But these inventories have two shortfalls:

1. **Annual GHG generation-based inventories lag about two years behind.** For instance, the 2018 inventory will be available in late 2020. This makes it difficult to get immediate feedback on changes to programs and policies.

2. **Generation-based inventories don’t tell the whole story.** Our goal is to achieve 50 percent reduction of GHG emissions by 2030 on the way to carbon neutrality well before 2045. It will be difficult to meet the carbon neutrality goal without calculating and tracking emissions from the consumption of goods and services in addition to generation of emissions.

Redwood City’s monitoring and ongoing improvement program addresses these shortfalls:

- Through the RICAPS program, Redwood City will consider participating in a countywide goal for Key Performance Indicators (KPIs) agreed to by all cities in the county. Those KPIs will be posted and tracked on the County’s website. Examples of common KPIs are number of solar installations, number of EV charging stations installed, number of homes retrofitted, number of EVs purchased, number of heat pump water heaters and/or space heaters installed, etc.

- Every year, the Environmental Initiatives Coordinator will provide an annual update to the City Council, residents, and other interested stakeholders on progress made implementing the CAP actions. The update will detail lessons learned and make recommendations for changes to the implementation strategy or the CAP itself. Following the release of the update report, a 30-day public comment period will be open to allow for community input on the implementation of the CAP.

- The Environmental Initiatives Coordinator will track the programs, additions and modifications, emissions, resource savings, equity and inclusion impact, and any other effects of each implemented action. Each action will be summarized in the annual update and made available for public review.

- Every year, Redwood City will review the newest community GHG inventory provided by the County of San Mateo Office of Sustainability through the San Mateo County Energy Watch program. Every five years, the City will conduct a municipal GHG generation-based inventory to track progress on reducing the City’s own emissions.

- The Environmental Initiatives Coordinator will update the Plan as needed based on the results of the GHG inventories. Redwood City may modify and/or add new actions to ensure that the City is on track to meet its GHG reduction goals.

- In partnership with the County Office of Sustainability, Redwood City will explore a collaboration with a research institution to include questions about climate protection behaviors in an annual countywide survey of community members. Responses from the survey could be used to track progress on community actions related to consumption-based emissions.
CONCLUSION
Conclusion

The challenge of preparing for and mitigating the effects of climate change is unprecedented in its scale and potential disruption to our way of living. Recent climate disasters have given us a preview of what could become the “new abnormal.”

We must act now. However, in the face of daunting headlines, we remain hopeful and resolved, and know what we need to do to move forward. We have the solutions to reduce emissions, increase efficiency, promote economic vitality, and improve our quality of life.

This CAP provides an overarching, strategic framework for Redwood City to achieve the goal of reducing GHG emissions by 50 percent by 2030, on the way to carbon neutrality well before 2045. While developing and publishing this CAP is an important step, it’s even more critical that this CAP remain a living document, to be updated as technology and policies progress.

The City Council’s Strategic Plan includes the Guiding Principle of Sustainability: to proactively address environmental concerns to protect our community. By implementing and supporting climate protection and sustainability programs, the Climate Action Plan includes ideas for our City government to “walk the talk” by implementing practices that minimize the City’s own impacts on the environment and that serve as an example for the energy efficiency, water conservation and alternative transportation programs and services our Climate Action Plan calls for establishing in our community. This Climate Action Plan is an important step that builds on the City’s current efforts in environmental stewardship and protection.

This CAP not only supports the City’s efforts to manage its own GHG emissions, it’s a call-to-action to residents, community institutions, and businesses to take an active part in our transition to a low-carbon future and clean economy. In this process, Redwood City will foster a vibrant economy, increase its resiliency, and support a collective vision for a livable and sustainable community for generations to come.
## Appendix

### A. Glossary of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAAQMD</td>
<td>Bay Area Air Quality Management District</td>
</tr>
<tr>
<td>BAU</td>
<td>Business as usual</td>
</tr>
<tr>
<td>CARB</td>
<td>California Air Resources Board</td>
</tr>
<tr>
<td>CAP</td>
<td>Climate action plan</td>
</tr>
<tr>
<td>CEC</td>
<td>California Energy Commission</td>
</tr>
<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
</tr>
<tr>
<td>CO2</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CO2e</td>
<td>Carbon dioxide equivalent</td>
</tr>
<tr>
<td>CPUC</td>
<td>California Public Utilities Commission</td>
</tr>
<tr>
<td>EV</td>
<td>Electric vehicle</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
</tr>
<tr>
<td>ICE</td>
<td>Internal combustion engine</td>
</tr>
<tr>
<td>ICLEI</td>
<td>Local Governments for Sustainability</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
</tr>
<tr>
<td>kWh</td>
<td>Kilowatt hour</td>
</tr>
<tr>
<td>MT</td>
<td>Metric ton</td>
</tr>
<tr>
<td>MMT</td>
<td>Million metric tons</td>
</tr>
<tr>
<td>PCE</td>
<td>Peninsula Clean Energy</td>
</tr>
<tr>
<td>PG&amp;E</td>
<td>Pacific Gas and Electric Company</td>
</tr>
<tr>
<td>RICAPS</td>
<td>Regionally Integrated Climate Action Planning Suite</td>
</tr>
<tr>
<td>RPS</td>
<td>Renewable portfolio standard</td>
</tr>
<tr>
<td>SLR</td>
<td>Sea-level rise</td>
</tr>
<tr>
<td>SOV</td>
<td>Single occupancy vehicle</td>
</tr>
<tr>
<td>TNC</td>
<td>Transportation network company (Lyft, Uber, etc.)</td>
</tr>
<tr>
<td>TOD</td>
<td>Transit-oriented development</td>
</tr>
<tr>
<td>U.S. EPA</td>
<td>United States Environmental Protection Agency</td>
</tr>
<tr>
<td>VMT</td>
<td>Vehicle miles traveled</td>
</tr>
<tr>
<td>WRI</td>
<td>World Resources Institute</td>
</tr>
</tbody>
</table>
B. Climate Change

B.1 Global Goal to Limit Warming to 1.5°C

The Intergovernmental Panel on Climate Change (IPCC), the leading international scientific body on climate change, released a report\(^6\) in mid-2018 shifting the threshold at which significant and potentially irreversible climate change impacts occur from 2°C to 1.5°C of average global temperature increase above pre-industrial levels. The IPCC report promotes immediate actions to meet the 1.5°C threshold to prevent or slow these impacts. Many of the impacts of warming up to and beyond 1.5°C, and some potential impacts of mitigation actions required to limit warming to 1.5°C, fall disproportionately on low income and socially vulnerable people.

Substantial changes in regional climate occur between 1.5°C and 2°C of global average temperature increase. For example, the number of people exposed to severe heat waves triples. Keeping temperatures at 1.5°C as compared to a 2°C warming would result in global reductions in risk, including:

- **Sea level rise**: Decreasing global rate of rise by approximately 3.9 inches
- **Heat waves**: Decreasing the number of people being frequently exposed by 420 million worldwide
- **Heavy precipitation and drought**: Reducing intensity and frequency worldwide
- **Drinking water**: Lowering the number of people without access to drinking water by 50 percent

Limiting warming to 1.5°C will require changes by 2050, including:

- Eliminating GHG emissions in our cities
- Deep reductions in global emissions of non-CO2 climate pollutants, particularly methane
- Reducing oil use by 32-74 percent
- Reducing natural gas use by 13-60 percent
- Leveraging renewables to supply 36-97 percent of energy
- Making buildings and transportation energy efficient
- Implementing adaptation options, including coastal defense and hardening, efficient irrigation, green infrastructure, and disaster risk management

B.2 State and Local Goals and Targets

California has some of the most aggressive climate action goals in the United States. The State has set a goal of emissions reductions to 40 percent below 1990 levels by 2030 (or 49 percent below 2005 levels). To achieve this, California has created the following strategies:

- Increase renewable electricity production to 50 percent
- Reduce petroleum use by 50 percent in vehicles
- Double energy efficiency savings at existing buildings
- Reduce GHG emissions from natural and working lands
- Reduce short-lived climate pollutants such as black carbon, methane, tropospheric ozone, and fluorinated gases
- Make California more resilient to climate change in accordance with California’s 2018 *Safeguarding California Plan*
B.3 Trends in National and State Emissions

National Emissions

According to the U.S. EPA, gross total U.S. GHG emissions in 2017 were 6,456.7 million metric tons (MMT) of CO2 equivalent (CO2e), representing a 12 percent decrease below 2005 levels. Emissions have also decreased 4.5 percent since 2014, largely driven by transitioning power plants from using coal to natural gas, as well as warmer winter conditions. CO2, the largest component of man-made GHGs, made up 81.6 percent of total U.S. GHG emissions in 2017, followed by methane at 10.2 percent, nitrous oxide at 5.6 percent, and fluorinated gases at 2.6 percent.

Figure 15: Gross U.S. GHG Emissions by Gas: 1990-2018

In 2018, the industrial sector contributed the largest share of GHG emissions (29.1 percent), followed by transportation (27.9 percent), commercial (16.2 percent), residential (15.6 percent), and agriculture (10.5 percent). Land use and forestry offset 11 percent of total gross emissions. Of the five main sectors, transportation has seen the largest increase in emissions since 1990 (22 percent increase), while industrial emissions have seen the largest decrease (15.5 percent decrease).

Figure 16: U.S. GHG Emissions by Economic Sector
California Emissions

Similar to the national trend, total GHG emissions in California have decreased in recent years. According to the California Air Resources Board (CARB), total California GHG emissions in 2017 were 424 million metric tons (MMT) of CO2e, representing a 2 percent decrease below 1990 levels and a 13 percent decrease below 2005 levels.66

Figure 17: California GHG Emissions by Sector: 2000-2017

California has seen an overall decrease in carbon intensity of electricity generation, driven by a large increase in zero-GHG and renewable energy resources due in part to California’s Renewable Portfolio Standard (RPS)67 and Cap-and-Trade Program.68 In 2017, the transportation sector contributed the largest share of GHG emissions (41 percent), followed by industrial (24 percent), in-state electricity (9 percent), agriculture and forestry (8 percent), residential (7 percent), imported electricity (6 percent), and commercial (5 percent).
B.4 Four Scenarios Show What Climate Change Will Do to the Earth, From Pretty Bad to Disaster

The following is a reprint of an article that was published in Fast Company on August 26, 2014.69

Four Scenarios Show What Climate Change Will Do to the Earth, From Pretty Bad to Disaster

*Climate change is going to do a lot of damage. How bad that damage will be is still under debate.*

The most recent Intergovernmental Panel on Climate Change (IPCC) report left no doubt about the future of the world if we don’t slow the rate at which we release heat-trapping gases into the atmosphere. In a word, it’s going to get bad.

But exactly how bad is still an open question, and a lot depends not only on how we react, but how quickly. The rate at which humans cut down on greenhouse gas (GHG) emissions—if we do choose to cut them—will have a large bearing on how the world turns out by 2100, the forecasts reveal.

This graphic from the World Resources Institute gives a sense of the dynamics at play. It presents four “emissions pathways,” ranging from the very optimistic to the highly pessimistic.
WE ACTUALLY DO SOMETHING ABOUT CLIMATE CHANGE

LOW EMISSIONS PATHWAY

Carbon dioxide emissions peak by 2020 and then drop 66 percent below 2010 levels by 2050. While the world will still experience some climate impacts under this pathway, they grow exponentially worse under higher emissions scenarios.

- Global temperature increases by up to 2°C.
- Roughly one-third of the world’s coral reefs, which provide habitat and resources to more than 500 million people, will experience long-term degradation over the next two decades.
- Australia’s production of more than 40% of global dairy products, with 7°C of warming by 2050, may experience a 30-50% decline in productivity throughout Australia.
- About 85% of the projected global population will live in countries that are affected by climate change by 2050 compared to the 1980s.

24% of the world

33% of the world

www.wri.org/ipcc-infographics
WE KEEP DOING WHAT WE’RE DOING

MEDIUM EMISSIONS PATHWAY

Carbon dioxide emissions peak by 2040, but still rise 19 percent above 2010 levels by 2050.

*This is the upper bound of the medium temperature range of the low emissions pathway scenario, and does not include the full range of uncertainties.

The same is true for the "medium," "high," and "extreme" emissions pathways.

2056
Year the carbon budget is exhausted, looking in 2°C of warming.

Global temperature increases by up to 2.9°C.

- In the 2020s, water supplies are expected to be substantially lower compared to the 1980s.
- About 26% of the projected global population will lose access to renewable groundwater resources by the 2080s, compared to the 1980s.
- By 2050s, about 3 times as many people are exposed to the amount of water associated with a 100-year flood compared to the 1980s.
- Roughly two-thirds of the world’s coral reefs will experience long-term degradation over the next few decades.
- Climate change impacts like heat stress are expected to negatively impact workers and decrease global productivity by 20% by 2100.

www.wri.org/ipcc-infographics

The “Medium Emissions” scenario sees increases in emissions until 2040 and the world exceeding its “carbon budget” – the level at which it should stay within the 2 degrees limit – by 2056. By 2100, the planet has warmed by 2.9 degrees, and economic productivity has fallen by 20%. By the 2080s, six times as many people are experiencing catastrophic flooding as the 1980s.
WE REV THE ENGINES

HIGH EMISSIONS PATHWAY

Carbon dioxide emissions peak by 2080, but still rise 34 percent above 2010 levels by 2050.

The “High Emissions” scenario doesn’t see emissions peaking until 2080, while global temperatures jump 3.7 degrees C by 2100. The carbon budget is exhausted in 2057. The impact on agricultural production is so heinous that adaption is no longer viable, the WRI predicts.
As if that's not bad enough, there's one last “Highest Emissions” scenario (they should have called it the Doomsday Scenario, really). It sees the carbon budget obliterated in 2045 and global temperatures increasing a whopping 4.8 degrees by century’s end. Many animals have become extinct and farming in some places, like southern Brazil, has become impossible.

But won’t we adapt to the new conditions, you might ask? Well, maybe. The scenarios here assume flat technology development, not the leaps forward in innovation that we can hope for. We could have drought-resistant crops and new ways of recycling and desalinating water, for instance, that could make these predictions less forceful.

The easier course, though, is to cut emissions. To have a fighting chance of coping with climate disorder, we have to cut greenhouse gases quickly, not just wait until it’s convenient.

ABOUT THE AUTHOR: Ben Schiller is a New York staff writer for Fast Company. Previously, he edited a European management magazine and was a reporter in San Francisco, Prague, and Brussels.
C. Policy

C.1 Global Policy

United Nations Sustainable Development Goal #13: Climate Action

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing – in a global partnership. Goal #13 is “Take urgent action to combat climate change and its impacts.”

C.2 State Policy and Regulatory Context

The State of California has been a leader in developing and implementing policies and regulations to directly address the risk of severe climate change. Below we summarize the key statewide legislation aimed at reducing greenhouse gas (GHG) emissions and adapt to climate impacts. There are many supporting pieces of legislation and other related initiatives that are sector specific.

Assembly Bill 32 (AB 32), California Global Solutions Act, 2006

In September 2006, the California legislature passed Assembly Bill 32 (AB 32), which set the goal of reducing GHG emissions back to 1990 levels by 2020. AB 32 finds and declares that “global warming poses a serious threat to economic well-being, public health, natural resources and the environment of California.” The legislation granted authority to the Air Resources Board to establish multiple mechanisms (regulatory, reporting, voluntary, and market) to achieve quantifiable reductions in GHG emissions to meet the statewide goal.

Senate Bill 97, CEQA Guidelines for Addressing GHG Emissions, 2007

In August of 2007, Senate Bill (SB) 97 was signed into law, expressly recognizing the need to analyze GHG emissions as a part of the California Environmental Quality Act (CEQA) process. SB 97 required the Office of Planning and Research (OPR) to develop, and the California Natural Resources Agency to adopt, amendments to CEQA Guidelines addressing the analysis and mitigation of GHG emissions. Those amendments became effective in March of 2010. Proposed projects that must comply with CEQA regulations include General Plans, Specific Plans and specific types of development projects.

Senate Bill 350, Clean Energy and Pollution Reduction Act, 2015

In October of 2015, Senate Bill 350 (SB 350) was signed into law, establishing new clean energy, clean air and greenhouse gas reduction goals for 2030 and beyond. SB 350 codified Governor Jerry Brown’s aggressive clean energy goals and established California’s 2030 greenhouse gas reduction target of 40 percent below 1990 levels. To achieve this goal, SB 350 increases California’s renewable electricity procurement goal from 33 percent by 2020 (legislation originally enacted in 2002) to 50 percent by 2030. Renewable resources include wind, solar, geothermal, wave, and small hydroelectric power. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030.

Senate Bill 100, The 100% Clean Energy Act, 2018

In September of 2018, Governor Brown signed Senate Bill 100 (SB 100), requiring the State’s load serving entities (including energy utilities and community choice energy programs) to achieve 50 percent renewable resources target by December 31, 2026, to achieve a 60 percent target by December 31, 2030 and supply 100 percent of
retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. At the same time, Governor Brown also signed Executive Order B-55-18, requiring California to achieve carbon neutrality as soon as possible, and no later than 2045, and to maintain negative emissions thereafter.

**Senate Bill 1477, Low Emissions Buildings and Sources of Heat Energy, 2018**

In September 2018, Governor Brown signed Senate Bill 1477 (SB 1477), that requires the California Public Utilities Commission (CPUC) to oversee two new low-carbon heating programs, investigate potential pilot programs to build all-electric, zero-carbon buildings in areas damaged by wildfires, coordinate with the California Energy Commission on updates to the State’s building (Title 24) and appliance (Title 20) energy efficiency standards, and establish a building decarbonization policy framework. The bill authorizes $200 million over four years to be invested in programs to advance low-carbon space and water heating technologies in both new and existing buildings. Funding for the programs is slated to come from natural gas utility carbon allowance proceeds from California’s cap-and-trade program.

**Bay Area Air Quality Management District CEQA Guidelines**

The Bay Area Air Quality Management District (BAAQMD) encourages local governments to adopt a GHG Reduction Strategy that is consistent with AB 32 goals. The GHG Reduction Strategy may streamline environmental review of community development projects. According to the BAAQMD, if a project is consistent with a GHG Reduction Strategy, then it can be presumed that the project will not have significant GHG impacts. This approach is consistent with the following State CEQA Guidelines, Section 15183.5.a:

> “Lead agencies may analyze and mitigate the significant impacts of greenhouse gas emissions at a programmatic level, such as...a plan to reduce greenhouse gas emissions. Later project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review. Project-specific environmental documents may rely on an [Environmental Impact Report] containing a programmatic analysis of greenhouse gas emissions.”

This CAP provides a foundation for future development efforts in the community. It is expected that environmental documents for future development projects will identify and incorporate all applicable voluntary and mandatory actions from CAP for projects undergoing CEQA review.
C.3 State-Level Programs

The City isn’t expected to make all the reductions on its own. The following programs help cities meet their climate goals.

California Advanced Clean Cars Program

In 2012, CARB adopted a set of regulations to control emissions from passenger vehicles, collectively called Advanced Clean Cars. The program was developed in coordination with the U.S. EPA and National Highway Traffic Safety Administration (NHTSA) and combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of regulations. ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program

California Low Carbon Fuel Standard Program

The Low Carbon Fuel Standard (LCFS) is designed to encourage the use of low-carbon fuels, encourage the production of those fuels, and therefore, reduce GHG emissions. Currently, the LCFS calls for a 20 percent decline in the carbon intensity of diesel fuels below 2010 levels by 2030. ww3.arb.ca.gov/fuels/lcfs/lcfs.htm

Caltrain Electrification

Caltrain Electrification is a key component of Caltrain Modernization Program (CalMod). The current project will electrify the corridor from San Francisco to San Jose, including all track in San Mateo County, and will replace 75 percent of Caltrain’s diesel service with electric. The project will lower GHG emissions, improve regional air quality, and reduce noise. https://calmod.org

California Renewable Portfolio Standard

The Renewable Portfolio Standard (RPS), originally established in 2002, required 20 percent of electricity retail sales to be served by renewable sources by 2017. The program was accelerated in 2015 with SB 350, which mandated a 50 percent RPS by 2030. SB 100, enacted in 2018, accelerated the program further, establishing renewable energy targets of 50 percent by 2026, 60 percent by 2030, and 100 percent by 2045. www.cpuc.ca.gov/rps

California Long Term Energy Efficiency Strategic Plan

Published in 2008 and updated in 2011, the California Long Term Energy Efficiency Strategic Plan outlines goals and strategies for key market sectors (i.e., commercial, residential, industrial, and agricultural) and crosscutting initiatives (e.g., heating, ventilation and air conditioning, codes and standards, research, and technology). While the Plan has not been updated since 2011, it is still referenced in numerous State documents and reports. The Plan embraces four specific programmatic goals, known as the Big Bold Energy Efficiency Strategies. These goals are:

- All new residential construction in California will be zero net energy by 2020.
- All new commercial construction in California will be zero net energy by 2030.
- The Heating, Venting and Air Conditioning (HVAC) industry will be re-shaped to deliver maximum performance HVAC systems.
- All eligible low-income customers will have an opportunity to participate in the LIEE program and will be provided all cost-effective energy efficiency measures in their residences by 2020.

More information on California’s zero net energy goals can be found online at: www.cpuc.ca.gov/ZNE
Organic/Food Waste Diversion

In 2016, Senate Bill 1383 (SB 1383) established methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California’s economy. SB 1383 establishes target to achieve a 50 percent reduction in the level of statewide disposal of organic waste from 2014 levels by 2020 and a 75 percent reduction by 2025. The law grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets. More information about SB 1383 can be found online at: https://www.calrecycle.ca.gov/climate/slcp

C.4 Local Policy

In September 2019, the San Mateo County Board of Supervisors adopted a resolution declaring a climate emergency in San Mateo County to highlight the increasingly urgent need for action to address the climate crisis. The County of San Mateo joined over 1,000 national, international, and local jurisdictions with similar declarations. The resolution calls for the County to create climate action plans (CAPs) for its government operations and unincorporated community that will achieve carbon neutrality in advance of the State of California’s 2045 goal, and coordinate with the cities and other local partners in addressing the climate crisis.71
D. Best Practices for Community Collaboration and Sustainability Planning

Community engagement is an invaluable resource to climate action planning, building the social cohesion and resilience needed to adapt and mitigate to climate change impacts. San Mateo County Health Policy and Planning (HPP) supports meaningful, transparent, and inclusive public participation of residents that are most impacted by the decisions at stake in planning and policy processes. Community is central to the process to:

- Learn about the issues we are trying to address
- Share power and resources
- Build community ownership of the issues
- Do “with” versus doing “for”
- Honor community residents’ knowledge and experience
- Inform solutions, implementation, and evaluation
- Meet the community where they are

The most effective plans are those that create a transparent process and collaborate with community from the beginning, thus providing residents with the opportunity to create ownership of and interest in the plans and issues at hand. There is a spectrum of community engagement processes with increasing levels of public influence on decision-making processes, beginning with informing the public of decisions and issues on one end of the spectrum and collaborating and empowering community members to co-design and decide for themselves at the other end.72

Some California cities have engaged in effective public collaboration and empowerment practices in their planning process by sharing their decision-making power. The table below highlights jurisdictions with model planning practices that went beyond informing the public and collaborated with and empowered the public. Building strong sustainability planning comes down to building strong narratives internally and externally, while establishing transformative collaboration processes.73, 74

D.1 Health Policy and Planning Recommended Best Practices for Community Engagement

The following recommendations incorporate best practices for inclusive and intentional engagement, transparency and clear communication, community empowerment, and program measurement.

Inclusive & Intentional Engagement

- Work through existing networks of community-based and faith-based organizations that serve and organize in diverse cultural communities to identify community leaders to work with.
- Host a “meet and greet” with community organizations and advocacy groups to build connections across sectors and develop partnerships.
- Engage community members with humility and by meeting people where they are: do not expect all community members to engage at the same level, acknowledge the many forms of community member knowledge, and use accessible and non-technical language (not planning jargon).
- Attend community meetings and cultural events as a participant. Listen to what issues are discussed and how they are talked about. Be sensitive to and aware of potential power dynamics due to race, ethnicity, citizenship, class, or gender differences.
• Develop awareness of the racial and economic disparities in the area and why those disparities exist; seek insights from experienced community leaders and organizations.

• Seek out relationships with leaders from non-English speaking communities. Work with them to identify barriers to engagement and ways to bridge the divide to work with their communities. Translate materials and provide interpretation at community meetings.

• Build incentives for engagement for each strategy that reduce barriers to participate.

• Hold meetings at times, such as on evenings and weekends, and places that are convenient and accessible to the public, including low-income residents; whenever possible, provide childcare, meals, and transit passes. Meeting locations should be well served by public transit that runs at night and on weekends.

• Establish an Equity Working Group as a way of creating an effective forum for bringing together the best thinking on equity issues through ongoing dialogue. At the same time, ensure that the recommendations of equity stakeholders do not live in a silo but are brought to other key decision-makers and advisory groups throughout the process. Ensure equity representation on technical advisory committees.

Transparency

• Structure your engagement and planning process to include substantive representation by Black, Indigenous, and People of Color (BIPOC) and/or organizations that represent low-income communities in various decision-making capacities.

• Communicate all key decision points in the planning or policy process.

• Demonstrate how public input will be considered by describing how public input from outreach strategies will be used in the development, evaluation, and selection of the plan alternatives at each key decision point.

• Establish regular communication mechanisms and communicate early and often to gauge progress, gain feedback on the process, share information, and gain new ideas for cultivating connections and maintaining relevance to community concerns.

• Use diverse communication techniques such as social media, pictures, video, and art to help people absorb information visually.

Empowerment: Sharing Power & Capacity

• Empower community members to take an active role in neighborhood revitalization from the start of a process. This means:
  o Creating a participatory process for developing a shared vision for community change.
  o Engaging residents in documenting not only the disparities and conditions that merit change but also community assets to preserve and build from.

• Share governance and decision-making by, for example, setting aside resources to be shaped and decided on by community members. Resources can include: grants for community engagement, land acquisition funds, the hiring of consultants, project selection, or participatory budgeting.

• Structure the planning process so community organizations and leaders can: 1) Shape agendas and issues, 2) Organize and lead convenings, and 3) Identify concrete and measurable benchmarks for success, as well as the parties who will be responsible for both procedural (community engagement) and substantive (program/policy) outcomes.

• Establish a system of neighborhood-level resident representation to empower/engage local neighborhoods in their own revitalization process.
• Build capacity within disadvantaged/vulnerable/historically underserved communities to empower them to co-
lead, navigate and participate in planning and policy processes. This can be achieved by:
  o Contracting with local, community-based organizations in low-income communities and
    communities of color to conduct engagement processes.
  o Partnering with and funding equity-focused community-based organizations to train participating
    residents from low-income communities and communities of color in the content and skills they will
    need to exercise informed leaderships.

• Promote Community Based Participatory Research (CBPR) principles in data collection and mapping of
  neighborhood existing conditions.

Measuring Success

Community planning for sustainability requires establishing measurable standards for diligent implementation. Defined assessment standards such as the Envision Rating System or STAR Community Rating System enhance the success, progress, and opportunities for any plan.

The current CAP acknowledges the value of continuously updating the implementation matrix and the monitoring tool: both are critical for implementation and transparency. Including more holistic measures like those used by the STAR Community Rating and Envision Rating may enhance the CAP’s current evaluation metrics. Measure review should also include both quantitative and qualitative performance measures.

D.2 Health Policy and Planning Recommended Best Practices for Measure Review

• Identify SMART (Specific, Measurable, Agreed Upon, Realistic, Time-Bound) goals to accurately track and
  measure goals and deliverables.
  o Effectively communicate and share information with county/municipal agencies and stakeholders.
• Use tools (e.g., checklists, health impact assessments, etc.) to evaluate and identify challenges and potential
  solutions.
  o Identify implementation priority areas based on equitable vulnerability practices/assessments.
  o Routinely conduct pre/post evaluations.
• Practice accountability (in the form of regular progress reports and meetings with interested stakeholders),
  consulting with experts and community.
  o Produce annual progress reports and ensure reports are accessible to communities.
  o Clearly identify and communicate action plan methodologies, performance measures, timelines,
    and leads.
  o Assess changes and updates on a yearly basis, both for the plan and the relevant areas.
• Measure benefits and impacts in low-income and other vulnerable communities.
  o Ensure that updates and investments benefit existing and future residents.
  o Include displacement risk of existing residents in measure criteria.
  o Prioritize implementation of goals and actions in areas that are most affected.
Additional Resources

- **Your Community Toolbox for Leading in a Changing Climate**: Step-by-step guide to collaborate across sectors and provide climate change education and engagement (Climate Education Partners)
- **Sustainability Best Practices Framework**: Options for local action in 10 sustainability areas (Institute for Local Government)
- **Planning for Equity Policy Guide**: Guidelines to remove policy barriers to equity (American Planning Association)
- **Assessing Sustainability: A Guide for Local Governments**: Best practices for sustainability implementation (American Planning Association)
- **Office of Planning and Research Clearinghouse**: Tools and database, case studies, climate stories, equity resources, and more sustainability best practices (Governor’s Office of Planning and Research)
- **International Association for Public Participation**: Resources for public participation and engagement at all levels (i.e., government, institution, individual, etc.)

### Table X: Community Engagement Model Practices in suburban, urban, and rural jurisdictions

<table>
<thead>
<tr>
<th>Jurisdiction (type)</th>
<th>Leading Stakeholders</th>
<th>Outcome</th>
<th>Model Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Napa (urban/rural)</td>
<td>City staff, Task force, and Community residents</td>
<td>Sustainability Plan</td>
<td>Interviews with community leaders</td>
</tr>
<tr>
<td>East Palo Alto (urban)</td>
<td>City Council, City staff, Community stakeholders</td>
<td>Health and Equity Element</td>
<td>Policies for civic engagement and inclusivity in decision-making process</td>
</tr>
<tr>
<td>Jurupa Valley (suburban)</td>
<td>Consultants, Community-based organizations, and City staff</td>
<td>Environmental Justice Element</td>
<td>Meetings in affected neighborhoods</td>
</tr>
<tr>
<td>Los Angeles (urban)</td>
<td>City council, City staff, and Citywide coalition</td>
<td>Clean Up Green Up Ordinance</td>
<td>Community data ground-truthing</td>
</tr>
<tr>
<td>National City (suburban)</td>
<td>City council, City staff, and Community-based organizations</td>
<td>Environmental Justice Element</td>
<td>Meetings with decision-makers</td>
</tr>
<tr>
<td>Oakland (urban)</td>
<td>Planning Bureau and 12 Community-based organizations</td>
<td>EO Neighborhood Initiative</td>
<td>Year-long community engagement</td>
</tr>
<tr>
<td>Richmond (urban)</td>
<td>Advisory Committee and City staff</td>
<td>Community Health &amp; Wellness Element</td>
<td>Council-appointed committee of resident leaders</td>
</tr>
</tbody>
</table>
E. Partners

In addition to the partners listed here, the newly launched Bay Area Climate Action Mapping Project (https://www.bayareacclimateactionmap.org/) lists additional organizations actively working on climate action.

E.1 Public Sector

<table>
<thead>
<tr>
<th>Organization</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Area Regional Energy Network (BayREN)</td>
<td>Led by the Association of Bay Area Governments (ABAG), BayREN provides regional-scale energy efficiency programs, services, and resources for single-family and multi-family homes, and small and medium-size businesses. BayREN supports cities in developing reach codes, and local building departments in complying with the Energy Code through trainings, events, and compliance tools. A water bill savings program is launching in 2020. In San Mateo County, the program is administered by the County of San Mateo Office of Sustainability. <a href="http://www.bayren.org">www.bayren.org</a></td>
</tr>
</tbody>
</table>
| C/CAG | C/CAG is a council of governments consisting of the County of San Mateo and its 20 cities and towns. The organization deals with topics such as transportation, air quality, stormwater runoff, hazardous waste, solid waste and recycling, land use near airports, abandoned vehicle abatement, and issues that affect general quality of life. C/CAG supports several sustainability initiatives including:  
San Mateo County Energy Watch. A local government partnership between PG&E and C/CAG to promote energy efficiency in municipal and non-profit buildings. It is managed and staffed by the County of San Mateo Office of Sustainability. https://smcenergywatch.org/  
Congestion Management Agency. C/CAG serves as the Congestion Management Agency for San Mateo County to identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions. https://ccag.ca.gov/programs/transportation-programs/congestion-management/  
Sustainable Communities Strategy/Regional Transportation Plan. C/CAG is collaborating with local governments and regional agencies to develop a Sustainable Communities Strategy (SCS) in compliance with the requirements of SB 375. The SCS will facilitate more focused development in priority development areas near public transit stations. The aim of the San Mateo County SCS is to better integrate land use with public transportation in order to reduce GHG emissions. The San Mateo Countywide Transportation Plan was adopted by the C/CAG Board of Directors in February 2017. The Plan can be found online at: https://ccag.ca.gov/programs/countywide-transportation-plan/  
San Mateo County Energy and Water Strategy 2025. This Plan provides a comprehensive roadmap for addressing challenges in the energy and water sectors in San Mateo County through 2025. It was developed by the County of San Mateo Office of Sustainability and the City/County Association of Governments of San Mateo County (C/CAG) with extensive input from expert local stakeholders from other public agencies, community-based organizations, and the private sector.  
San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). The program is a partnership of C/CAG, each incorporated city and town in the County, and the County of San Mateo, which share a common National Pollutant Discharge Elimination System (NPDES) permit. The goal of the collaboration is to reduce the pollution carried by stormwater into local creeks, the San Francisco Bay, and the Pacific Ocean. Permittees developed Green Infrastructure Plans to prompt specific reductions in mercury and PCBs (polychlorinated biphenyls) from entering the Bay via stormwater by 2040. |

City/County Association of Governments of San Mateo County (C/CAG)
The Office of Sustainability (OOS) strives to improve the sustainability of the County’s operations and the greater community by administering programs and developing policies in the areas of renewable energy and energy efficiency, water conservation, alternative transportation, affordable housing, waste reduction, and greenhouse gas (GHG) emission reductions. OOS also leads the following regional collaborations:

**Climate Ready SMC.** Brings together leaders from across sectors and jurisdictions to foster collaboration and collectively find solutions to make San Mateo County climate ready. The Collaborative is facilitated by the County of San Mateo Office of Sustainability. The Collaborative seeks to help leaders from non-profit and community-based organizations local government, businesses, and other key partners. [https://www.smcsustainability.org/climate-ready](https://www.smcsustainability.org/climate-ready)

**Home for All Initiative.** Builds on the work and momentum of the Closing the Jobs/Housing Gap Task Force. Led by Supervisors Don Horsley and Warren Slocum, the Home for All Initiative is working to inspire community action and promote closure of the County’s 16:1 jobs/housing gap. The Initiative’s members include representatives from all sectors of the community and are focused on creating a future where everyone in San Mateo County has an affordable home. [https://homeforallsmc.org/](https://homeforallsmc.org/)

**Regionally Integrated Climate Action Planning Suite (RICAPS).** A set of tools and a collaboration of all 20 incorporated cities and the County in climate action planning and implementation. [https://smcenergywatch.org/local-governments/](https://smcenergywatch.org/local-governments/)

**Flood and Sea-Level Rise Resiliency District**

The Flood and Sea Level Rise Resiliency District is a coordinated, cross-jurisdictional collaborative to face impending coastal erosion, sea-level rise, and flooding threats as we look toward 2100. Comprised of the 20 incorporated cities, City/County Association of Governments, and the County of San Mateo, the purpose of this entity is to create a unified voice, to cost-effectively implement resilient infrastructure to face these challenges. The District initiates new countywide efforts to address sea-level rise, flooding, coastal erosion, and large-scale stormwater infrastructure improvements through integrated regional planning, project implementation and long-term maintenance. [https://resilientsanmateo.org](https://resilientsanmateo.org)

**ICLEI - Local Governments for Sustainability**

ICLEI is an international organization of local and regional governments that have made a commitment to sustainable development. They provide guides and frameworks that support climate action. [https://icleiusa.org/](https://icleiusa.org/)

**Local Government Commission (LGC)**

LGC works to build livable communities and local leadership by connecting leaders via innovative programs and network opportunities, advancing policies through participation at the local and state level, and implementing solutions as a technical assistance provider and advisor to local jurisdictions. [https://www.lgc.org/](https://www.lgc.org/)

**Peninsula Clean Energy (PCE)**

Peninsula Clean Energy (PCE) was launched collaboratively by the County of San Mateo and all 20 of its cities and towns in 2016 to help the environment through cleaner energy, while helping customers save money through lower rates. PCE currently offers two electricity options to all residents, businesses, and municipalities in San Mateo County. Customers are automatically enrolled in the ECOplus rate that consists of 50 percent renewable and 95 percent greenhouse gas-free energy and can “opt up” to the ECO100 rate that consists of 100 percent renewable energy that is Green-e certified. PCE has a stated goal of sourcing 100 percent of electricity from California Renewable Portfolio Standard (RPS) eligible renewable energy by 2025. PCE is also supporting programs that reduce GHG emissions and deliver benefits to San Mateo County communities. [www.peninsulacleanenergy.com](http://www.peninsulacleanenergy.com)
### E.2 Non-Profit Organizations

<table>
<thead>
<tr>
<th>Organization</th>
<th>Description</th>
</tr>
</thead>
</table>
| Acterra      | Acterra builds alliances between community residents, local government programs, and community-based organizations in low-income areas in San Mateo County to create resilience against the coming impacts of climate change. [https://www.acterra.org/](https://www.acterra.org/)
| Building Decarbonization Coalition | The Building Decarbonization Coalition unites building industry stakeholders with energy providers, environmental organizations, and local governments to help electrify California's homes and workspaces with clean energy. Through research, policy development, and consumer inspiration, the BDC is pursuing fast, fair action to accelerate the development of zero-emission homes and buildings that will help California cut one of its largest sources of climate pollution, while creating safe, healthy, and affordable communities. [www.buildingdecarb.org/](http://www.buildingdecarb.org/) |
| Business Council on Climate Change (BC3) | The Business Council on Climate Change (BC3) is a San Francisco-based multi-sector partnership dedicated to incubating, scaling, and sharing world-leading solutions to address climate change. It helps companies pool their buying power to move markets and improve the economics of sustainable purchasing decisions, share knowledge about sustainability programs that work, coordinate multi-company or multi-sector partnerships, and create opportunities for cross-sector dialogue to advance Bay Area climate policy. [https://www.bc3sfbay.org/] |
| GRID Alternatives | The nation's largest nonprofit solar installer, GRID develops and implements solar projects that serve low-income households and communities. The organization partners with affordable housing organizations, job training groups, government agencies, municipalities, utilities, tribes, and local communities to make solar a win for everyone. [https://gridalternatives.org/] |
| Joint Venture: Silicon Valley Network | Established in 1993, Joint Venture provides analysis and action on issues affecting the Silicon Valley economy and quality of life. The organization brings together established and emerging leaders—from business, government, academia, labor, and the broader community—to spotlight issues, launch projects, and work toward innovative solutions. Joint Venture is actively involved in Silicon Valley's regional response to climate change. It is engaged with dozens of regional and local public and private agencies, municipalities, businesses, and other stakeholders in programs and activities designed to reduce greenhouse gas (GHG) emissions, promote sustainable energy, and improve the quality of life for all. [www.jointventure.org] |
| Peninsula Interfaith Climate Action | Peninsula Interfaith Climate Action (PICA) is a Regional Working Group of California Interfaith Power and Light. To carry forward this local interfaith approach, PICA was formed in 2014 with members from about a dozen congregations from the San Francisco Bay Peninsula area, including Trinity Episcopal in Menlo Park and the Unitarian-Universalist Fellowship of Redwood City. PICA members work to reduce the carbon footprint at their facilities by sharing information and best practices on energy, water, and resource conservation. [https://www.interfaithpower.org/get-involved-3/pica/] |
| Rising Sun Center for Opportunity | Rising Sun runs Climate Careers, a summer youth employment and residential water and energy efficiency program in the Bay Area. Climate Careers hires young people (ages 15 to 22) to become Energy Specialists, serving their communities with a free Green House Call. Energy Specialists perform audits, install free energy and water saving devices, and provide personalized recommendations and education for further savings in the home. Climate Careers was designed to serve hard-to-reach residents including renters, non-English speaking households, and low- to moderate-income households. [https://risingsunopp.org/] |
| San Mateo County Association of Realtors (SAMCAR) | SAMCAR is a trade association organized to ensure professionalism, protect property rights, promote the ownership of real property, and help members achieve success. [https://www.samcar.org/] |
| San Mateo County Economic Development Agency (SAMCEDA) | SAMCEDA was founded in 1953 to promote business issues that enhance and sustain the economic prosperity of our region and its local communities. [https://www.samceda.org/] |
Sustainable San Mateo County (SSMC) | SSMC supports multiple programs to promote energy efficiency, alternative transportation, and education on sustainability concepts that focus on the intersections of the environment, economy, and social equity. SSMC’s core programs include an Indicators Report that has been produced annually since 1997 and the Sustainable San Mateo County Awards Event, which has been held annually since 1999. The most recent Indicators Report can be found online at: https://sustainablesanmateo.org/home/indicators/

Sustainable Silicon Valley (SSV) | SSV is a collaboration of businesses, governments, and non-governmental organizations that are identifying and addressing environmental and resource pressures in Silicon Valley. As its first initiative, SSV engages Silicon Valley organizations to work towards a goal of reducing regional carbon dioxide emissions 20 percent below 1990 levels by 2010. SSV’s Net Positive Bay Area 2050 goals are to: 1) produce more renewable energy than we consume, 2) sequester more carbon than we emit, and 3) optimize water resources to ensure water resilience. Their current strategy focuses on facilitating measure projects, education, events, and polices that deliver solutions by activating SSV’s member network to reach the Net Positive Bay Area goals. www.sustainablesv.org

Thrive, The Alliance for Nonprofits of San Mateo County | A robust, trusted network of 200+ nonprofit organizations, government entities, foundations, businesses, and community leaders with a shared commitment to strengthening the nonprofit sector, thereby improving the quality of life in San Mateo County. Thrive unites the voice and influence of nonprofits, helps build their capacity, and enables effective cross-sector collaboration. https://www.thrivealliance.org/
F. Summary of Funding Sources

For implementation of the CAP, Redwood City must evaluate strategies for financing climate protection actions and provide adequate, reliable, and consistent long-term program funding. This appendix provides an overview of available funding sources to help determine appropriate potential program funding sources and funding levels to support existing and new programs outlined in this plan. Other funding sources may be available that are not listed here.

F.1 Federal Funding

Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants program https://www.transportation.gov/BUILDgrants

Transportation Secretary Elaine L. Chao announced that in fiscal year 2020 over $1 billion will be available for transportation projects that “have significant local or regional impact.” Cities can apply for a BUILD grant to fund road, rail, transit, and port projects. In the first two years of the BUILD Grants Program, other cities in California were awarded grants for zero-emission, battery-electric buses and chargers, as well as roadway improvements to enhance walkability and bikeability.

F.2 State Funding


Since 1979, more than $399 million has been allocated to more than 850 recipients through ECAA Program Loans. The program offers loans with a one percent interest rate to finance energy efficiency improvements. The maximum loan amount is $3 million per application. Eligible projects include lighting system upgrades, pumps and motors, streetlights and LED traffic signals, energy management systems and equipment controls, building insulation, energy generating infrastructure including renewable and combined heat and power projects, HVAC equipment, water and waste water treatment equipment, and load shifting projects.

F.3 Utility Programs

Pacific Gas and Electric Company (PG&E) offers a full suite of energy efficiency rebates to support its customers in saving energy and money.

Rebates

For households:

For small and medium businesses:

For large businesses:
0% interest Financing

F.4 Other Funding Opportunities

American Forests Global ReLeaf Grant Program
http://www.americanforests.org/discover-american-forests/our-work/

American Forests is a non-profit organization founded in 1875 that promotes forest conservation. American Forest’s Global ReLeaf Program provides grants to fund tree-planting projects in urban and natural areas.

Large Landscape Audit
http://bawsca.org/conserve/programs/audits

BAWSCA and its participating member agencies offer this audit program to select large landscapes within the service area free of charge. This program includes the development and monthly distribution of landscape water budgets for selected accounts and actual large landscape surveys to assess landscape watering needs. A key component of the program is ongoing monitoring/tracking of actual water use and estimated water savings for the sites surveyed. For water conservation related questions, please call (650) 349-3000 or send an email to bawsca@bawsca.org. Also check with your local water company; some offer water audits for no charge.

Waste Audits by Recology
https://www.recology.com/recology-san-mateo-county/specialty-services/

Recology offers a free waste audit to its business customers. A Waste Zero Specialist will come to your facility to advise you on the size/type of bins you could use and make other recommendations to help you reduce the amount of waste generated. To make an appointment, call (650) 595-3900.
G. Adaptation Planning for Climate Impacts

Effective adaptation planning and management entails dealing with uncertainty. It is a long-term process that should allow immediate action when necessary and adjust to changing conditions and new knowledge. Redwood City plans to initiate an inclusive planning process that ensures the resulting actions are feasible and widely accepted. Adaptation will likely be an ongoing process of planning, prioritization, and specific project implementation.

Five important steps to effective adaptation planning are summarized below:

1. **Increase Public Awareness, Engage and Educate the Community**
   
   It is critical that the public understand the magnitude of the challenge and why action is needed. It is also important for the community to be aware of win-win opportunities that can improve quality of life, protect community members, and potentially generate more jobs. The planning process should be inclusive of all stakeholders. Local outreach campaigns are needed to promote awareness of the dangers of heat exposure, flooding, wildfires, and recommend low-cost and low-GHG adaptation strategies. These efforts should leverage similar efforts undertaken at the regional, state, and federal levels. The efforts should be inclusive of community organizations (especially those with socially vulnerable community members), and include community needs early on in the process.

2. **Assess Vulnerability**
   
   Understanding vulnerability to sea-level rise and other climate change impacts is critical to developing adaptation effective strategies. A detailed vulnerability analysis should be performed to assess potential climate change impacts to infrastructure and natural systems. Climate Ready SMC has developed an interactive map of climate impacts for all cities and unincorporated County. Assets and infrastructure can be overlaid with individual or multiple climate impacts to project their future vulnerability. The map includes critical infrastructure, socially vulnerable communities, and health facilities to allow for rapid vulnerability analysis. For example, cities can engage with city staff and community members to "ground-truth" data assumptions based on current observations. Often the people who live and work in the areas modeled can add valuable details, nuance, and missing information to assist Planners. Level of risk can be categorized in terms of likelihood of damage within the forecasting period and the severity of the damages. This allows planners to prioritize their response to climate change over time, known as the adaptation pathway approach. The vulnerability assessment can also provide a framework for agency and community education and participation, feed into other planning documents, and identify funding needs.

3. **Establish Goals, Criteria, and Planning Principles**
   
   Engage with stakeholders to establish planning priorities, determine decision criteria, and build community support for taking action. Include community-based organizations in this process to ensure that these priorities and criteria will reflect their needs as well. Rank physical and natural assets for preservation efforts. Where possible, look for situations where a mitigation action has adaptation co-benefits (e.g., planting trees to reduce urban heat islands while sequestering carbon and providing habitat).
4. **Develop Adaptation Plan**

Identify specific strategies, develop actions and cost estimates, and prioritize actions to increase local resilience of City infrastructure and critical assets, including community-identified and natural systems like wetlands and urban forests. Look for synergies between natural processes and engineering solutions. There is a continuum of strategies available to manage climate change impacts. An adaptation plan should include a prioritized list of actions (e.g., projects) with a timeline, capital expenditure plan, and framework for monitoring and adaptive management. Efforts should be made to integrate capital projects, existing infrastructure, emergency planning, and community services.

5. **Ongoing Monitoring and Adaptive Management**

Reassess climate change vulnerabilities on a regular basis and modify actions accordingly. This includes monitoring the effectiveness of current policies, strategies and actions, and keeping up with changing science, funding opportunities, and regulatory actions. When reassessing, consider the most updated science available, and the timing of the impact.

Climate Ready SMC has developed a set of climate adaptation strategies and tools for use in planning. These tools will continue to be updated as new ones are available, including tools for developing climate adaptation plans, incorporating climate adaptation into General Plans, Local Hazard Mitigation Plans, Capital Improvement Plans, and community engagement and social equity. For the latest information on climate impacts and adaptation strategies, visit the Climate Ready SMC site: [https://www.smcsustainability.org/climate-ready](https://www.smcsustainability.org/climate-ready).
Endnotes


21 Ibid.


27 Ibid.


30. Ibid.

31. Ibid.


42. Ibid.


64 Ibid.

65 Ibid.


76 Bergstrom D.


82 Ibid.

83 Bergstrom D.


1.0 STATEMENT OF POLICY

It is the policy of the City of Redwood City to:

- Institute practices that reduce waste through efficient operational procedures, environmentally friendly procurement, reuse, and recycling,
- Purchase products that minimize environmental impacts, toxics, pollution, and hazards to employee and community safety;
- Purchase products that reduce greenhouse gas emissions in their production, shipping, use and disposal; and
- Purchase products that include recycled content, are durable and long-lasting, conserve energy and water, use agricultural fibers and residues, use unbleached or chlorine free manufacturing processes, are lead-free and mercury-free, and use wood from sustainably harvested forests.

This policy is subject to the City’s Purchasing Ordinance and Purchasing Guidelines, as they may be amended from time to time.

2.0 BACKGROUND

The City of Redwood City recognizes the opportunity to serve as a community model for environmental leadership by incorporating environmental considerations into public procurement, reducing its burden on the local and global environment, removing unnecessary hazards from its operations, protecting public health, reducing costs and liabilities, and helping develop markets for environmentally responsible products. Further, the Environmentally Preferred Purchasing Policy aligns with the City’s Climate Action Plan waste measures, Goal NR-4 in the Natural Resources Element of the Redwood City General Plan, and Goals PS-4 and PS-5 of the Public Safety Element of the Redwood City General Plan. It aligns with and implements Policies PS-4.2 and PS-5.3 of the Public Safety Element and implements Programs NR-14 and NR-15 of the Natural Resources Element.
3.0 PURPOSE

This Policy is adopted in order to:

- Conserve natural resources,
- Minimize environmental impacts such as pollution and use of water and energy,
- Eliminate or reduce toxics that create hazards to employees and our community,
- Support strong recycling markets,
- Reduce materials that are landfilled,
- Increase the use and availability of environmentally preferable products that protect the environment,
- Identify environmentally preferable products and distribution systems,
- Reward manufacturers and vendors that reduce environmental impacts in their production and distribution systems or services, and
- Create a model for successfully purchasing environmentally preferable products that encourages the use of agricultural fibers, chlorine-free manufacturing processes, wood from sustainably harvested forests, and other environmentally friendly practices, and that encourages other purchasers in our community to adopt similar goals.

4.0 STRATEGIES FOR IMPLEMENTATION

4.1 Source Reduction

4.1.1 Institute practices that reduce waste, encourage reuse, and result in the purchase of fewer products.

4.1.2 Specify and purchase remanufactured products such as toner cartridges, tires, furniture, equipment and automotive parts, whenever possible.

4.1.3 Consider short-term and long-term costs when comparing product alternatives and preparing bid specifications. This includes evaluation of total costs expected during the time a product is owned, including, but not limited to, acquisition, extended warranties, operation, supplies, maintenance and replacement parts, disposal costs and expected lifetime compared to other alternatives.

4.1.4 Specify and purchase products that are durable, long lasting, reusable or refillable, and avoid purchasing one-time use or disposable products whenever possible.

4.1.5 Request vendors eliminate packaging and shipping materials or use the minimum amount necessary for product protection. Vendors shall be encouraged to take back packaging, shipping materials, and pallets for reuse.

4.1.6 Specify a preference for packaging that is reusable, recyclable or compostable, when suitable uses and programs exist.
4.1.7 Encourage suppliers of equipment, including but not limited to computers, monitors, printers, and copiers, to take back equipment for reuse or environmentally sound recycling when the City of Redwood City discards or replaces such equipment, whenever possible. Suppliers will be required to state their take back, reuse or recycling programs during the bidding process.

4.1.8 Promote electronic distribution of documents rather than printing or copying.

4.1.9 When producing paper documents, print and copy all documents on both sides to reduce the use and purchase of paper. Printers and copiers shall be set to default to duplex.

4.1.10 Reduce the number and type of equipment needed to perform office functions to save energy and reduce purchasing and maintenance costs. Eliminate unnecessary desktop printers, redundant network printers and reduce the number of fax machines leased or owned by the City of Redwood City. Consider lease or purchase of multi-function devices.

4.1.11 Ensure all imaging equipment is installed with energy and resource-efficient settings set as default.

4.2 Recycled Content Products

4.2.1 Specify and purchase products for which the United States Environmental Protection Agency (U.S. EPA) has established minimum recycled content standard guidelines, preferably those which contain the highest post-consumer content available, but no less than the minimum recycled content standards established by the U.S. EPA Comprehensive Procurement Guidelines. Products which have U.S. EPA minimum content standard guidelines include printing paper, office paper, janitorial paper, construction products, landscaping products, parks and recreation products, transportation products, vehicular products, miscellaneous products, and non-paper office products.

4.2.2 Specify and purchase multi-function devices, copiers and printers compatible with the use of recycled content and remanufactured products.

4.2.3 In accordance with California Public Contract Code, Sec. 10409, purchase re-refined lubricating and industrial oil for use in vehicles and other equipment, as long as it is certified by the American Petroleum Institute (API) as appropriate for use in such equipment. This section does not preclude the purchase of virgin-oil products for exclusive use in vehicles whose warranties expressly prohibit the use of products containing recycled oil.

4.2.4 When specifying asphalt, concrete, aggregate base or portland cement concrete for construction projects, use recycled, reusable or reground materials and only as specifically listed and permitted by the Redwood City
Engineering Standards, City-approved project construction, specifications, plans, and details, and other applicable procurement documents.

4.2.5 Specify and purchase recycled content traffic control products, including signs, cones, parking stops, delineators, channelizers and barricades and only as specifically listed and permitted by the Redwood City Engineering Standards, City-approved project construction, specifications, plans, and details, and other applicable procurement documents.

4.2.6 Ensure pre-printed recycled content papers intended for distribution that are purchased or produced contain a statement that the paper is recycled content and indicate the percentage of post-consumer recycled content.

4.3 **Energy Efficient and Water Saving Products**

4.3.1 Specify and purchase energy-efficient equipment with the most up-to-date energy efficiency functions. This includes, but is not limited to, high efficiency space heating systems and high efficiency space cooling equipment.

4.3.2 Replace inefficient interior lighting with energy-efficient equipment.

4.3.3 Replace inefficient exterior lighting, street lighting and traffic signal lights with energy-efficient equipment. Minimize exterior lighting where possible to avoid unnecessary lighting of architectural and landscape features while providing adequate illumination for safety and accessibility per replacement program master plan and as funding is available.

4.3.4 Specify and purchase U.S. EPA Energy Star certified products when available. When Energy Star labels are not available, specify and purchase energy-efficient products that are in the upper 25% of energy efficiency as designated by the Federal Energy Management Program.

4.3.5 Specify and purchase U.S. EPA WaterSense labeled water-saving products when available. This includes, but is not limited to, high-performance fixtures like toilets, low-flow faucets and aerators, and upgraded irrigation systems.

4.4 **Green Building Products and Practices**

4.4.1 Consider Green Building practices for design, construction, and operation as described in the LEED Rating Systems for all building and renovations undertaken by the City of Redwood City.

4.4.2 Specify the use of all-electric building construction and equipment for all building and renovations undertaken by the City of Redwood City as applicable and to the extent possible as stated in City-approved project construction specifications, plans and details, and other applicable procurement documents.
4.4.3 Reduce cement in City construction projects whenever possible and replace to the extent possible with alternative cementitious materials that have lower embedded emissions, such as fly ash, slag, and glass pozzolans, when these alternatives are available locally and cost no more than traditional cement and only as specifically listed and permitted by the Redwood City Engineering Standards, City-approved project construction specifications, plans and details, and other applicable procurement documents.

4.5 Landscaping Products and Practices

4.5.1 Employ Bay-Friendly Landscaping or sustainable landscape management techniques for all landscape renovations, construction and maintenance performed by the City of Redwood City or by contractors providing landscaping services for the City of Redwood City, including but not limited to integrated pest management, grasscycling (leaving grass clippings on areas after mowing, instead of bagging and collecting them), drip irrigation, computerized central irrigation linked with the local weather station, composting, and procurement and use of mulch and compost produced from regionally generated plant debris and/or food scrap programs.

4.5.2 Specify and select a Bay-Friendly Qualified Landscape Professional for landscape design and maintenance services. Training and qualifications shall include landscaping locally, landscaping for less to the landfill, nurturing the soil, conserving water, conserving energy, protecting water and air quality, and creating wildlife habitat.

4.5.3 Select plants to minimize waste by choosing species for purchase that are appropriate to the microclimate, species that can grow to their natural size in the space allotted them, and perennials rather than annuals for color. Native and drought-tolerant plants that require no or minimal watering once established are preferred.

4.5.4 Hardscapes and landscape structures constructed of recycled content materials are encouraged. Limit the amount of impervious surfaces in the landscape. Permeable substitutes, such as permeable asphalt or pavers, are encouraged for walkways, patios and public rights of way.

4.5.5 Create swales in all landscape renovations and construction performed by the City of Redwood City to assist in water run-off management. Develop outreach programs to instruct the public in the proper maintenance of swales.

4.6 Toxics and Pollution Prevention Products and Practices

4.6.1 Manage pest problems through prevention and physical, mechanical and biological controls when the City of Redwood City and its contractors maintain buildings and landscapes. The City of Redwood City will implement the adopted Integrated Pest Management (IPM) policy and practices using the
least toxic pest control as a last resort.

4.6.2 Specify and purchase products with the lowest amount of volatile organic compounds (VOCs), highest recycled content, low or no formaldehyde and no halogenated organic flame retardants when purchasing building maintenance materials such as paint, carpeting, adhesives, furniture and casework.

4.6.3 Specify and purchase, or require janitorial contractors to supply, industrial and institutional cleaning products that meet Green Seal or UL/EcoLogo certification standards for environmental preferability and performance.

4.6.4 Specify and purchase, or require janitorial contractors to supply, vacuum cleaners that meet the requirements of the Carpet and Rug Institute Green Label/Seal of Approval Program for soil removal, dust containment and carpet fiber retention for indoor air quality protection and performance cleaning standards. Require other janitorial cleaning equipment to be capable of capturing fine particulates, removing sufficient moisture so as to dry within 24 hours, operate with a sound level less than 70dBA, and use high-efficiency, low-emissions engines.

4.6.5 Specify and purchase paper, paper products, and janitorial paper products that are unbleached or are processed without chlorine or chlorine derivatives.

4.6.6 Prohibit the purchase of products that use polyvinyl chloride (PVC) such as, but not limited to, furniture and flooring. Exceptions are utility pipes and associated appurtenances as permitted in the Redwood City Engineering Standards and City-approved Building and Plumbing Codes.

4.6.7 Specify and purchase products and equipment with no lead or mercury whenever possible. For products that contain lead or mercury, the City of Redwood City should solicit those products with lower quantities of these metals and those vendors with established lead and mercury recovery programs. In addition, whenever lead- or mercury-containing products require disposal, the City of Redwood City will dispose of those products in the most environmentally safe manner possible. All fluorescent lamps and batteries will be recycled.

4.6.8 Specify and purchase personal computers, displays, imaging equipment and televisions that meet, at a minimum, all Electronic Product Environmental Assessment Tool (EPEAT) environmental criteria designated as “required” as contained in the IEEE 1680 family of Environmental Assessment Standards.

4.6.9 Specify and purchase office furniture that meets the California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation (BEARHFTI) and Department of Consumer Affairs standard Technical Bulletin 117-2013, or most current version, for testing upholstered furniture flammability without the use of flame retardant chemicals.
4.6.10 Specify and purchase commercial carpeting that meets NSF/ANSI 140 Standard for Sustainable Carpet Assessment, and require old carpet that is removed be recycled.

4.6.11 Specify and purchase non-carpet floor coverings that meet NSF/ANSI 332 Standard for Resilient Flooring including vinyl, linoleum and rubber flooring.

4.6.12 When replacing vehicles, consider less-polluting alternatives to diesel such as bio-based fuels, hybrids, electric batteries, and fuel cells, as available.

4.7 Bio-Based Products

4.7.1 Encourage the use of vehicle fuels made from non-wood, plant-based contents such as vegetable oils whenever practicable.

4.7.2 Use paper, paper products and construction products made from non-wood, plant-based contents such as agricultural crops and residues.

4.7.3 Use bio-based plastic products that are biodegradable and compostable, such as bags, film, food and beverage containers, and cutlery.

4.7.4 Specify and purchase compostable plastic products that meet American Society for Testing and Materials (ASTM) standards as found in ASTM D6400. Meet ASTM D6868 standards for biodegradable plastics used as coatings on paper and other compostable substrates.

4.7.5 Ask vendors to provide proof of compliance with ASTM standards for compostable, biodegradable and degradable plastic products upon request. One acceptable proof of compliance for compostable plastic products is certification by the Biodegradable Products Institute (BPI).

4.8 Forest Conservation Products

4.8.1 To the greatest extent practicable, do not procure wood products such as lumber and paper that originate from forests harvested in an environmentally unsustainable manner. When possible, specify and purchase wood products that are certified to be sustainably harvested by a comprehensive, performance-based certification system. The certification system shall include independent third-party audits, with standards equivalent to, or stricter than, those of the Forest Stewardship Council certification.

4.8.2 Encourage the purchase or use of previously used or salvaged wood and wood products whenever practicable.

5.0 FLEET PROCUREMENT

The City of Redwood City’s Climate Action Plan calls for aggressive greenhouse gas emissions reductions in government operations to meet and exceed State-mandated
emissions targets. The Fleet Division’s goal is to lead by example, cutting emissions by reducing gasoline and diesel usage in fleet vehicles and equipment. The primarily path to achieving these greenhouse gas reductions is through a policy of municipal fleet electrification, replacing gas- and diesel-powered vehicles and equipment with electric alternatives, with more fuel efficient and lower emission vehicles when suitable electric alternatives are not available, or retiring vehicles and equipment and not replacing them when operations allow. The priorities of the Sustainable Fleet Policy are outlined below.

5.0.1 Solicit and purchase the most fuel-efficient vehicles with the lowest emissions whenever possible.

5.0.2 Reduce vehicle size and weight whenever possible.

5.0.3 Reduce the number of vehicles by right-sizing the fleet whenever possible.

5.0.4 Replace diesel equipment with electric, hybrid, or gas-powered equipment whenever possible.

5.0.5 Transition to renewable diesel when it becomes competitively offered.

5.0.6 Provide education and outreach programs to all employees who use City vehicles.

5.0.7 Participate in regional efforts to procure electric vehicles, equipment, and infrastructure through collaborative initiatives.

5.0.8 Reduce waste and hazardous material waste by employing environmentally friendly, recycled-content, and biodegradable products whenever possible.

6.0 ROLES AND RESPONSIBILITIES

It is the responsibility of all City departments to promote the development and use of environmentally friendly products and services through the following activities:

6.0.1 Reviewing contracts, bids and specifications for goods and services to ensure that, whenever possible and economical, they are amended to provide for the expanded use of products and services that contain the maximum level of post-consumer reusable or recyclable waste / or recyclable content, without significantly affecting the intended use of the product or service.

6.0.2 Identifying new environmentally friendly products and services as well as improvements/changes in industry standards that may impact the environment.
6.0.3 Requiring the use of recycled materials and recycled products by incorporating them in bid specifications where practicable.

6.0.4 Purchasing from suppliers that provide environmentally friendly products and services or suppliers that are environmentally sensitive in their daily operations whenever possible.

6.0.5 Making suppliers aware of the City of Redwood City’s Environmentally Preferred Purchasing Policy.

6.0.6 Encouraging vendors, contractors and grantees to comply with applicable sections of this policy for products and services provided to the City of Redwood City.

6.0.7 Including businesses certified by the Bay Area Green Business Program in purchasing requests for products and services.

6.0.8 Seeking new suppliers and encouraging existing suppliers to review the manner in which their goods are packaged and working with suppliers in the areas of reduction and reuse of packaging materials.

6.0.9 Using cost/benefit analysis to arrive at the correct sourcing decision; one that remains economically practical, reflects effective purchasing practices and satisfies the requirements of the user department.

6.0.10 Utilizing the Sustainable Purchasing Checklist for City purchasing.

6.0.11 Developing tools to track goals, assist in identifying and financially justifying green products and services, make it easier to measure achievement of goals, and integrate green purchasing into everyday decisions.

6.0.12 Participating in training for implementing and improving the procurement of environmentally friendly products.

6.0.13 Informing employees of their responsibilities under this policy and providing them with information about recycled products and environmental procurement opportunities.

6.0.14 Creating and participating in a Citywide interdepartmental team such as a Sustainable Purchasing Committee or Green Team to promote implementation of the Environmentally Preferred Purchasing Policy, track policy adherence, suggest additional items to be included in the policy, and develop procedures to ensure that the departments can take advantage of environmentally friendly improvements in products, services and practices.

7.0 PRIORITIES
The City of Redwood City is committed to actions designed to conserve and protect the environment, and will continue to implement those actions whenever possible, economically feasible, and compliant with the requirements of local, State and Federal regulations.

7.0.1 The health and safety of community members and employees is of utmost importance and takes precedence over all other practices. Nevertheless, the City of Redwood City recognizes its duty to act in a fiscally responsible as well as a timely manner.

7.0.2 Nothing contained in this policy shall be construed as requiring the City of Redwood City, department, purchaser, or contractor to take any action that conflicts with local, state or federal requirements.

7.0.3 Nothing contained in this policy shall be construed as requiring a department, purchaser or contractor to procure products that do not perform adequately for their intended use, exclude adequate competition, risk the health or safety of employees and citizens, or are not available at a reasonable price in a reasonable period of time.

7.0.4 The City of Redwood City has made significant investments in developing a successful recycling system and recognizes that recycled content products are essential to the continuing viability of that recycling system and for the foundation of an environmentally sound production system. Therefore, to the greatest extent practicable, recycled content shall be included in products that also meet other specifications, such as chlorine free or bio-based.

8.0 IMPLEMENTATION

The Citywide interdepartmental team will provide implementation guidance to departments by providing sustainable purchasing requirements and recommendations, approved environmental standards and certifications, training, resources, and best practices to assist in fulfilling the intent of this policy. These tools will include the Sustainable Purchasing Checklist in Appendix A, a list of awarded contracts that meet the requirements and recommendations in the Sustainable Purchasing Checklist, and training for departments and suppliers.

8.1 Sustainable Purchasing Checklist

8.1.1 When preparing solicitation documents, refer to the Sustainable Purchasing Checklist in Appendix A to evaluate products and services.

8.2 Cost and Price Consideration

8.2.1 Procure environmentally friendly goods and services that meet Departmental performance standards and requirements at a competitive cost.

8.2.2 Consider short-term and long-term costs when comparing product alternatives
and preparing bid specifications, including the costs over the life of the product, including maintenance, operating, insurance, disposal, recycling, replacement, potential liability costs, and expected lifetime.

8.3 Bid Evaluation Preferences

8.3.1 Require successful bidders to certify in writing that the environmental attributes claimed in competitive bids are accurate. In compliance with State law, vendors shall be required to specify the minimum or actual percentage of recovered and post-consumer material in their products, even when such percentages are zero.

8.3.2 Upon request, buyers preparing the specifications for competitive bids must be able to provide justification for product choices that do not meet the environmentally preferable purchasing criteria in this policy.

9.0 PROGRAM EVALUATION

The Citywide interdepartmental team will provide a narrative report periodically to the Department Heads on the implementation of this policy.

9.1 Metrics and Benchmarking

9.1.1 The Citywide interdepartmental team will develop and implement a monitoring and tracking system as a tool to confirm compliance with this policy.

9.1.2 Departments will require vendors to supply data for performance tracking and evaluation of the City’s environmentally responsible purchasing program upon request.

9.1.3 Departments will compile records for producing an annual summary of the City’s environmentally responsible/sustainable purchasing actions and to evaluate the effectiveness in reducing the environmental impacts of City procurement, as feasible and practicable.

9.1.4 As feasible, the narrative report will include types, quantities, and dollar amounts of climate-friendly products and services purchased in the previous year and dollar amounts of conventional products and services, will identify and discuss instances where this policy is waived or its requirements found impracticable, and will highlight barriers to procurement of climate-friendly products and services.

9.2 Best Practices and Continual Improvement

9.2.1 As environmentally preferable products and best practices are continually evolving, the Citywide interdepartmental team will stay abreast of the latest and best practices to guide the City to be the most environmentally responsible
9.2.2 The Citywide interdepartmental team will review this policy every five years and recommend changes to further promote the goal of environmentally responsible purchasing.

10.0 DEFINITIONS

10.1 “American Society for Testing and Materials” means ASTM International, an open forum for the development of high quality, market relevant international standards use around the globe.

10.2 “Bay Area Green Business Program” is a partnership of governments and businesses that certifies the environmental performance of government agencies and businesses.

10.3 “Bay-Friendly Landscaping” means working with the natural ecosystems of the San Francisco Bay Area to foster soil health, to reduce runoff and pollution, prevent and reuse plant waste, and conserve water and other natural resources. Bay-Friendly Landscaping practices are described in the Bay-Friendly Landscape Guidelines, by StopWaste.

10.4 “Bio-Based Products” means commercial or industrial products (other than food or feed) that utilize agricultural crops or residues but does not include products made from forestry materials.

10.5 “Biodegradable plastic” means the degradation of the plastic must occur as a result of the action of naturally occurring microorganisms.

10.6 “Biodegradable Products Institute” (BPI) is a multi-stakeholder association of key individuals and groups from government, industry and academia, which promotes the use, and recycling of biodegradable polymeric materials (via composting). BPI does not create standards but certifies products that demonstrate they meet the requirements in ASTM D6400 or D6868, based on testing in an approved laboratory.

10.7 “Buyer” means anyone authorized to purchase or contract for purchases on behalf of this jurisdiction or its subdivisions.

10.8 “The Carpet and Rug Institute” (CRI) is the national trade association representing the carpet and rug industry. CRI has developed and administered the “Green Label” indoor air quality testing and labeling program for carpet, adhesives, cushion materials and vacuum cleaners. The “Green Label Plus” testing program incorporates additional requirements to meet California’s Collaborative for High Performance Schools low-emitting materials criteria.
10.9 “Compostable plastic” means plastic that is biodegradable during composting to yield carbon dioxide, water and inorganic compounds and biomass, at a rate consistent with other known compostable materials and leaves no visually distinguishable or toxic residues.

10.10 “Contractor” means any person, group of persons, business, consultant, designing architect, association, partnership, corporation, supplier, vendor or other entity that has a contract with the City of Redwood City or serves in a subcontracting capacity with an entity having a contract with the City of Redwood City for the provision of goods or services.

10.11 “Degradable plastic” means plastic that undergoes significant changes in its chemical structure under specific environmental conditions.

10.12 “EcoLogo” is a third-party, multi-attribute eco-labeling program founded by the Canadian government in 1988 and part of UL Environment since 2010. The Program compares products/services with others in the same category, develops rigorous and scientifically relevant criteria, and awards the EcoLogo to those that are environmentally preferable throughout their entire lifecycle.

10.13 “Electronic Product Environmental Assessment Tool” (EPEAT) is a procurement tool to help institutional purchasers in the public and private sectors evaluate, compare and select personal computers, displays, imaging equipment and televisions based on their environmental attributes.

10.14 “Energy Star” means the U.S. EPA’s energy efficiency product labeling program.

10.15 “Energy-Efficient Product” means a product that is in the upper 25% of energy efficiency for all similar products, or that is at least 10% more efficient than the minimum level that meets Federal standards.


10.17 “Forest Stewardship Council” is a global organization that certifies responsible, on-the-ground forest management according to rigorous standards developed by a broad variety of stakeholder groups.

10.18 “Green Seal” is an independent, non-profit environmental labeling organization. Green Seal standards for products and services meet the U.S. EPA’s criteria for third-party certifiers. The Green Seal is a registered certification mark that may appear only on certified products.

10.19 “Integrated Pest Management” is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of
cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

10.20 “LEED Rating System” means the most recent version of the Leadership in Energy and Environmental Design (LEED) Rating System, approved by the U.S. Green Building Council, and designed for rating new and existing commercial, institutional, and residential buildings.

10.21 “NSF/ANSI” means NSF International follows the American National Standards Institute (ANSI) standards development process. Standards are developed by joint committees (balanced stakeholder groups of public health, industry and user representatives).

10.22 “Organic Pest Management” prohibits the use and application of toxic chemical pesticides and strives to prevent pest problems through the application of natural, organic horticultural and maintenance practices. All pest control products shall be in keeping with, but not limited to, those products on the approved list of California Certified Organic Farmers (CCOF).

10.23 "Post-consumer Material" means a finished material which would normally be disposed of as a solid waste, having reached its intended end-use and completed its life cycle as a consumer item, and does not include manufacturing or converting wastes.

10.24 “Pre-consumer Material” means material or by-products generated after manufacture of a product is completed but before the product reaches the end-use consumer. Pre-consumer material does not include mill and manufacturing trim, scrap, or broke which is generated at a manufacturing site and commonly reused on-site in the same or another manufacturing process.

10.25 “Recovered Material” means fragments of products or finished products of a manufacturing process, which has converted a resource into a commodity of real economic value, and includes pre-consumer and post-consumer material but does not include excess resources of the manufacturing process.

10.26 “Recycled Content” means the percentage of recovered material, including pre-consumer and post-consumer materials, in a product.

10.27 “Recycled Content Standard” means the minimum level of recovered material and/or post-consumer material necessary for products to qualify as “recycled products.”

10.28 “Recycled Product” means a product that meets the City’s recycled content policy objectives for post-consumer and recovered material.
10.29 “Remanufactured Product” means any product diverted from the supply of discarded materials by refurbishing and marketing said product without substantial change to its original form.

10.30 “Reused Product” means any product designed to be used many times for the same or other purposes without additional processing except for specific requirements such as cleaning, painting or minor repairs.

10.31 “Source Reduction” refers to products that result in a net reduction in the generation of waste compared to their previous or alternate version and includes durable, reusable and remanufactured products; products with no, or reduced, toxic constituents; and products marketed with no, or reduced, packaging.

10.32 “U.S. EPA Guidelines” means the Comprehensive Procurement Guidelines established by the U.S. Environmental Protection Agency for federal agency purchases as of October 2007 and any subsequent versions adopted.

10.33 “Water-Saving Products” are those that are in the upper 25% of water conservation for all similar products, or at least 10% more water-conserving than the minimum level that meets the Federal standards.

10.34 “WaterSense” means a partnership program by the U.S. Environmental Protection Agency. Independent, third-party licensed certifying bodies certify that products meet EPA criteria for water efficiency and performance by following testing and certification protocols specific to each product category. Products that are certified to meet EPA specifications are allowed to bear the WaterSense label.
APPENDIX A

CHECKLIST FOR SUSTAINABLE PURCHASING

Sustainable purchasing involves the critical evaluation of products, services and processes that move the City toward procurement decisions that provide the best value, i.e. total cost of ownership with the lowest environmental and social impacts. Wherever possible, prepare solicitation documents that specify products that have attributes or qualities that can be measured favorably against the following checklist.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Product Certification</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Has the product/service been certified by an independent organization such as EcoLogo, Energy Star, or LEED?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Are there unbiased studies of the environmental attributes of this product?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Are pre-established environmental standards available?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Performance Testing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Is it possible to test the product/service prior to purchase?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Does the product meet the required performance specifications?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Waste Reduction</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td><em>Reduce</em></td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Is this purchase necessary?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can demand for the item be aggregated amongst multiple users?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can a service be used to meet the need?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>How much waste is generated by the product during its use and disposal?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can this waste be minimized?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>What is the cost of disposal arrangements?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Reuse</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can a used or refurbished item meet the requirement?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can the product be disassembled for reconditioning and reuse?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Recycle</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can the item be recycled at end of life?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can waste be source separated on site and recycled?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Do appropriate local facilities exist for recycling?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Does the supplier/manufacturer offer take-back programs for reuse or recycling?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Can this reuse or recycling be verified?</td>
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<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Will consumables (such as toner cartridges) be accepted for recycling?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>If there is hazardous waste involved, can a certified recycler be engaged to reclaim or recycle material?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NA</th>
<th><strong>Recycled Content &amp; Renewable Resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Does the product include post-consumer recycled content?</td>
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<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>What type and what percentage of recycled material does the product contain?</td>
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<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Does the product contain reconditioned parts?</td>
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<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Is the product made from renewable resources?</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Is the product reusable or does it contain reusable parts?</td>
</tr>
<tr>
<td>Category</td>
<td>Question</td>
<td></td>
<td></td>
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<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Energy and Resource Efficiency</td>
<td>Does this product make efficient use of resources and energy throughout its lifecycle?</td>
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<tr>
<td></td>
<td>Is it made with resource-saving materials or processes?</td>
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<tr>
<td></td>
<td>What are the operational costs of the product, such as energy or water, over its life?</td>
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<td></td>
<td>Does the product have any energy, water or fuel saving features such as “sleep mode”?</td>
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<td></td>
<td>Are there clear instructions on how to use the product to achieve the maximum efficiencies?</td>
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<tr>
<td></td>
<td>How does it compare to its competitors in terms of resource efficiency?</td>
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<tr>
<td>Hazardous Materials and Volatile Organic Compounds (VOCs)</td>
<td>Does the product require Safety Data Sheets (SDS)s?</td>
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<tr>
<td></td>
<td>Does the supplier offer a non-hazardous equivalent for this product?</td>
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<tr>
<td></td>
<td>Does the product release VOCs and is there a suitable alternate that generates lower emissions?</td>
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<tr>
<td></td>
<td>Where hazardous waste is involved, can a certified recycler be engaged to reclaim or recycle material?</td>
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<tr>
<td>Social Responsibility</td>
<td>Do social responsibility standards exist for the manufacture of the product?</td>
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<tr>
<td></td>
<td>Does the product meet relevant social responsibility standards?</td>
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<tr>
<td>Packaging</td>
<td>Is packaging necessary to protect the product?</td>
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<td></td>
<td>Can the product be packaged in bulk if more than one is required?</td>
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<td></td>
<td>Is the packaging reusable or does it contain reusable parts? Is it recyclable?</td>
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<td></td>
<td>Can the packaging be returned to the supplier?</td>
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<td></td>
<td>Is the packaging made from renewable resources?</td>
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<tr>
<td></td>
<td>Does the packaging material contain post-consumer recycled materials?</td>
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<tr>
<td>Warranties and Durability</td>
<td>Is the product durable?</td>
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<tr>
<td></td>
<td>What is the expected useful life span of the product?</td>
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<tr>
<td>Maintenance</td>
<td>Is the product designed for easy maintenance and repair?</td>
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<td></td>
<td>Are maintenance and replacement parts readily available and reasonably priced?</td>
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<tr>
<td></td>
<td>Is the product easy and cost effective to upgrade or repair?</td>
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<tr>
<td>Indirect Costs</td>
<td>What indirect costs are associated with the good or service (e.g. energy efficient IT equipment will produce more heat causing the building’s air conditioning system to work harder and increase electricity costs)?</td>
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<td></td>
<td>Are additional administrative costs involved?</td>
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