Midpeninsula Regional Open Space District

R-20-80
Meeting 20-16
July 22, 2020

AGENDA ITEM 10

AGENDA ITEM

Consideration of a Letter Commenting on the Proposed Redwood City Climate Action Plan

GENERAL MANAGER'S RECOMMENDATION

Receive a Board Member request to consider a comment letter addressed to Redwood City regarding their proposed Redwood City Climate Action Plan.

SUMMARY

On July 1, 2020, Board President Karen Holman received a request from the Sierra Club Loma Prieta Chapter to participate as a signatory on their comment letter regarding the proposed Redwood City 2030 Climate Action Plan (City CAP) (Attachment 1). President Holman requested placing this item on the agenda for Board consideration. If approved by the full Board, Midpeninsula Regional Open Space District (District) may sign onto the group sign-on letter (Attachment 2) or may consider sending its own letter (Attachment 3). Redwood City will be considering adoption the proposed City CAP at their July 27, 2020 Redwood City Council Meeting (Attachment 4).

DISCUSSION

Staff has reviewed the advocacy points contained within the Sierra Club sign-on letter and evaluated it for consistency with both the District's Legislative Program (Attachment 5) and Climate Action Plan (District CAP) (Attachment 6).

District Climate Action Plan Consistency:
The main goal of both the District CAP and the City CAP is to reduce greenhouse gas emissions. A secondary goal is adaptation planning, which, while common to both plans, looks very different for an open space agency than it does for a city. The District's adaptation planning efforts are summarized in the District CAP as follows:

> "Going forward, adaptation and resilience efforts will focus on assessing the vulnerability of natural resources to climate change, identifying land management strategies to increase resilience, continuing biological monitoring, and implementing restoration projects. This work is closely tied to much of what the Natural Resources Department manages, including prescribed and wildland fire, forest restoration, special status species, integrated pest management, and ongoing monitoring and restoration."

The Sierra Club letter calls on Redwood City to focus adaptation measures on protecting vulnerable people and infrastructure. Though certain proposed measures would protect open

space, such as restoring wetlands, limiting development on the shoreline, or adjusting land use policies in the wildland-urban interface, the stated purpose of these measures is primarily to protect suburban communities, avoid new construction within city boundaries that would be at risk from flooding or fire, and improve the resiliency of existing infrastructure.

Redwood City lies within District boundaries, however, there are currently no District owned or managed properties within Redwood City. The city boundary abuts a portion of Edgewood Road between Edgewood County Park and Pulgas Ridge Open Space Preserve. The City CAP is specifically focused on city-based resiliency and adaptation measures. These measures can help protect District lands by reducing city-wide greenhouse gas emissions that would aid in dampening the severity of climate change impacts at a regional scale, as well as reduce potential for fire ignition at the wildland-urban interface in city areas east of Pulgas Ridge Open Space Preserve.

The District's CAP (Action Item 6 – Education), calls for the District to "Support and influence regional and state climate change-related policies and funding allocations." Since GHG emissions result in regional impacts, the City CAP may be considered a "regional policy" of District interest.

District Legislative Program Consistency:
The primary focus of the Legislative Program is to support the District's mission and forward annual Board-adopted goals. To this end, there are limited references to policy positions directed towards the built environment.

- **Goal 1: Promote, establish, and implement a common environmental protection vision with partners, Position #4:** Promotes the use of urban infill and urban growth boundaries to avoid sprawl and prevent pressure on developing open spaces and further encroachment into the wildland-urban interface and open space buffer areas.

Several provisions requested in the original sign-on letter fall outside of the Legislative Program. However, the reference to prohibiting development at the Redwood City Salt Ponds under Shoreline Adaptation is consistent with the June 9, 2010 Board resolution opposing the proposed redevelopment of the 1,436-acre Cargill-owned salt pond. (Attachment 7). Also, the request to "Adapt to flooding and sea level rise by restoring wetlands and prioritizing nature-based solutions, while creating recreational opportunities for the City and surrounding communities" can be considered consistent with Goal 2, Position #4:

- **Protect the positive environmental values of open space lands:** Supports effective and comprehensive Districtwide, regional and statewide measures that respond to sea level rise and other effects of climate change and enhance ecological and community resilience.

With regard to fire, the most applicable District policy position for the Redwood City CAP would be under Goal 2, Position #1:

- **Protect the positive environmental values of open space lands:** Ensures reasonable setback requirements that allow minimum defensible space clearances to be met by private property owners to prevent catastrophic fires that damage habitats and pose a high public safety hazard.

Based on the analysis above, the Board of Directors may wish to submit a comment letter to Redwood City focused on the policy positions adopted as part of the annual Legislative Program. Please see Attachment 3 for Board consideration of such a Comment Letter.

FISCAL IMPACT

No fiscal impact is anticipated from a decision on this item.

BOARD COMMITTEE REVIEW

Due to the time-sensitive nature of the item there has been no prior Board Committee review.

PUBLIC NOTICE

Public notice was provided as required by the Brown Act.

CEQA COMPLIANCE

This item is not a project subject to the California Environmental Quality Act.

NEXT STEPS

If the Board decides to sign onto the advocacy letter, staff will communicate with the letter's author to ensure it is properly represented on the letter.

Attachments:

1. Copy of email request from the Sierra Club, Loma Prieta Chapter
2. Sign-on letter template for Redwood City Climate Action Plan
3. Draft District-only Comment Letter for Board Consideration
4. Draft Redwood City Climate Action Plan
5. Adopted District Legislative Program
6. Adopted District Climate Action Plan
7. June 9, 2010 Board resolution opposing the proposed redevelopment of the 1,436-acre Cargill-owned salt pond

Responsible Department Head:
Ana Ruiz, General Manager

Prepared by:
Brian Malone, Assistant General Manager

From: Jennifer Chang Hetterly < [redacted] >
Subject: Joint letter on Redwood City Climate Action Plan Update
Date: July 1, 2020 at 12:45:42 PM PDT
To: Karen Holman < [redacted] >

Dear Karen,

I am writing to request your organization's support on the joint statement below, urging Redwood City to take action to protect the community from the impacts of climate change in their upcoming Climate Action Plan Update for 2030.

The Redwood City Council is considering adoption of its new Climate Action Plan on July 27. This plan will determine what the City is going to do to prepare for climate change over the next decade. Although Redwood City is already experiencing the impacts of climate change, **the current draft does not include any measurable or actionable steps to adapt to sea level rise, flooding, or other climate risks like wildfires.** Steps must be taken to prepare Redwood City for the climate threats that are already here.

Please consider joining Redwood City Neighbors United, Green Foothills, Sierra Club Loma Prieta Chapter, Save The Bay, and a growing list of organizations in signing the joint statement included below.

Final sign-ons are requested by Friday, July 10. If you are able to sign on please reply to Maryann Tekverk at Save The Bay (mtekverk@savesfbay.org) with confirmation and a high quality logo. If you have questions, please reach out via email or phone at (208) 755-3962.

Thank you,

Jennifer Chang Hetterly
Sierra Club Loma Prieta Chapter

[Logos – organizational sign-ons]

Joint Statement to Redwood City Council commenting on Climate Action Plan Update 2030

Released [DATE]

The Redwood City Climate Action Plan (CAP) Update for 2030 represents a critical opportunity for the City to set a course for climate adaptation locally and establish a standard in the region for resilient cities.

We applaud Redwood City's work to reduce greenhouse gas (GHG) emissions, including efforts to ensure that active and mass transportation are expanded and investing in bicycle, pedestrian, and transit infrastructure, and safety programs. Redwood City should continue to lead by establishing ambitious goals that surpass California state standards for GHG emissions.

In addressing adaptation to climate change, however, Redwood City has sadly fallen far short of where the City should be by this point. Climate change impacts are already occurring in Redwood City and surrounding communities. Redwood City should lead the Bay Area in adaptation as well as in emissions reduction by addressing the risks that Redwood City residents face from sea level rise, shoreline and inland flooding, extreme heat, wildfires, and other climate impacts.

Redwood City must also address climate equity in its 2030 CAP Update. Climate adaptation planning can either exacerbate existing disparities or help make our region more equitable through community-centered planning and protections against displacement. The ICLEI (Local Governments for Sustainability) states that 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."

Redwood City's first CAP, completed in 2013, committed to develop "recommendations for the City's climate adaptation planning process," including engaging with stakeholders to "establish planning priorities, determine decision criteria, and build community support for taking action." The undersigned organizations believe such an approach would have resulted in a comprehensive plan for adapting to climate change over the next decade.

In the CAP 2030 Update, Redwood City should include specific and measurable climate adaptation actions to protect communities, homes, businesses, infrastructure, and the health of the San Francisco Bay. The 2030 CAP should include:

Shoreline Adaptation – Develop a shoreline vulnerability and opportunity assessment which includes the following measures:

- Adapt to flooding and sea level rise by restoring wetlands and prioritizing nature-based solutions, while creating recreational opportunities for the City and surrounding communities.
- Develop a shoreline management plan with associated adaptation strategies using available resources including the San Francisco Bay Shoreline Adaptation Atlas.
- Prohibit new development on undeveloped baylands at risk of flooding based on sea level rise projections, including the Redwood City Salt Ponds.
- Protect public safety and critical infrastructure by requiring that new development in developed areas, and infrastructure supporting new development, are designed to be resilient based on mid-century sea-level rise projections and flooding projections due to major storm events.
- Develop guidelines and standards for infrastructure and buildings to be flood-proofed or capable of accommodating temporary flooding.
- Integrate climate change impacts into City planning, operations and capital improvement program project design and evaluation.

Green Stormwater Infrastructure (GSI) – Integrate GSI into upland and upstream areas to alleviate localized flooding and urban heat island effect. Strategies should include increasing tree canopy and installing rain gardens, bioretention swales, regional stormwater facilities, and similar strategies in the public right-of-way and on private development of all sizes. In addition to improving climate resilience, these strategies reduce polluted stormwater discharge into the creeks and Bay.

Mitigate Wildfire Risk – Reduce wildfire risk in the urban-wildland interface by strengthening wildfire scenario planning, building codes, fuel management, and fire protection plans for development in fire-risk areas. Develop new land use policies and programs to prevent and reduce development in the Wildland Urban Interface and to harden existing homes to survive wildfires.

The public deserves a CAP that prepares Redwood City and San Mateo County for climate change over the next decade. In order to protect our communities and taxpayers from disastrous effects of hesitancy and inaction, please include these comprehensive adaptation measures in the 2030 CAP Update now, to equitably protect our communities from flooding and other climate change-associated threats.

Organizations

[sign ons will be listed here]

ATTACHMENT 7

Midpeninsula Regional OpenSpace | Midpeninsula Regional Open Space District

DATE

Redwood City Council
publiccomment@redwoodcity.org

RE: Comments on the Redwood City Climate Action Plan

Dear Redwood City Council,

The Midpeninsula Regional Open Space District (Midpen) supports the Redwood City Climate Action Plan (CAP) Update for 2030, representing a critical opportunity for Redwood City to set a course for local climate adaptation and establish a regional standard for resilient cities. We applaud Redwood City's work to reduce greenhouse gas (GHG) emissions, including the proposed expansion and new investments in multi-modal/bicycle, pedestrian, and transit infrastructure, and safety programs. We encourage Redwood City to continue leading by establishing ambitious goals that surpass California state standards for GHG emissions.

In Section 1.4.1 of the proposed Redwood City Climate Action Plan, under Sea Level Rise and Flooding, there is an opportunity to further mitigate the effects of sea level rise by expanding wetlands preservation and restoration. The ***preservation and restoration of the Cargill Redwood City Salt Ponds*** represents the most significant opportunity for Redwood City to meet its sea level adaption goals. Midpen requests that the goal of restoring the Redwood City Salt Ponds be specifically added to the CAP update. This goal is well aligned with the Sea Change San Mateo County Initiative and consistent with current and potential projects supported by the San Mateo County Flood and Sea Level Rise Resiliency District.

To further strengthen Section 1.4.1, Midpen requests your consideration for the inclusion of the following elements into the CAP:

- Restore wetlands and prioritize nature-based solutions to expand community resilience to sea level rise and flooding events; note that these areas also support outdoor recreational opportunities as an additional public benefit.
- Develop a shoreline management plan with climate change adaptation strategies that draw upon available resources, including the San Francisco Bay Shoreline Adaptation Atlas.
- Prohibit new development on undeveloped bay lands at risk of flooding based on sea level rise projections.

Section 1.4.2 outlines the work Redwood City has been undertaking to minimize the risk of wildfire for its neighborhoods in the wildland-urban interface. Midpen commends the collaborative work Redwood City has pursued with the County and other stakeholder entities to educate the public about wildfire risk and encourage defensible space adoption. To further reduce wildfire risk, Midpen requests consideration for the following:

- Strengthen wildfire scenario planning, building codes, fuel management, and fire protection plans for new development in fire-risk areas.
- Develop new land use policies and programs that ensure defensible space buffers of structures within private property for private parcels that adjoin wildland areas, parks, and open spaces.
- Include hardening requirements as part of building codes for existing homes that seek permits for additions, demolitions, and remodels to ensure that affected structure can survive a potential wildfire.

Midpen values the work of our partners in limiting urban sprawl and encroachment into the wildland-urban interface, preserving open space, and adapting to sea level rise with nature-based solutions. Undeveloped bay lands and forested hillsides represent unique opportunities to enhance local and regional climate resiliency, while protecting iconic San Francisco Bay Area views, preserving fragile habitat, and providing new access opportunities for people to experience nature close to home – all of which enhance the quality of life for Bay Area residents. Thank you for your consideration.

Sincerely,

Karen Holman
President, Midpeninsula Regional Open Space Board of Directors

cc: Midpeninsula Regional Open Space District Board of Directors

City of Redwood City

2030 Climate Action Plan

July 27, 2020

Prepared in collaboration with City/County Association of Governments of San Mateo County

Acknowledgements

Redwood City Council
Diane Howard, Mayor
Shelly Masur, Vice Mayor
Alicia C. Aguirre, Council Member
Ian Bain, Council Member
Janet Borgens, Council Member
Giselle Hale, Council Member
Diana Reddy, Council Member

Environmental Initiatives Sub-Committee
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Kirk Gharda, Management Analyst Intern

This climate action plan was developed using the Regionally Integrated Climate Action Planning Suite (RICAPS) funded by a grant from the Bay Area Air Quality Management District (BAAQMD) and by California utility customers, administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission and with matching funds provided by the City and County Association of Governments of San Mateo County (C/CAG).

RICAPS Project Consultant: DNV GL

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EXECUTIVE SUMMARY

The City of Redwood City's 2030 Climate Action Plan (CAP) is designed to be our community's roadmap for addressing climate change and for increasing our resiliency in adapting to the climate change impacts we are already experiencing today and will continue to face in the future. The compounded impacts of increased emissions have begun to manifest in the forms of sea level rise, longer wildfire seasons, extreme heat events, air pollution, an increase in the prevalence and strength of storms, and a decrease in the reliability of the water supply; all of which impact Redwood City directly. In California, aggressive climate change goals are set by the State to curb these emissions, with local governments implementing much of the policy.

The City of Redwood City has taken a significant step toward a more sustainable future with the 2030 Climate Action Plan. This updated CAP builds on the efforts and achievements of the 2013 CAP by identifying actions and opportunities to reduce GHG emissions within the community and City operations to meet and exceed the State target of 40 percent below 1990 levels by 2030, with a target of 50% below 2005 levels by 2030. From 2020 to the target year of 2030, this Plan recommends that the City:

- Reduce emissions associated with single-occupant vehicle transportation by focusing on mode shifts to walking, biking, and using transit; reducing trips altogether; and promoting the switch to electric vehicles (EVs).

- Reduce emissions associated with the built environment by focusing on shifting to renewable energy sources through our Community Choice Aggregation program, Peninsula Clean Energy (PCE), and new building requirements for solar installations; improving building energy efficiency in our codes and standards; switching from natural gas to electricity in our buildings; and promoting energy efficiency and water conservation in our homes and businesses.

- Reduce emissions associated with solid waste by focusing on reducing the amount of material we send to landfill through increased composting and recycling, food rescue and recovery, and materials reduction and reuse.

- Address emissions already in the atmosphere by focusing on composting and tree planting projects for sequestration and adaptation planning for sea level rise and flooding, wildfires, extreme heat and storm events, drought, and water supply adequacy.

The Climate Action Plan calls for 33 quantifiable emissions reduction measures for Redwood City to achieve the 2030 target. These measures were selected from a set of 47 measures developed for jurisdictions in the San Mateo County region by the City and County Association of Governments (C/CAG) and promoted through the countywide Regionally Integrated Climate Action Planning Suite (RICAPS) initiative. A summary table of the measures is provided on pages 19 and 20 in Chapter 2.

The City of Redwood City is poised to reap the benefits of a clean energy economy, with policies that can increase the demand for local green jobs. While an important first step, this Plan will remain a living document, to be updated as technology and policies progress, to support the City's efforts to manage GHG emissions for a sustainable future for all.

1. Climate Action Strategies

The City of Redwood City is pleased to present the following Climate Action Plan (Plan). This Plan is designed to be a roadmap for our community's response to the challenges posed by climate change. Redwood City has committed to taking steps to reduce our emissions, implementing current environmental programs and services – and creating new ones – that support our community and families in doing the same.

This Plan describes the measures the City is taking to lead by example in reducing communitywide GHG emissions and recommends new measures that will make our municipal government an even more efficient and resource conservation-minded organization. The Plan calls for continuing to implement, monitor, and evaluate a number of communitywide programs that can effectively reduce our emissions, such as the "smart" development patterns put forth in the City's 2010 General Plan, our energy efficiency and water conservation programs and incentives, and our Complete Streets program. It outlines a schedule for reviewing and updating measures the City is currently taking, including our implementing our Community Choice Aggregation program, Green Building Codes and Standards, Citywide Transportation Plan, and Composting, Recycling, and Solid Waste Ordinances, not only to increase their effectiveness in reducing emissions, but also to better meet the changing needs of the City's businesses and residents. Finally, the Plan outlines a set of measures for the City to consider undertaking in the future, as we assess our progress toward meeting our emissions targets over time.

The sections below describe 33 specific measures to reduce Redwood City's GHG emissions to 50 percent below 2005 levels by 2030. The measures are divided into the major emission sectors: Energy used in the built environment, transportation and mobile equipment emissions, and emissions associated with solid waste. Certain measures aim to reduce emissions from the community at large, while other measures focus specifically on municipal operations. All measures are assumed to lead to specific, quantifiable reduction of GHG emissions, except for the supporting measures such as inventorying emissions and updating the Plan. The final section introduces adaptation planning, which is the next step after climate action planning.

1.1 Energy

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 to 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 Peninsula Clean Energy's (PCE) 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.

The following section identifies the City's General Plan goal and describes five municipal measures to encourage renewable energy, as well as continuing to promote energy efficiency, in both new and existing municipal facilities and operations.

1.1.1 Municipal Energy Measures

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. 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. 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.

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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EM-1	Community Choice Aggregation: Municipality	Continue to provide 100% renewable electricity to municipal facilities.	-1,142
EM-2	Solar on Municipal Facilities	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.	-146
EM-4	Energy Efficiency in Municipal Buildings	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.	-373
EM-6	Energy Efficient Street Lighting	Continue LED street light replacement program and replacement of parks and parking lot lighting.	-112
EM-7	Environmentally Preferred Purchasing Policy: Energy	Implement a sustainable purchasing policy that emphasizes the purchase of ENERGY STAR certified equipment – appliances, electronics, etc.	-8

1.1.2 Community Energy Measures

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.

This section describes the communitywide measures that will promote clean energy and renewable energy production, alongside energy and water efficiency in both new and existing residential and commercial buildings.

Community Choice Aggregation and Local Renewable Energy

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EC-1	Community Choice Aggregation: Community	Continue to provide renewable electricity and promote “opting up” to PCE’s ECO100 (100% renewable) service.	-55,042
EC-2	Solar Incentives	Provide incentives for solar installation through Bay Area SunShares Program or others.	-5,778

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 also calls for adopting building reach codes effective in 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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EC-5	Commercial Energy Efficiency Programs	Promote participation in commercial energy efficiency programs and demand response programs offered by SMC Energy Watch and PG&E – including PGE's appliance rebates, 0% energy efficiency financing and demand response programs. Encourage commercial energy audits.	-491
EC-6	Residential Energy Efficiency Programs	Promote participation in residential energy efficiency programs, including BayREN's Home Upgrade program and PG&E's efficient appliance rebates. Encourage residential energy audits.	-860
EC-8	Commercial Energy Conservation Program	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 benchmarking by registered energy assessors.	-997
EC-9	Residential Energy Conservation Program	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 by registered energy assessors.	-696
EC-10	Green Building Policy: All Electric	Update building code to promote the construction of all-electric new buildings.	-21,006
EC-11	Electric Panel Upgrade Incentives	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.	-17,930
EC-12	Microgrid Demonstration Projects	Identify microgrid demonstration project site. Provide education and outreach to stakeholders on the multiple benefits of microgrids, including reliability, cleaner energy and cost savings.	-107
EC-13	Solar + Battery Storage Promotion	Provide education, outreach, and incentives to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.	-3,451

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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
A-1	Green Business Program	Promote San Mateo County Green Business program and set goals for participation.	-294

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.

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

Indoor and Outdoor Water Use Ordinances

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EW-1	Water Conservation Programs	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).	-403
EW-2	Enforce Water Efficient Landscape Ordinance	Enforce Water Efficient Landscape Ordinance.	-172

1.2 Transportation and Land Use

In 2005, 51 percent of Redwood City's emissions stemmed from transportation. 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. The following sections identify relevant General Plan goals and describe the municipal and community measures that will address transportation emissions.

1.2.1 Municipal Transportation Measures

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.

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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
TM-1	Municipal Fleet Electrification Policy	Establish policy requiring the prioritization of electric vehicles and mobile equipment.	-109
TM-3	Commute Alternatives Program: Municipal	Continue commute alternatives program including pre-tax commuter benefits, transit subsidies, and carpool program.	-4

1.2.2 Community Transportation and Land Use Measures

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.

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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
TL-1	Smart Growth Development Policy	Continue smart growth policy that prioritizes infill, higher density, transportation-oriented and mixed-use development.	-4,228
TL-2	Walkable/Bikeable Streets	Modify landscape to make walking and biking more desirable. Install bike lanes, bike parking, traffic calming measures, beautification, etc.	-5,212
TL-4	Parking Policies Promoting Public Transit, Biking, and Walking	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.	-9,695
TL-5	Safe Routes to School Program	Support the City's Safe Route to Schools program by investing in enhancing bike trails and safe pedestrian routes to local schools. Promote the program to increase volunteer participation.	-197

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

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
TL-3	Car/Bike Share Promotion	Develop policies and incentives that attract bike and car sharing companies to establish service.	-810
TL-6	Expand Local Shuttle Service	Expand local shuttle service routes and/or frequency of service within city limits to connect areas not covered by public transit.	-178
TL-7	Local Farmers' Markets Promotion	Encourage community farmers' markets with locally-grown food and community gardens to reduce associated VMT.	-23

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.

Increase Electrically-Powered Transportation and Mobile Equipment

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
TL-8	Electric Vehicle Ownership Programs	Establish community target for adoption rate of electric vehicles and explore strategies to reduce off-road and mobile equipment emissions.	-2,321
TL-9	Expand EV Charging Infrastructure	Expand EV charging infrastructure in public properties, multi-unit dwellings and workplaces.	-32,522
TL-10	Green Building Policy: EV charging	Update building code to increase the mandated percentage of parking spaces accommodating electric vehicle charging equipment and of parking spaces devoted to clean air vehicles.	-3,650
TL-11	Electric Bikes/Scooter Share Promotion	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.	-3,281

1.3 Solid Waste

Reducing the amount of waste deposited into the landfill through material reuse, reduction, composting and recycling is an important strategy Redwood City can initiate to reduce GHG emissions. Some landfills capture as much methane as possible and combust it for electricity generation such as RethinkWaste's Organics-to-Energy Pilot. However, for many landfills, much of the methane leaks to the atmosphere, a primary source of GHG emissions in the waste category. GHG emissions are also associated with product supply chains, so waste reduction and recycling become powerful tools for reducing emissions all along the consumer materials' lifecycle.

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. The following sections identify the General Plan goal and describes the municipal and community measures that will address the State's mandates.

1.3.1 Municipal Solid Waste Diversion

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.

General Plan Goal (BE-45): Minimize the volume of solid waste that enters regional landfills.

Solid Waste Diversion Target

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
WM-1	Municipal Zero Waste Policy	Establish a policy to achieve 95% waste diversion rate in city operations. Provide appropriate bins and signage, organics recycling and education to public employees.	-20

1.3.2 Community Solid Waste Diversion

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.

Solid Waste Diversion Target

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
WC-1	Increase Waste Diversion Rate	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.	-631

1.4 Adaptation

To combat the direct impacts of climate change, Redwood City and its partners have been identifying the people and structures that are vulnerable to climate change, receiving input from stakeholders, planning for adaptability and resiliency to changing conditions, and developing implementation strategies to effectively address climate change. Until now, this 2030 Climate Action Plan update has gone over the various ways the City of Redwood City plans to reduce its emissions. However, the impacts of climate change are not theoretical. As such, the City will continue to address these growing threats using the General Plan's Guiding Principles. These impacts include but are not limited to increased sea level rise, flood risk, wildfire, extreme heat events, and resource adequacy. This section summarizes Redwood City's analysis of these threats and the steps the City is taking to insure climate change resiliency.

1.4.1 Sea Level Rise and Flooding

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.

1.4.2 Wildfire

Similar to former marshland development now being vulnerable to sea level rise, 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 wildfires 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.

1.4.3 Extreme Heat

Extreme Heat events, otherwise known as heat waves, are the top climate-related cause of death in San Mateo County. Four percent of San Mateo County's population have heat related emergency room visits every year. In 2017, San Mateo County lost 3 residents due to extreme heat just on Labor Day. Higher average temperatures not only during the day, but during the night as well, expose Redwood City's vulnerable residents to increased chances of heat related emergency room visits and death. These vulnerable populations are the youngest, aged 0-5, and the oldest, aged 65+, among us, in addition to diabetics, those with respiratory diseases, those in low-income households, and those active outdoors during heat waves. To combat this, Redwood City has set up 9 different cooling centers at libraries and community centers around the City.

1.4.4 Drought and Resource Adequacy

Recent droughts in California have highlighted need for stable and readily available water supplies throughout the state. Climate change is projected to make our water collection systems less resilient. 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.

1.4.5 Sequestration

Along with adapting to the climate impacts of GHG emissions, the City has the opportunity to offset carbon by sequestering emissions that could not be prevented in the first place. This kind of adaptation can provide multiple co-benefits to the City. For example, improving the urban canopy through tree planting can not only remove carbon from the atmosphere, but also help settle airborne particles during wildfire smoke events, reduce heat impacts, improve walkability, and beautify our community. Diverting and processing organic waste into compost to use on City trees and landscaped areas of parks and facilities not only sequesters carbon, but improves tree health, decreases soil erosion, water usage, herbicide and fertilizer usage, and increases stormwater recharge. Wetlands restoration projects and nature-based shoreline protection rather than engineered levee and seawall hardscapes not only act as a carbon sinks, they protect against sea level rise and flooding, preserve and increase wildlife habitat, and clean the water in the Bay.

This Plan recommends maintaining Redwood City’s now 37-year designation as a Tree City USA, continuing the City’s partnership with CityTrees for education, outreach, advocacy, and tree planting events, and enhancing our existing organics collection, processing, and compost use on City landscapes. The Plan further recommends evaluating opportunities for soft shoreline protection through the City’s participation in the Flood and Sea Level Rise Resiliency District.

2. Implementation

The preceding chapter outlines and describes the goals and measures for achieving the community's target of reducing emissions to 50 percent below 2005 levels by 2030. This chapter outlines the main components of the process for putting this Plan into action and identifies specific actions that are recommended for implementation.

2.1 Prioritizing and Selecting Measures for Action

There are a large number of measures and programs that Redwood City may implement to reduce GHG emissions. The measures recommended in this Plan were prioritized and selected, with public input, based on those that are likely to yield the greatest emissions reductions toward the City's target, those that can be quantified using C/CAG tools, and those that are most feasible (implemented or partially implemented, ongoing, or planned by the City).

The first step in the CAP update was to conduct a baseline emissions inventory and forecast. In 2009, Redwood City's 2005 community and municipal GHG inventories were completed as part of a joint effort with ICLEI, Joint Venture Silicon Valley Network, and the County of San Mateo funded by C/CAG. For more information on the Greenhouse Gas Inventory and Forecast, see Appendix C. The second step in the process was to establish an emissions reduction target for the forecast year of 2030. The City's target was chosen to align with the state's target. The third step in the process was to determine the contribution that statewide emissions reduction initiatives will make toward meeting the City's reduction target, and the fourth step involved identifying additional measures that the City can feasibly take to reduce the emissions remaining after accounting for reductions from statewide initiatives. This included a review of the City's current programs and an estimate of associated emissions, as well as an evaluation of the 47 measures developed by C/CAG through the Regionally Integrated Climate Action Planning Suite (RICAPS) initiative. Appendix D identifies and describes the measures provided through RICAPS. Next, the City set up a general email and conducted two public workshops to collect input on measures to include in the Plan. For future planning, Appendix E describes potential measures that the City can consider along with ongoing Adaptation Planning (Appendix B) when updating this Plan, as funding or other resources becomes available, or as the measures recommended in this Plan are implemented. A summary of all recommended emission reduction measures is provided in Table 1 below.

Table 1: Summary of Recommended Measures

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EC-1	Community Choice Aggregation: Community	Through Peninsula Clean Energy, continue to provide greener renewable electricity to the community and promote "opting up" to PCE's ECO100 (100% renewable) service.	-55,042
EC-2	Solar Incentives	Provide incentives for solar installation through Bay Area SunShares Program or others.	-5,778
EC-5	Commercial Energy Efficiency Programs	Promote participation in commercial energy efficiency programs and demand response programs offered by SMC Energy Watch and PG&E – including PGE's appliance rebates, 0% energy efficiency financing and demand response programs. Encourage commercial energy audits.	-491
EC-6	Residential Energy Efficiency Programs	Promote participation in residential energy efficiency programs, including BayREN's Home Upgrade program and PG&E's efficient appliance rebates. Encourage residential energy audits.	-860
EC-8	Commercial Energy Conservation Program	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 benchmarking by registered energy assessors over time.	-997
EC-9	Residential Energy Conservation Program	Establish a voluntary residential energy conservation program, encouraging minimum energy efficiency and water efficiency standards at the time of building sale.	-696
EC-10	Green Building Policy: All Electric	Update building code to promote the construction of all-electric new buildings.	-21,006
EC-11	Electric Panel Upgrade Incentives	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.	-17,930
EC-12	Microgrid Demonstration Projects	Identify microgrid demonstration project site. Provide education and outreach to stakeholders on the multiple benefits of developing a microgrid, including reliability, cleaner energy and cost savings.	-107
EC-13	Solar + Battery Storage Promotion	Provide education and outreach to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.	-3,451
EM-1	Community Choice Aggregation: Municipality	Continue to provide 100% renewable electricity to municipal facilities.	-1,142
EM-2	Solar on Municipal Facilities	Identify new or existing municipal facilities that are well suited to the installation of solar PV or solar hot water systems. Use group purchasing power or purchase power agreements (PPAs) to lower cost.	-146
EM-4	Energy Efficiency in Municipal Buildings	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.	-373
EM-6	Energy Efficient Street Lighting	Continue LED street light replacement program and replacement of parks and parking lot lighting.	-112

Code	Measure Name	Detailed Description	Reduction (MTCO2e)
EM-7	Environmentally Preferred Purchasing Policy: Energy	Implement a sustainable purchasing policy that emphasizes the purchase of ENERGY STAR certified equipment – appliances, electronics, etc.	-8
TL-1	Smart Growth Development Policy	Continue smart growth policy that prioritizes infill, higher density, transportation-oriented and mixed-use development.	-4,228
TL-2	Walkable/Bikeable Streets	Modify landscape to make walking and biking more desirable. Install bike lanes, bike parking, traffic calming measures, beautification, etc.	-5,212
TL-3	Car/Bike Share Promotion	Develop policies and incentives that attract bike and car sharing companies to establish service.	-810
TL-4	Parking Policies Promoting Public Transit, Biking, and Walking	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.	-9,695
TL-5	Safe Routes to School Program	Support the City's Safe Route to Schools program by investing in enhancing bike trails and safe pedestrian routes to local schools. Promote the program to increase volunteer participation.	-197
TL-6	Expand Local Shuttle Service	Expand local shuttle service routes and/or frequency of service within city limits to connect areas not covered by public transit.	-178
TL-7	Local Farmers' Markets Promotion	Encourage community farmers' markets with locally-grown food and community gardens to reduce associated VMT.	-23
TL-8	Electric Vehicle Ownership Programs	Establish community target for adoption rate of electric vehicles.	-2,321
TL-9	Expand EV Charging Infrastructure	Expand EV charging infrastructure in public properties, multi-unit dwellings and workplaces.	-32,522
TL-10	Green Building Policy: EV charging	Update building code to increase the mandated percentage of parking spaces accommodating electric vehicle charging equipment and of parking spaces devoted to clean air vehicles.	-3,650
TL-11	Electric Bikes/Scooter Share Promotion	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.	-3,281
TM-1	Municipal Fleet Electrification Policy	Establish policy requiring the prioritization of electric vehicles and explore strategies to reduce emissions from mobile equipment.	-109
TM-3	Commute Alternatives Program: Municipal	Continue commute alternatives program including pre-tax commuter benefits, transit subsidies, and carpool program.	-4
WC-1	Increase Waste Diversion Rate	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.	-631
WM-1	Municipal Zero Waste Policy	Establish a policy to achieve 95% waste diversion rate in city operations. Provide appropriate bins and signage, organics recycling and education to public employees.	-20
EW-1	Water Conservation Programs	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).	-403
EW-2	Enforce Water Efficient Landscape Ordinance	Enforce Water Efficient Landscape Ordinance.	-172
A-1	Green Business Program	Promote San Mateo County Green Business program and set goals for participation.	-294

2.2 Meeting Emissions Targets

The measures described in this Climate Action Plan, combined with statewide legislation and initiatives, will enable the City of Redwood City to reduce its emissions to 50 percent below 2005 levels by 2030.

The table below shows the contribution of the major statewide emissions reduction initiatives combined with the proposed CAP measures.[1] Based on the inventory and forecast, the City of Redwood City needs to achieve 350,562 $MTCO_2e$ of emissions reductions to meet the State goal of 40% below 1990 levels by 2030 (equivalent to 49% below 2005 levels). The estimated reductions described and accounted for in this Plan, including those from statewide measures, equal 365,857 $MTCO_2e$, exceeding the minimum reductions required to meet the State's target.

Table 3: Meeting the 2030 Target

State Initiative	**Sector**	**Reduction in City's Emissions**
Advanced Clean Cars Program	Transportation	88,292
Low Carbon Fuel Standard (LCFS)	Transportation	9,251
Caltrain Electrification	Energy	1,440
Renewable Portfolio Standard (RPS)	Energy	30,667
Zero Net Energy (ZNE) Construction	Energy	54,658
SB 1383 Organic Waste Diversion	Waste	9,663
Regional and Local Initiatives	**Sector**	**Reduction in City's Emissions**
Community Choice Aggregation: Peninsula Clean Energy (PCE)	Energy	55,042
2030 CAP Measures	All sectors	116,844
A. Total Statewide State Initiative Emissions Reductions		193,970
B. Total Regional and Local Initiatives Reductions (PCE + 2030 CAP Emissions Reductions)		171,886
C. Total Expected Emissions Reductions by 2030 (A+B)		365,856
D. City Emissions Reduction Requirement for 2030		350,562
E. Meets/exceeds state goals? (C > D)		Yes

[1] AB 1493 (Pavley) refers to the Assembly Bill that directs the Air Resources Board to adopt standards that will achieve "the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles," taking into account environmental, social, technological, and economic factors. LCFS refers to the State of California's Low Carbon Fuel Standard, which mandates a 20 percent overall reduction in the carbon intensity of transportation fuels by 2030. Lastly, 50% RPS refers to the California Renewable Portfolio Standard, which requires electric utilities to have 50 percent of their retail sales sourced from eligible renewable resources in 2030 and all subsequent years.

2.3 Management of GHG Reduction Strategy

Support is needed to implement the Plan measures. This section details how the City can organize to put this Plan into action.

Dedicate and direct staff to assist in and be responsible for CAP implementation
The City can dedicate and direct additional staff to assist in and be responsible for implementation of this CAP.

Continue to hold regular meetings of the Environmental Initiatives Subcommittee
The Environmental Initiatives Subcommittee can meet quarterly to monitor progress on CAP measures.

Maintain associations and partnerships that assist the City in implementing the CAP
The City can maintain existing associations and partnerships with agencies and organizations such as PCE, C/CAG, San Mateo County Energy Watch Program, Energy Upgrade California in San Mateo County, Joint Venture: Silicon Valley Network, PG&E's Sustainable Communities Team, Silicon Valley Leadership Group, Sustainable San Mateo County, Sustainable Silicon Valley, and Thrive that can assist with funding and outreach for, monitoring and reporting on, and evaluating and updating CAP measures.

2.4 Public Participation and Community Engagement

There are significant opportunities for the City to leverage existing programs funded by the State of California, PG&E, PCE, and others to support community efforts to improve energy efficiency, install renewable energy technologies, facilitate transit/biking/walking initiatives, purchase EVs and install EV charging infrastructure, and support households and businesses in taking other actions. This Plan calls for the City of Redwood City to distribute information widely on funding opportunities for residents and local businesses. Actions include more information posted on the City website and marketing materials posted at key locations, including City Hall and libraries. Additional actions include partnering with PG&E, PCE, and local water districts to further develop marketing presentations and workshops for the community. The general email climateactionplan@redwoodcity.org is open for public comment and feedback on Climate Action Plan measures. Funding opportunities that support public participation and community engagement are listed in Appendix E.

3. Monitoring and Improvement

Monitoring progress is a critical component to ensure that the emissions targets are met. Should monitoring efforts find that the Climate Action Plan is falling short of its goals, the City will add additional mandatory and voluntary measures to the Plan in order to meet the Plan's GHG reduction target. Ongoing monitoring is critical in order to demonstrate that the Plan is achieving its goals, thereby maintaining its status as a GHG Reduction Strategy over time.

The following describes the monitoring and improvement program.

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

- The Environmental Initiatives Coordinator or dedicated staff will track programs, additions and modifications, as well as emissions, resource savings, or other effects of the programs implemented under the CAP measures. Programs will be summarized in the update and made available for public review.

- The Environmental Initiatives Coordinator or designated staff will conduct a full GHG inventory at least every 5 years, and annually if feasible, according to the ICLEI community emissions protocol. The inventory will allow the city to understand how emissions levels are tracking in a top-down manner. PG&E and PCE can provide annual updates on electricity and natural gas usage to track associated GHG emissions.

- The Environmental Initiatives Coordinator or designated staff will update the Plan as needed based on the results of the GHG inventory. Redwood City may modify and/or add new measures to ensure that the city is on track to meet or exceed its greenhouse gas reduction goals.

4. Conclusion

This Plan is a strategic approach to sustainability, offering a suite of recommended actions that will engage all members of Redwood City's community in this journey to safeguard our environment.

The City Council's Strategic Plan includes the Guiding Principle of Sustainablity: 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. The proposed efforts of Redwood City are small when compared to the collective action of our citizenry. Sustainability requires more than just environmental protection; it will take leadership and partnership to deploy these actions. We invite you to join Redwood City's transition to a clean environment, healthy community, and prosperous future.

Appendix A. Glossary of Terms

AB32	The California Global Warming Solutions Act of 2006
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BAU	business as usual
CAP	Climate Action Plan
CAPPA	Climate and Air Pollution Planning Assistant
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
EIR	environmental impact review
EV	electric vehicle
GHG	greenhouse gas
ICE	internal combustion engine
ICLEI	Local Governments for Sustainability
kWh	kilowatt hour
MFD	multifamily dwelling
MPO	metropolitan planning organization
MT	metric ton
MTCO2e	metric tonnes of carbon dioxide equivalent
PACE	property-assessed clean energy
PCE	Peninsula Clean Energy
PG&E	Pacific Gas and Electric Company
PEHV	plug-in electric hybrid vehicle
Ppm	parts per million
PV	photovoltaic

RICAPS	Regionally Integrated Climate Action Planning Suite
RPS	renewable portfolio standard
SLR	sea level rise
SOV	single occupancy vehicle
U.S. EPA	United States Environmental Protection Agency
Title 24	California's "Green" building code
TNC	transportation network companies (Lyft, Uber, etc.)
TOD	transit-oriented development
VMT	vehicle miles traveled

Appendix B. 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. The planning process should be inclusive of all stakeholders. Local outreach campaigns are needed to promote awareness of the dangers of heat exposure and recommend low-cost and low-GHG adaptation strategies. These efforts should leverage similar efforts undertaken at the regional, state, and federal levels.

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. Future vulnerability of assets and infrastructure can then be assessed using conceptual models of shore response to sea level rise. Shore response models can be applied for one or more climate change scenarios and planning horizons, and a strategy for adapting can be developed with due consideration to priorities and time frames. Both short-term and long-term adaptation strategies should be identified. 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 sea level rise. 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. 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 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 sea level rise, ranging from coastal armoring (levees, seawalls, etc.) to elevated development to a managed retreat or abandonment of low-lying development. 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.

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.

A menu of potential adaptation strategies and measures is provided in the table below.

Adaptation Strategies and Measures

Climate Change Impacts	Sample Adaptation Measures
Sea Level Rise Risks to existing facilities, natural systems, private property and public infrastructure	• Educate and engage the community on the need for long-range planning • Partner or collaborate with other jurisdictions and agencies to increase awareness and build community support for action • Identify funding mechanisms and seek public-private partnerships where interests converge • Use natural backshore wave-buffering processes to reduce wave erosion and run-up on levees • Increase or maintain the buffering capacity of tidal wetlands to protect against storm surges and keep pace with sea-level rise • Move levees further inland to allow marshes and mudflats to naturally transgress landward • Protect and restore wetlands that provide vital habitat and carbon storage, and allow for landward migration of habitat over time • Do coastal armoring with levees and seawalls to protect vital infrastructure from erosion, inundation, and flooding
Extreme Heat Events Risks to public health and infrastructure	• Identify vulnerable communities and develop emergency preparedness plan • Establish cooling centers, especially for vulnerable populations • Reduce urban heat islands through use of cool roofs and other reflective surfaces • Do targeted tree planting and enact new requirements for shading in new parking lots and other large paved areas • Reduce risk of wildfires through fuels reduction in the urban-wild land interface

Regional Drought Risks to reliable water supply, and potential conflicts between urban and agriculture users	• Increase capacity for community water storage • Promote local water conservation • Make water conservation a top priority for agriculture in the region • Do water reclamation and reuse projects
Increased Flooding and Severe Weather Events Risks to public health, private property, public infrastructure, and ecosystems	• Integrate local flood management plans with adaptation planning • Identify vulnerable communities and develop emergency preparedness plans • Establish local land use policies that decrease flood risk; avoid building in high-risk areas • Make modifications to storm water system routing and storage • Develop storage areas for peak flows • Maximize use of bioswales and permeable surfaces in both greenscape and hardscape areas to improve aquifer recharge and mitigate flooding from storm water
Air Quality and Other Public Health Concerns	• Restrict use of fireplaces and open fires on high-risk days • Monitor potential threats to public health, including new diseases, and develop public awareness
Threats to Species, Ecosystems, and Ecosystem Services	• Design urban forest program to improve biodiversity, provide heat relief, and sequester carbon • Preserve wetlands, salt marshes, and other critical coastal habitats
Risks to Local Agriculture and Food Supply	• Promote conservation of local agricultural land • Promote the use of public and private land and rooftops for producing food • Promote the planting of fruit and nut trees • Support local farmers markets by providing incentives such as reduced costs for permits and support in attaining electronic benefit transfer (EBT) point-of-sale terminals • Provide incentives and remove regulatory obstacles to encourage animal husbandry and local food production and distribution • Provide and promote educational opportunities for residents at all levels of the educational system (preschool through college) to gain skills in organic gardening; fruit production; animal husbandry; food preservation and cooking; and affordable, healthy eating • Develop a city-run or city-supported food gleaning program that organizes volunteers or compensates workers to collect food from trees and shrubs on land owned by cities or within cities to distribute through food banks and other local distribution channels • Reduce food waste by implementing a local composting program where all food scraps, food-soiled paper, waxed cardboard, wood crates and landscape trimmings from markets, restaurants, homes, hotels, and schools, would be collected and made available for distribution to rural or urban gardeners

Appendix C. Baseline GHG Inventory and Forecast

The emissions inventory provides an important foundation for the Climate Action Plan, providing a baseline year, 2005, against which progress toward the City goal of reducing GHG emissions 50 percent by 2030 can be measured. The completed Plan includes a business-as-usual (BAU) forecast of GHG emissions, which will enable the City to estimate the amount of emissions reductions needed to meet its goal.

1. Inventory Sources and Data Collection Process

An inventory of GHG emissions requires the collection of information (data) from a variety of sectors and sources. The emissions inventory completed for the City of Redwood City follows the standard outlined in the BAAQMD's GHG Plan Level Quantification Guidance (dated May 2012), as well as the Local Government Operations Protocol[2]. Table 1 summarizes the sectors, emissions sources, and energy types included in our GHG inventory.

Table 1: Sectors and Emissions in the GHG Inventory

Sector	Emissions sources	Energy types
Residential	Energy and water use in residential buildings	Electricity Natural gas
Commercial	Energy and water use in commercial, government and institutional buildings	Electricity Natural gas
Industrial	Energy and water use in industrial facilities, and processes	Electricity Natural gas
Transportation and Land Use*	All road vehicles Public transportation Light rail Off-road vehicles/equipment	Gasoline Diesel Compressed natural gas Liquefied natural gas Biodiesel
Waste	Landfills Waste stream	Landfill gas (methane)
Water	Water Pumps Sewage/wastewater management Irrigation/sprinkler system	Electricity Natural Gas

* Some sectors may be updated in a new version of the BAAQMD GHG Plan Level Quantification Guidance.[3]

While the BAAQMD GHG Plan Level Guidance recommends the inclusion of GHG emissions from water processing and delivery that occurs outside of the city's boundary, these emissions are not included in Redwood City's baseline inventory due to lack of accurate data on water usage in the City of Redwood City in the baseline year, and lack of data on the energy used for water processing and delivery in the baseline year. The following are emission sources that are

[2] Local Government Operations Protocol – For the quantification and reporting of greenhouse gas emissions inventories (Version 1.0). Developed in partnership by California Air Resources Board, California Climate Action Registry, ICLEI – Local Governments for Sustainability, and The Climate Registry. September 2008. Note that a newer version (version 1.1, dated May 2010) of the LGOP is available; however, at the time the GHG inventory was completed for the City of Redwood City, version 1.0 was the only version available.

[3] For updates to the GHG Plan Level Quantification Guidance, check the BAAQMD website: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

mentioned in the BAAQMD GHG Plan Level Guidance, but were excluded from the City's inventory because they are inventoried separately or due to lack of data: Sea ports, non-road vehicle use (planes, trains, ships), and water travel. Air emissions at the Port of Redwood City were quantified with the Bay Planning Coalition through BAAQMD's "Green Ports Initiative."

ICLEI has since developed the U.S. Community Protocol[4], the first U.S.-specific protocol for developing community-wide greenhouse gas emissions estimates. All future inventories should utilize this protocol. Future inventories will also utilize the most recent version of the Local Government Operations Protocol, as well as any updated guidance from the BAAQMD.

The industry-accepted methodology for quantifying a community-wide GHG emissions inventory focuses on emissions that occur from combustion sources within city limits and from electricity consumption. In the future, there may be the opportunity and need to quantity GHG emissions associated with the goods and products procured by communities and its residents. This type of lifecycle emissions accounting is not included in this Climate Action Plan.

2. Baseline Emissions Inventory for 2005

In the base year of 2005, the City of Redwood City emitted approximately 640,161 metric tons of carbon dioxide equivalent ($MTCO_2e$) from the residential, commercial, industrial, transportation, waste, and municipal sectors.[5] Municipal sector emissions are calculated and reported because the City of Redwood City generally has more control over these emissions than emissions from the other sectors, and thus the City of Redwood City can implement specific policies and programs to reduce these municipal emissions. However, in the context of the community-wide inventory, the municipal emissions are included in the commercial/industrial sector. Burning fossil fuels in vehicles and for energy use in buildings and facilities is the largest contributor to Redwood City's GHG emissions. Table 2 provides a summary of total citywide (i.e. community and municipal) GHG emissions.

[4] U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Version 1.0). Developed by ICLEI – Local Governments for Sustainability. October 2012.

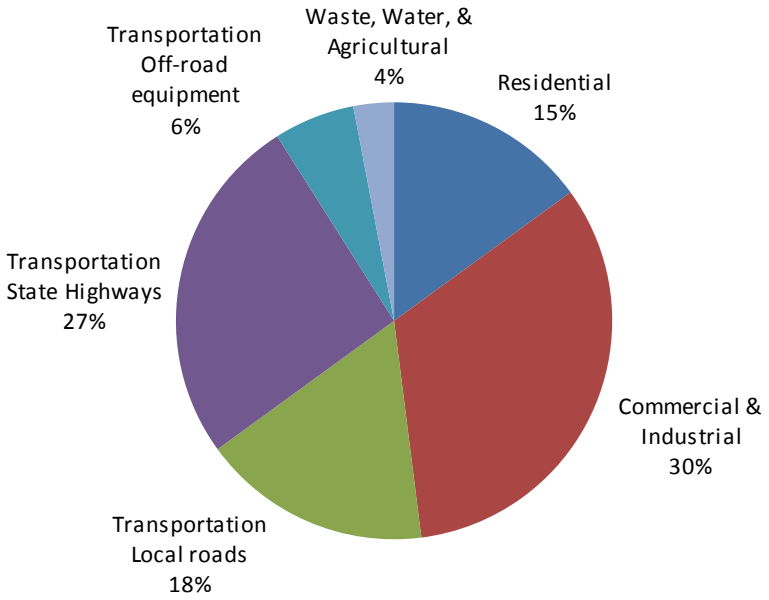
[5] Carbon dioxide equivalent is a unit of measure that normalizes the varying climate warming potencies of all six GHG emissions, which are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). For example, one metric ton of methane is equivalent to 28 metric tons of CO_2e. One metric ton of nitrous oxide is 261 metric tons of CO_2e.

Table 1: 2005 Community Emissions by Sector

Sector	Greenhouse Gas Emissions (metric tons CO_2e)	Percentage of Greenhouse Gas Emissions
Residential	99,144	15%
Commercial/Industrial	189,166	30%
Transportation – Local roads	114,370	18%
Transportation – State highways	175,367	27%
Transportation – Off-road equipment	39,758	6%
Generated Waste, Wastewater Treatment, and Ag Emissions	22,356	4%
TOTAL	**640,161**	100%

The residential, commercial, and 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 transit vehicles and the City-owned fleet. Off-road equipment includes lawnmowers, garden equipment, and construction, industrial, and light commercial equipment. Figure 2 shows the proportion of Redwood City's total GHG emissions from all major sources for 2005.

Figure 2: Community Emissions by Sector[6] (2005)



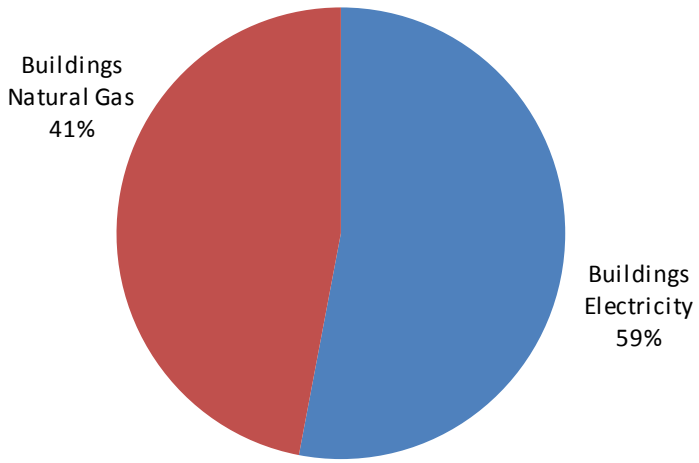
[6] While Redwood City's water emissions are not displayed separately in the chart above, they have been accounted for in the commercial/industrial and residential building energy sectors.

As shown above, the two largest categories of emissions are related to transportation (highway travel, local travel, and off-road equipment) and building energy use (both residential and commercial & industrial).

2.1 Electricity and Natural Gas Emissions

In 2005, electricity and natural gas use for buildings and facilities accounted for 45 percent of Redwood City's total emissions. Residential buildings accounted for 15 percent (99,144 $MTCO_2e$), commercial/industrial facilities (including municipal facilities) accounted for 24 percent (149,810 $MTCO_2e$), and direct access energy use accounted for 6 percent (39,356 $MTCO_2e$). Direct access is when end use customer buys electricity or natural gas on the wholesale market, rather than from PG&E. Of the total 288,310 $MTCO_2e$ emitted, 59 percent (169,446 $MTCO_2e$) was the result of electricity consumption, and 41 percent (118,864 $MTCO_2e$) was the result of natural gas consumption.

Figure 3: Building Energy Use – Fuel Type



It is important to note that emissions associated with the generation of electricity, which make up a significant portion of the greenhouse gasses associated with building energy, can vary widely from year to year. The GHG emissions associated with electricity use is based on an emissions factor specific to PG&E's territory and is calculated annually by PG&E and then made available to Cities. The source of the emission factor used for the 2005 baseline inventory is the PG&E Power/Utility Protocol (PUP) spreadsheet of the PG&E California Climate Action Registry Report. In future inventory years, the emission factor may be found in the Additional Optional Information tab of PG&E's Electric Power Sector report spreadsheet, which is part of PG&E's Report to The Climate Registry. PG&E's specific emissions factor is calculated by dividing

PG&E's total emissions from their power plants (in pounds of CO_2) by the total amount of electricity (in megawatt-hours or MWh) delivered to end users. This factor varies year over year because PG&E's electricity sources change. For instance, the utility specific emissions factor for PG&E in 2006 was 455.81 lbs/MWh whereas in 2008 it was 641.35 lbs/MWh. For PG&E, the variance is typically dependent on the availability of hydroelectric resources. During low precipitation years, there is less water available to generate emissions free hydropower. Because of this, PG&E must compensate by supplying more electricity generated from natural gas or coal.

For the 2005 baseline inventory, the 2005 emissions factor was used. For future inventories, a three-year average emissions factor could be used to address the large variance that may occur from year to year.

Emissions from natural gas usage are calculated using the emissions factors from the Local Government Operations Protocol (version 1.0), Tables G.1 and G.3.

2.2 Transportation Emissions

In 2005, transportation emissions accounted for 49 percent of Redwood City's total emissions. Travel on local roads accounted for 17 percent (114,370 $MTCO_2e$), travel on state highways within city limits accounted for 26 percent (175,367 $MTCO_2e$), and emissions from off-road equipment, such as lawn and garden equipment and construction and industrial equipment, accounted for 6 percent (39,758 $MTCO_2e$). Agricultural equipment emissions were not included in this sector.

On-road transportation emissions are based on figures for total VMT for the City of Redwood City provided by the Metropolitan Transportation Commission (MTC) and calculated from 2005 California Public Road Data, Highway Performance Monitoring System, State of California, Department of Transportation and Caltrans GIS data of state highway road segments divided into jurisdictional segments. Off-road equipment emissions data is calculated from the Bay Area Air Quality Management District, using EMFAC 2007 as a proxy for unavailable 2005 data.

Figure 4: Transportation Emissions – Highways v. Local Travel

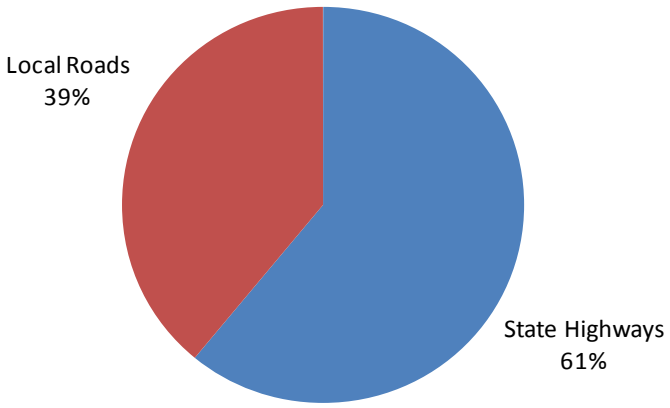
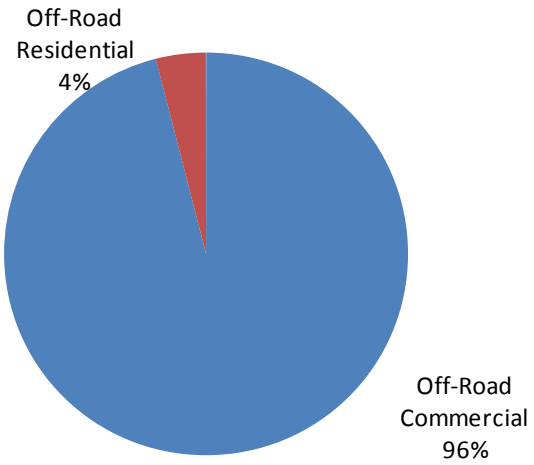


Figure 5: Transportation Emissions – Residential v. Commercial Off-road Equipment



2.3 Solid Waste

In 2005, Redwood City sent 112,998 tons of solid waste to landfills, resulting in 20,630 $MTCO_2e$. Another 203 $MTCO_2e$ of emissions are estimated from the 81,442 tons of alternative daily cover (ADC) used on the surface of the active face of municipal landfills to control odors, blowing litter, and scavenging. Together, landfilled solid waste and ADC accounted for approximately 3 percent of Redwood City's total emissions.

Emissions from waste result from organic materials decomposing in the anaerobic environment of a landfill that produces methane—a GHG 21 times more potent than carbon dioxide. Organic materials (e.g., paper, plant debris, food waste, and so forth) generate methane within the anaerobic environment of a landfill while non-organic materials do not (e.g., metal, glass, and so on). Table 3 shows the approximate breakdown of the materials Redwood City sent to landfills in 2005. Materials that do not release GHGs as they decompose are included in the "All Other Waste" category.

Table 2: Assumed Waste Composition[7]

Waste Type	Waste Share
Paper Products	21.0 %
Food Waste	14.6 %
Plant Debris	6.9 %
Wood/Textiles	21.8 %
All Other Waste	35.7 %
Total	**100 %**

2.4 Wastewater Treatment

Emissions from the wastewater treatment plant located in Redwood City are approximately 1,523 $MTCO_2e$/year, which is less than one-half of one percent of total emissions in 2005. There are three types of GHG emissions included: 1) stationary methane from incomplete combustion of digester gas, 2) process emissions from the wastewater treatment without nitrification/denitrification, and 3) process emissions from effluent discharge to rivers and estuaries. Emissions were calculated using LGOP's methodology for Wastewater Treatment Facilities.

2.5 Agriculture

Agriculture emissions totaled 594 $MTCO_2e$/year, which is 0.1 percent of total emissions in 2005, and are based on the total amount of agricultural land in Redwood City. Agriculture emissions are due to four categories of activities: Agricultural equipment, animal waste, soil management, and biomass burning.

2.6 Municipal Operations

In 2005, Redwood City's municipal operations generated 8,059 $MTCO_2e$, accounting for slightly over 1 percent of the city's total emissions. Table 4 shows that municipal buildings and facilities

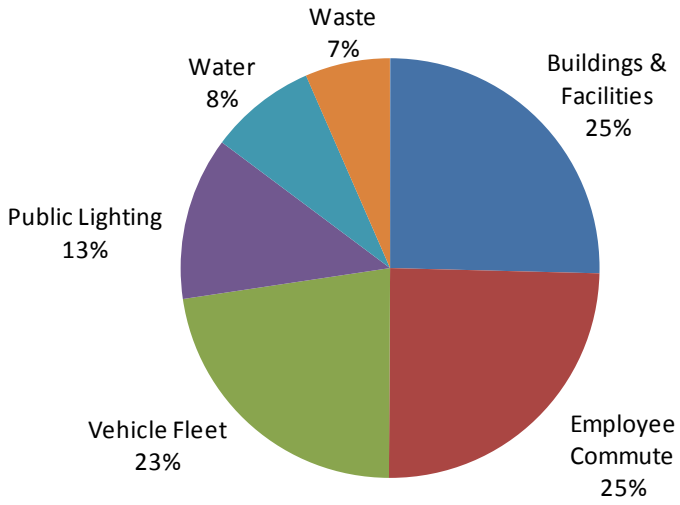
[7] Waste characterization: CIWMB 2004 Statewide Waste Characterization Study. This state average waste characterization accounts for residential, commercial and self-haul waste. http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097

were the largest source of emissions from government operations, accounting for over a quarter of the total, followed by employee commute at just under a quarter, vehicle fleet at 23 percent, and public lighting at 13 percent.

Table 3: 2005 Redwood City Government Operations Emissions by Sector

Sector	Greenhouse Gas Emissions (metric tons CO_2e)
Buildings and Facilities	2,046
Employee Commute	1,991
Vehicle Fleet	1,818
Public lighting	1,011
Wastewater and Water Transport	664
Government-generated solid waste	529
TOTAL	**8,059**

Figure 6: Municipal Operations – Greenhouse Gas Emissions



2.7 Emissions Forecast for 2030

Based on the 2005 community and municipal operations emissions inventories, the City of Redwood City projected a forecast of future emissions for the year 2030. The emission forecast represents a “business-as-usual” prediction of how GHG emissions would grow in the absence of GHG policy. Conducting an emissions forecast is essential for developing the Climate Action Plan because one must compare future reductions with future emissions levels, not current levels.

The projected business-as-usual GHG emissions are based on the emissions from the existing growth pattern and general plan prior to the adoption of this climate action plan. More specifically, business-as-usual emissions would occur if the City of Redwood City were to continue its 2005 patterns of travel, energy and water consumption, and waste generation and disposal. Therefore, the business-as-usual emissions are projected in the absence of any mitigation measures, policies or actions that would reduce emissions over time, including landmark state legislation described in section 1.3. Programs, policies, and measures implemented after 2005 are considered beyond business-as-usual. The projections from the baseline year of 2005 uses growth factors specific to each of the different economic sectors. Tables 5 and 7 below summarizes the results of the forecast.

Table 4: Redwood City "Business as Usual" Emissions Forecast for 2030

Emissions Sources	2005 ($MTCO_2$)	2010 ($MTCO_2$)	2015 ($MTCO_2$)	2020 ($MTCO_2$)	2030 ($MTCO_2$)
Residential	99,144	98,215	80,694	87,596	96,220
Commercial/Industrial	189,166	202,922	172,465	186,097	218,290
Transportation	329,495	300,405	324,952	331,994	346,540
Waste	22,356	14,219	12,171	13,178	14,899
Water	0	1,569	894	968	1,095
TOTAL	**640,161**	**617,330**	**591,176**	**619,833**	**677,044**

We projected the emissions forecast for each sector, because specific factors affect each sector differently (e.g. new building energy codes or new fuel economy standards for vehicles). This approach provides a better approximation of future emissions. The following points explain how the emissions forecast was estimated for each sector:

- For the residential energy sector, the compounded annual population growth rate was calculated from 2005 through 2030 using population projections from the US Census, the 2010 Redwood City General Plan, and *Plan Bay Area*.[8]

- For the commercial energy sector, the City of Redwood City relied on the analysis contained within "California Energy Demand 2008-2018: Staff Revised Forecast,"[9] a report by the California Energy Commission (CEC), which shows that commercial floor space and the number of jobs have closely tracked the growth in energy use in the commercial sector. The compounded annual growth in energy use in the commercial

[8] https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040/plan-bay-area
[9] http://www.energy.ca.gov/2007publications/CEC-200-2007-015/CEC-200-2007-015-SF2.PDF

sector from 2005 to 2030 was calculated using regional job projections for City of Redwood City from the Redwood City General Plan and *Plan Bay Area*.

- Emissions from the transportation sector are largely determined by growth in on-road vehicle miles traveled (VMT). For transportation, the City of Redwood City relied on jurisdiction-specific VMT projections from *Plan Bay Area*.

- For waste-related emissions growth, the primary determinate for growth in emissions for the waste sector is population. Therefore, the compounded annual population growth rate for 2005 to 2030 (the same as the residential sector projection) was used to estimate future emissions in the waste sector.

3. Emission Reduction Targets

The *California AB 32 Scoping Plan* seeks to bring California to a low carbon future, reaching 1990 emissions levels by 2020. As part of that reduction, the plan asks municipal governments to reduce their emissions by at least 15 percent by 2020 compared with current levels (current levels are defined as 2008 levels or earlier). The plan also directs local governments to assist the state in meeting California's emissions goals. Many cities have consequently adopted community-wide emissions reduction targets at least 15 percent below 2005 levels by 2020. Further, in 2016, the Legislature passed Senate Bill 32 (SB 32), which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. A second update to the *Scoping Plan* was released by the Air Resource Board (ARB) in 2017 to reflect the 2030 target. This Climate Action Plan summarizes the actions that City of Redwood City is planning to take to reduce emissions within our community in alignment with SB 32.

3.1 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 Advanced Clean Cars Program is a set of regulations adopted to control emissions from passenger vehicles, the Low Carbon Fuel Standard establishes declining targets for GHG emissions from fuel sold in California markets, and the California Renewable Portfolio Standard (RPS) mandates that half of electricity sold by the State's investor-owned utilities be generated from renewable resources by 2030. These actions are summarized in Section 2.2 of this Plan. 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 7.

A summary of the expected emission reductions from state programs is provided in Table 6 below.

Table 5: Total Emission Reductions from State of California Programs

State Initiative	Sector	% Reduction from 2030 BAU Emissions in Sector	2030 BAU Emissions in Applicable Sector (MT CO2e)	Reduction in City's Emissions by 2030 (MT CO2e)
Advanced Clean Cars Program	On-Road Transportation	-30.4%	290,682	-88,292
Low Carbon Fuel Standard (LCFS)	Off-Road Transportation	-17.1%	54,036	-9,251
Caltrain Electrification	Caltrain	-89.1%	1,615	-1,440
Renewable Portfolio Standard (RPS)	All Electricity	-20.5%	149,431	-30,667
ZNE 100% New Residential Construction by 2020	Residential Energy	-4.7%	96,220	-4,488
ZNE 50% Existing Commercial Construction by 2030	Non-Residential Energy	-23.0%	218,290	-50,170
Organic Waste Diversion SB 1383	Disposed Waste	-79.0%	12,235	-9,663
			All State Measures:	**-193,970**

3.2 The City of Redwood City Reduction Target

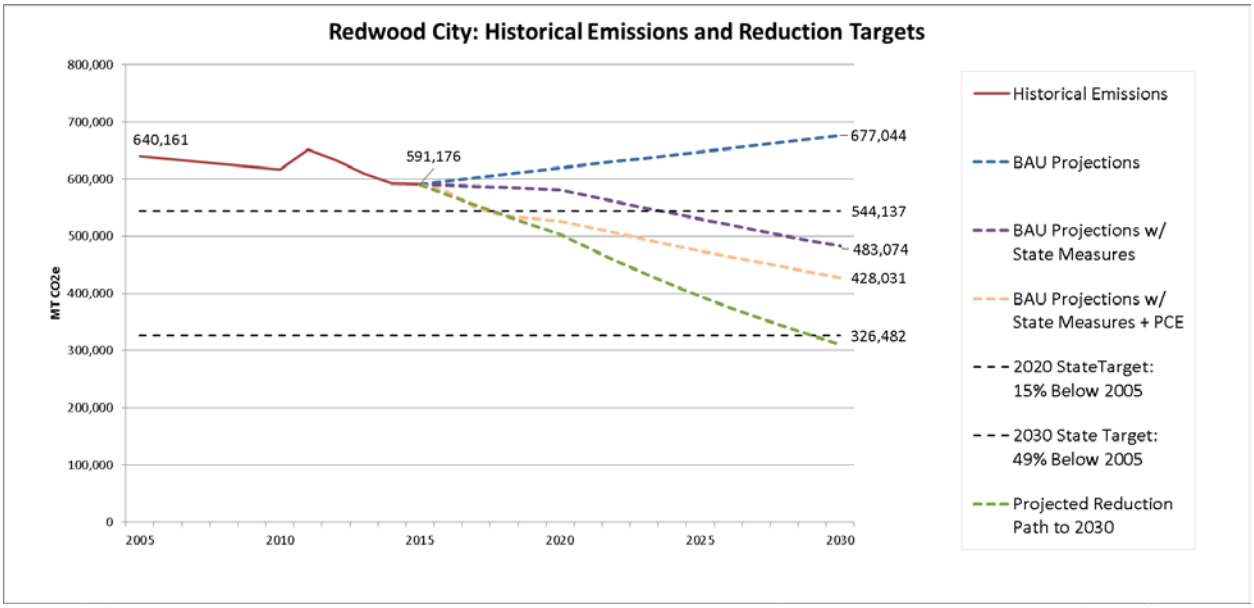
The City of Redwood City is committed to an emissions reduction target of 50 percent below the baseline 2005 levels by 2030. The goal was selected to be consistent with the Senate Bill 32 (SB 32), which sets a 2030 GHG emissions reduction target of 40% below 1990 levels, equivalent to 49% below 2005 levels, and because it is achievable by City-supported measures identified in the CAP.

The City of Redwood City is committing to reducing community-wide greenhouse gas emissions to 50 percent below 2005 levels by 2030 by supplementing state-wide actions

Figure 7 below illustrates how the business-as-usual emissions are estimated to increase, thus widening the emissions reductions needed by 2030. The figure also shows the emissions reductions expected from state-level actions, and the reductions needed to reach the City of Redwood City's emission target. Approximately 53 percent of the emission reductions needed to achieve the City's target of 50 percent below 2005 levels by 2030 will come from state-level policies and actions, including the Low Carbon Fuel Standard (LCFS), which reduces the carbon intensity of

transportation fuels, and the Renewable Portfolio Standard (RPS), which requires that at least 50 percent of the total energy provided by utilities and other energy services comes from renewable sources such as wind, solar, and geothermal. Another 16% will come from an increasingly renewable portfolio of electricity afforded by the City's participation in Peninsula Clean Energy, the Community Choice Aggregation program in San Mateo County. While approximately 70% of the emissions reductions necessary to meet the State target come from combined State-level and Community Choice Aggregation initiatives and programs, the remaining reductions come from the local measures captured in this Plan.

Figure 7. Redwood City GHG Reduction Path to 50% below 2005 levels by 2030



The baseline emissions, forecasted emissions, targeted emissions, and emissions needed to reach the target are shown in Table 7, and the forecasting data is shown on the worksheet on the following page.

Table 7: GHG Emissions Projection and Reduction Target

2005 Emissions ($MTCO_2e$)	2030 State Target ($MTCO_2e$)	2030 BAU Emissions ($MTCO_2e$)	Required Reductions for 2030 State Target ($MTCO_2e$)	Estimated CAP Reductions ($MTCO_2e$)	Estimated Emissions with 2030 CAP ($MTCO_2e$)
640,161	326,482	677,044	350,562	365,856	311,118

GHG Historical GHG Inventories and BAU Forecast							
Sector	**2005**	**2010**	**2015**	**2020**		**2030**	
	MTCO2e	**MTCO2e**	**MTCO2e**	**Annual growth rate: 2015-->2020**	**MTCO2e**	**Annual growth rate: 2015-->2030**	**MTCO2e**
Residential	99,144	98,215	80,694	1.66%	87,596	1.18%	96,220
Commercial/ Industrial	189,166	202,922	172,465	1.53%	186,097	1.58%	218,290
Transportation*	329,495	300,405	324,952	0.43%	331,994	0.43%	346,540
Generated Waste & Wastewater	22,356	14,219	12,171	1.60%	13,178	1.36%	14,899
Water	0	1,569	894	1.60%	968	1.36%	1,095
TOTAL	**640,161**	**617,330**	**591,176**	**0.95%**	**619,833**	**0.91%**	**677,044**

* The above table is set up to use jurisdiction-specific VMT projections from the Metropolitan Transportation Commission (MTC) to determine the annual growth rate in the transportation sector.

GHG BAU Forecast Growth Factor Inputs			
Sector	**Year**	**Data:**	**Current Data Source**
Residential (Population)	2010	76,815	Census
	2020	90,518	RWC 2010 GP
	2030	97,128	RWC 2010 GP
Commercial/Industrial (Jobs)	2010	58,080	ABAG Projections
	2020	67,624	RWC 2010 GP
	2030	79,519	RWC 2010 GP

Reaching 2020 & 2030 Targets		
	2020	**2030**
Business-as-Usual Emissions (MT CO2e):	**619,833**	**677,044**
Target: Percent Below 2005 Baseline Emissions:	15%	49%
Target Emissions (MT CO2e):	**544,137**	**326,482**
Required Emissions Reduction to Achieve Target (MT CO2e):	75,696	350,562
Estimated Percent Below 2005 Baseline Emissions with CAP:	**21.3%**	**51.4%**
Estimated Emissions with CAP (MT CO2e):	**503,675**	**311,188**

Appendix D. RICAPS Menu of Measures

This section describes the 47 greenhouse gas reduction measures selected and developed by the City/County Association of Governments (C/CAG) Regionally Integrated Climate Action Planning Suite (RICAPS) initiative for jurisdictions in the San Mateo County region.

Code	Sector	Measure Name	Detailed Description
EC-1	Energy: Community	Participate in community choice aggregation: Community	Through Peninsula Clean Energy, the City will continue to provide greener renewable electricity to the community and promote residents and businesses "opting up" to PCE's ECO100 (100% renewable) service.
EC-2	Energy: Community	Incentivize solar energy installation	Provide financial incentives for solar PV system installation through participation in the Peninsula SunShares Program.
EC-3	Energy: Community	Establish commercial green building ordinance: Energy efficiency	Update building code to mandate that commercial new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance.
EC-4	Energy: Community	Establish residential green building ordinance: Energy efficiency	Update building code to mandate that residential new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance.
EC-5	Energy: Community	Promote commercial energy efficiency programs for existing buildings including SMC Energy Watch and PG&E's commercial offerings	Through marketing and outreach, City promotes participation in commercial energy efficiency programs and demand response programs offered by SMC Energy Watch and PG&E – including PGE's appliance rebates, 0% energy efficiency financing and demand response programs. City provides or encourages commercial energy audits.
EC-6	Energy: Community	Promote residential energy efficiency programs for existing buildings including BayREN's Home Upgrade and PG&E's residential offerings	Through marketing and outreach, City promotes participation in residential energy efficiency programs, including BayREN's Home Upgrade program and PG&E's efficient appliance rebates. City provides or promotes residential energy audits. City considers supplementing existing efficiency incentives and rebates.
EC-7	Energy: Community	Implement program for free or subsidized shade trees	City program to reduce energy consumption associated with cooling homes through the provision of free or subsidized shade trees for buildings with eastern, western or southern exposures.
EC-8	Energy: Community	Establish commercial energy conservation program	City initially starts a voluntary commercial energy conservation program, whereby the City would encourage minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments and benchmarking by registered energy assessors over time.
EC-9	Energy: Community	Establish residential energy conservation program	City initially starts a voluntary residential energy conservation program, whereby the City would encourage minimum energy efficiency and water efficiency standards at the time of building sale. Transition to mandatory comprehensive energy assessments by registered energy assessors over time.

Code	Sector	Measure Name	Detailed Description
EC-10	Energy: Community	Establish residential & commercial green building policy: All electric	Update building code to promote the construction of all-electric new buildings. An Energy Design Rating (EDR) building code approach allows a municipality to require increased energy efficiency (e.g. 10% above code) for mixed fuel buildings, while enabling all-electric buildings to merely meet the minimum code requirements.
EC-11	Energy: Community	Incentivize electric panel upgrades in existing residential buildings to accommodate all-electric technologies	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.
EC-12	Energy: Community	Promote opportunities for microgrid demonstration projects	Work with stakeholders, such as local healthcare facilities or other critical facilities, to identify a potential site for a microgrid demonstration project. Provide education and outreach to these stakeholders on the multiple benefits of developing a microgrid including reliability, cleaner energy and cost savings.
EC-13	Energy: Community	Encourage pairing battery storage systems with all solar PV systems	Provide education, outreach, and incentives to stakeholders, including businesses, residents and contractors, on the benefits of pairing battery storage with solar PV systems.
EM-1	Energy: Municipal	Participate in community choice aggregation: Municipality	Through Peninsula Clean Energy, the City will continue to provide greener renewable electricity to municipal facilities. The City has also "opted up" to ECO100 service in all municipal facilities.
EM-2	Energy: Municipal	Install solar energy on municipal facilities	Through feasibility studies, 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 such as Bay Area SunShares or purchase power agreements (PPAs) to lower cost.
EM-3	Energy: Municipal	Establish municipal green building policy: Energy efficiency	Establish policy requiring that municipal new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance or by being built to LEED, Zero Net Energy (ZNE) or Zero Net Carbon (ZNC) standards.
EM-4	Energy: Municipal	Improve energy efficiency of municipal buildings	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.
EM-5	Energy: Municipal	Establish a revolving fund to finance municipal energy efficiency and solar	City establishes a program that utilizes an internal capital pool that is dedicated to funding municipal energy efficiency and solar energy projects that generate cost savings. A portion of those savings are then used to replenish the fund.
EM-6	Energy: Municipal	Install energy efficient streetlighting	City replaces street lighting – including signal, park and parking lots – with efficient LED lighting.
EM-7	Energy: Municipal	Establish environmentally preferred purchasing policy: Energy efficiency	Implement a sustainable purchasing policy that emphasizes the purchase of ENERGY STAR certified equipment – appliances, electronics, etc.

Code	Sector	Measure Name	Detailed Description
EM-8	Energy: Municipal	Enroll in carbon offset program	City purchases voluntary market carbon offsets to mitigate their GHG emissions.
EM-9	Energy: Municipal	Electrify existing municipal buildings and facilities	Evaluate municipal buildings and facilities to determine projects where electrification is feasible. Retrofit these facilities to be all-electric, including electric heating, cooling and water heating.
TL-1	Transportation & Land Use: Community	Establish and implement smart growth development policy	Establish a smart growth policy that prioritizes infill, higher density, transportation-oriented development and mixed-use development
TL-2	Transportation & Land Use: Community	Develop walkable and bikeable street landscape	Modify landscape to make walking and biking more desirable. Install bike lanes, bike parking, traffic calming measures, beautification, etc.
TL-3	Transportation & Land Use: Community	Encourage and incentivize bike and car sharing companies to operate	Develop policies and incentives that attract bike and car sharing companies to establish or expand service.
TL-4	Transportation & Land Use: Community	Establish parking policies that encourage public transit, biking, and walking	Establish parking policies such as metered parking, reducing parking requirements for new development, and "unbundling" sales/leases of parking space form building space to increase use of public transit, biking, and walking.
TL-5	Transportation & Land Use: Community	Support Safe Routes to School Program	Support the City's Safe Route to Schools program by investing in enhancing bike trails and safe pedestrian routes to local schools. Promote the program through collaboration with schools, hosting of events and outreach to increase volunteer participation.
TL-6	Transportation & Land Use: Community	Establish or expand local shuttle service	Establish local shuttle service. If local shuttle service already exists, expand routes and/or frequency of service within city limits to connect areas not covered by public transit. City will look to grant funding from C/CAG and work with the County Transportation Authority (Alliance) to fund local shuttles.
TL-7	Transportation & Land Use: Community	Support local farmers' markets	Encourage community farmers' markets with locally-grown food and community gardens to encourage local shopping and reduce VMT associated with acquiring produce.
TL-8	Transportation & Land Use: Community	Increase electric vehicle ownership	Establish overarching community target for adoption rate of electric vehicles. This target should be based on a combination of the expected market growth of electric vehicles and actions taken by the city (including measures TL-9, TL-10, TL-11 and TL-12 to support electric vehicles through policy and programs). Explore mobile equipment ordinances and fuel switching.
TL-9	Transportation & Land Use: Community	Expand EV charging infrastructure through incentives and partnerships	Leverage incentives from PCE to expand charging infrastructure in public properties, multi-unit dwellings and workplaces.
TL-10	Transportation & Land Use: Community	Establish commercial and residential green building policy: EV charging	Update residential and commercial building code to increase the mandated percentage of parking spaces designed to accommodate electric vehicle charging equipment and also increase the mandated percentage of parking spaces devoted to clean air vehicles.
TL-11	Transportation & Land Use: Community	Enhance infrastructure to promote shared electric bikes and scooters	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.

Code	Sector	Measure Name	Detailed Description
TL-12	Transportation & Land Use: Community	Develop policies that encourage adoption of EV TNCs	Develop policies, such as a revenue neutral fee that only applies to internal combustion engine (ICE) TNCs, to encourage the use of EV TNCs in the community. Utilize funds generated by fees on ICE TNC rides to provide discounts on EV TNC rides.
TM-1	Transportation: Municipal	Establish electric municipal fleet policy	Establish policy requiring the prioritization of electric vehicles (battery electric or plug-in hybrid electric) and mobile equipment.
TM-2	Transportation: Municipal	Establish flexible schedules policy for public employees	Establish policy enabling alternative work schedules and remote working to reduce VMT associated with employee commuting.
TM-3	Transportation: Municipal	Implement commute alternatives program for public employees	Establish commute alternatives program including pre-tax commuter benefits, transit subsidies, and a carpool program to promote and incentivize public transportation, carpooling, biking, etc.
WC-1	Waste: Community	Achieve higher waste diversion rate	Achieve 90% waste diversion rate through a combination of efforts including promotion of traditional and new recycling and organics recycling programs and local enforcement of recycling requirements.
WC-2	Waste: Community	Establish Mandatory Residential Organics Recycling Ordinance	Establish ordinance requiring all single-family homes and multi-family residences with under five units to sort and recycle organic material. Provide enforcement and issue fines to ensure compliance with ordinance.
WC-3	Waste: Community	Develop initiative to ensure enforcement of State's Mandatory Commercial Organics Recycling Ordinance	AB 1826 requires all businesses and multi-family complexes with more than five units to sort and recycle organic material. Provide enforcement and issue fines to ensure compliance with ordinance.
WC-4	Waste: Community	Establish sustainable vendor policy for public events	Establish policy requiring traditional and organics recycling at public events. Require compostable or recyclable cutlery and packaging to be used.
WM-1	Waste: Municipal	Establish a municipal zero waste policy	Establish a policy to achieve 95% waste diversion rate in city operations. Provide appropriate bins and signage, organics recycling and education to public employees to make goal achievable.
WM-2	Waste: Municipal	Establish environmentally preferred purchasing policy: Recycled materials	Implement a sustainable purchasing policy that emphasizes the purchase of materials with high recycled content – paper, furniture, etc.
EW-1	Water: Community	Promote existing residential water conservation rebates and services	Promote BAWSCA residential water conservation rebate programs that offer rebates for items including high efficiency washing machines and toilets, rain barrels, sprinkler nozzles, irrigation controls and Lawn Be Gone.
EW-2	Water: Community	Develop initiative to ensure enforcement of Water Efficient Landscape Ordinance	Enforce a Water Efficient Landscape Ordinance or local ordinance that is at least as effective as the State's model ordinance. Provide enforcement and issues fines to ensure compliance with ordinance.
A-1	All Sectors: Community	Participate in County Green Business program	Promote San Mateo County Green Business program and set goals for participation.
A-2	All Sectors: Community	Establish green lease program	Convert all leased property to "green" leases by either working with landlords or moving facilities to locations supported by systems such as solar, close to transportation, and/or with features to support and enhance energy efficiency and water conservation.

Appendix E. Future Opportunities for Emissions Reductions

This section identifies and describes an additional eleven measures that can be explored and initiated by Redwood City as funding and resources become available and as the measures in the current Climate Action Plan are implemented or completed.

Code	Sector	Measure Name	Detailed Description
EC-3	Energy: Community	Establish commercial green building ordinance: Energy efficiency	Update building code to mandate that commercial new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance.
EC-4	Energy: Community	Establish residential green building ordinance: Energy efficiency	Update building code to mandate that residential new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance.
EC-7	Energy: Community	Implement program for free or subsidized shade trees	City program to reduce energy consumption associated with cooling homes through the provision of free or subsidized shade trees for buildings with eastern, western or southern exposures.
EM-3	Energy: Municipal	Establish municipal green building policy: Energy efficiency	Establish policy requiring that municipal new construction and major remodels improve energy efficiency by achieving CALGreen Tier 1 energy performance or by being built to LEED, Zero Net Energy (ZNE) or Zero Net Carbon (ZNC) standards.
EM-5	Energy: Municipal	Establish a revolving fund to finance municipal energy efficiency and solar	City establishes a program that utilizes an internal capital pool that is dedicated to funding municipal energy efficiency and solar energy projects that generate cost savings. A portion of those savings are then used to replenish the fund.
EM-8	Energy: Municipal	Enroll in carbon offset program	City purchases voluntary market carbon offsets to mitigate their GHG emissions.
EM-9	Energy: Municipal	Electrify existing municipal buildings and facilities	Evaluate municipal buildings and facilities to determine projects where electrification is feasible. Retrofit these facilities to be all-electric, including electric heating, cooling and water heating.
TL-12	Transportation & Land Use: Community	Develop policies that encourage adoption of EV TNCs	Develop policies, such as a revenue neutral fee that only applies to ICE TNCs, to encourage the use of EV TNCs in the community. Utilize funds generated by fees on ICE TNC rides to provide discounts on EV TNC rides. Provide designated drop-off locations and charging locations for EV TNCs to facilitate EV adoption.
TM-2	Transportation: Municipal	Establish flexible schedules policy for public employees	Establish policy enabling alternative work schedules and remote working to reduce VMT associated with employee commuting.
WM-2	Waste: Municipal	Establish environmentally preferred purchasing policy: Recycled materials	Implement a sustainable purchasing policy that emphasizes the purchase of materials with high recycled content – paper, furniture, etc.
A-2	All Sectors: Community	Establish green lease program	Convert all leased property to "green" leases by either working with landlords or moving facilities to locations supported by systems such as solar, close to transportation, and/or with features to support and enhance energy efficiency and water conservation.

Appendix F. Summary of Funding Sources

For implementation of the Climate Action Plan, 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.

Federal Transportation Investment Generating Economic Recovery (TIGER) Grant
https://www.transportation.gov/highlights/tiger/tiger-discretionary-grant-program
The Federal Transportation Investment Generating Economic Recovery (TIGER) grant program was created by the American Investment and Recovery Act (ARRA) of 2009. In 2016, U.S. Transportation Secretary Anthony Foxx announced that nearly $500 million will be made available for transportation projects across the country in the eighth round of the highly successful TIGER grant program. Cities can apply for a TIGER grant to fund parking garages, and infrastructure to support electric battery-swap station and parking for electric vehicles.

State Funding

Energy Conservation Assistance Account Program (ECAA)
http://www.energy.ca.gov/efficiency/financing/index.html
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 including renewable and combined heat and power projects, HVAC equipment, water and waste water treatment equipment and load shifting projects.

Energy Upgrade California
https://www.energyupgradeca.org/
The Energy Upgrade California program helps residential and commercial consumers and the building industry to access available rebate programs and financing options for energy efficiency and renewable energy projects. It is supported by an alliance of the California Public Utilities Commissions, the California Energy Commissions, utilities, regional energy networks, local governments, businesses and nonprofits. Funding comes from investor-owned utility customers under the auspices of the California Public Utilities Commission.

Utility Rebate Programs

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

- Rebates for households: http://www.pge.com/myhome/saveenergymoney/
- Rebates for businesses: http://www.pge.com/mybusiness/energysavingsrebates/

Below, we provide some specific examples of PG&E programs available to the community.

PG&E San Mateo County Energy Watch Program
https://smcenergywatch.org/
San Mateo County Energy Watch provides energy efficiency services and retrofits and assists businesses and moderately low-income households to identify cost-effective projects. The program's services include energy audits, special rebates and incentives.

PG&E Residential Appliance Rebates
https://www.pge.com/en_US/residential/save-energy-money/savings-solutions-and-rebates/rebates-by-product/rebates-by-product.page
PG&E offers rebates to customers who purchase qualifying energy efficient appliances, including clothes washer, gas storage water heaters, electric heat pump water heaters and variable speed pool pumps/motors.

PG&E LED Streetlight Replacement Program
https://www.pge.com/en_US/large-business/save-energy-and-money/business-solutions-and-rebates/lighting.page
The City of Redwood City may be eligible for PG&E's LED streetlight replacement program which provides rebates to cities that replace existing streetlights with more energy efficient LED fixtures (up to $125 per fixture).

PG&E Commercial Appliance Rebates
https://www.pge.com/en_US/small-medium-business/save-energy-and-money/rebates-and-incentives/product-rebates.page
PG&E offers rebates to business customers on hundreds of products including refrigeration units, lighting fixtures, heating systems, food service appliances, boilers and water heaters, and insulation.

PG&E Home Energy Efficiency Improvements Rebates
https://www.pge.com/en_US/residential/save-energy-money/analyze-your-usage/home-energy-checkup/home-energy-checkup

PG&E offers rebates to customers who make energy efficiency improvements when remodeling their homes. Currently PG&E offers rebates on cool roof installations, attic and wall insulation installation, heating and cooling system upgrades, energy efficient furnace, and whole house fans. Finally, PG&E will provide up to $400 in rebates to customers who test and seal their home's duct system.

Local Energy Programs

California Youth Energy Services
http://www.risingsunenergy.org
Since 2000, Rising Sun Energy Center has run CYES, a summer youth employment and community efficiency retrofit program in the Bay Area. CYES hires young people (ages 15-22) and trains them to become Energy Specialists, serving their communities with a FREE Green House Call. Energy Specialists install free energy and water saving devices, and provide personalized recommendations and education for further savings in homes. CYES provides services to all community members regardless of income. However, it was designed to serve hard-to-reach residents including renters, non-English speaking households, and low-moderate income households. It provides youth with opportunities for training and meaningful employment; which are often not adequately available to them. CYES youth receive employability skills training, paid summer employment, and the foundation for a green career.

Green@Home HouseCalls
https://www.acterra.org/greenhome
Green@Home HouseCalls help fight climate change by saving residents energy, money and CO2. Trained volunteers meet with residents in their homes to install simple energy-saving devices and create home energy conservations plans. Volunteers demonstrate environmentally friendly choices and foster a deeper awareness of the need for change. HouseCalls are available to all residents of participating cities whether you rent or own.

Other Funding Opportunities

American Forests Global ReLeaf Grant Program
http://www.americanforests.org/global_releaf/
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.

California ReLeaf Urban Forestry Grant Program
http://californiareleaf.org/programs/grants
The California ReLeaf Urban Forestry grant program provides funding to assist nonprofit and community-based groups throughout California with urban forestry projects. The program is

funded through a contract with the California Department of Forestry and Fire Protection (CAL FIRE).

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. If you have water conservation related questions, please call 650-349-3000 or send an email to bawsca@bawsca.org. You can 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.

Midpeninsula Regional Open Space District
Legislative Program
2020

Adopted February 12, 2020

Contents

Introduction

Midpeninsula Regional Open Space District's Mission:

> *To acquire and preserve a regional greenbelt of open space land in perpetuity, protect and restore the natural environment, and provide opportunities for ecologically sensitive public enjoyment and education.*

As part of the Coastside Protection Area Service Plan, a Coastside mission was adopted:

> *To acquire and preserve in perpetuity open space land and agricultural land of regional significance, protect and restore the natural environment, preserve rural character, encourage viable agricultural use of land resources, and provide opportunities for ecologically sensitive public enjoyment and education.*

To further these missions, the Midpeninsula Regional Open Space District (District) annually reviews opportunities and challenges and establishes legislative program priorities and policy statements to guide its advocacy activities at the regional, state and federal levels.

Advocacy of the District's Interests

While this document attempts to cover a wide variety of legislative issues that may impact the District, it is not comprehensive, complete or final. Throughout the state and federal legislative sessions, the District will review and take positions on various proposed policies and state or federal budget items.

Per Section 2.0 of Board Policy 1.11, legislative advocacy is considered in the following manner:

Section 2.0: Local, State, and Federal Legislative Advocacy

a. The Legislative, Funding, and Public Affairs Committee (LFPAC) receives periodic updates throughout the year regarding the District's legislative program. When LFPAC determines that proposed legislation may affect District business, it may direct the General Manager to prepare a recommendation for consideration by the full Board or may direct the General Manager to take action to support or oppose the legislation without full Board approval when there is not adequate time to convene the full Board. In such cases, the General Manager or designee shall report to the Board any actions taken to support or oppose legislation at or before the next Board meeting.

b. When time is so short that neither the full Board nor LFPAC can be convened to consider positions to support or oppose local, state or federal legislation, the General Manager is authorized to take a position on behalf of the District if the legislation:
    i. Is related to the District's mission; AND
    ii. Would directly impact the District's business, such as project delivery, operations, finances, legal authority, or other District responsibilities; AND
    iii. The position being taken is consistent/inconsistent with existing District policy, past action, or the District's annual Strategic Plan Goals and Objectives; OR

iv. The legislation carries other considerations that make it contrary to the District's interests.

In such instances, the General Manager or designee shall report to the Board any actions taken to support or oppose the legislation at or before the next Board meeting.

c. Full Board action is required regarding legislation that is not clearly within the criteria listed above under Section 2.b. or guided by direction previously given by LFPAC.

All legislation on which the District takes a position will be closely tracked by the General Manager's Office (GMO) and reported to the Board of Directors. Public Affairs staff will be responsible for reporting similar information to key departments. Contracted state advocacy teams will represent District interests based upon the policies contained in the Legislative Session Program. In addition to District position letters, Board members and District staff may be asked to testify before or meet with relevant legislators or members of the executive branch to discuss issues requiring heightened advocacy. If this is the case, District staff must first notify and/or confirm approval of the GMO to ensure that positions taken are consistent with the Board-approved Legislative Session Program.

District Legislative Priorities

The following are the legislative priorities for the Midpeninsula Regional Open Space District during the 2020 State Legislative Session. Annual priority-setting considers a combination of issues that relate directly to important District-led projects or initiatives, opportunities to support or oppose state legislative initiatives sponsored by others that affect the District's mission, and any issues that are identified by the Board as particularly significant. Funding measures are the most common of these priorities and are generally tied to the creation of new funding sources or the processes that prescribe the allocation of existing funding sources. The 2020 legislative priorities are listed and grouped below consistent with the Board's annual Strategic Plan Goals and Objectives (See Appendix A) to provide a clear connection to agency priorities:

Goal 1: Promote, establish, and implement a common environmental protection vision with partners

1. **Wildlife Corridors:** Greater funding opportunities and permit streamlining to preserve and enhance wildlife corridors; promote wildlife permeability in the built environment.
2. **Anticoagulant Rodenticides:** Eliminate the use of second-generation anticoagulant rodenticides to protect raptors, large mammals and other nontarget native wildlife.

Goal 2: Protect the positive environmental values of open space lands

1. **Responsible Wildland Fire Vegetation Management:** Effective guidelines for wildland fire fuel reduction efforts that minimize potential impacts to rare and endangered species and the risk of exacerbating the spread of invasive species.

Goal 3: Connect people to open space and a regional environmental protection vision

1. **Equitable Access:** Expanded access to and enhanced funding eligibility for new and improved greenspace opportunities for underserved communities.
2. **Trail Corridors:** Linking of preserve trails to regional trails and ultimately to the places where people live and work.

Goal 4: Strengthen organizational capacity and long-term financial sustainability to fulfill the mission

1. **Climate Change Bond:** Climate change funding that benefits a wide range of open space priorities and promotes landscape climate resilience, particularly in the Bay Area.
2. **Proposition 68 Implementation:** Efforts to ensure that parks bond funds are allocated in a timely, equitable, and responsible manner, and that the resulting grant programs support District opens space and public access projects.
3. **Cap and Trade/Climate-Related Funding:** Funding that supports the climate resiliency

benefits of open space and working lands, including carbon sequestration.

4. **Green Bonds:** Efforts to allow the California Natural Resources Agency to work with the State Treasurer's Office to develop standards for green bond projects, in which California can invest.
5. **Public Safety Power Shutoffs:** State efforts to ease the burden of PG&E Public Safety Power Shutoffs on local agency operations.

District Legislative Policy Positions

The ability of the District to deliver its mission and remain a sustainable organization can be impacted by legislation proposed on the local, state or federal level. To this end, proactive, Board-approved policy positions taken by the District on a variety of relevant issue areas help to ensure consistency in advocacy. District policy positions are then grouped by strategic plan goals.

Goal 1: Promote, establish, and implement a common environmental protection vision with partners

1. Enhances the purchase or acquisition of regional and strategic open space lands and connects District lands to federal, state, county, city and other protected open space, parklands, bay lands, watershed lands, wildlife corridors and agricultural lands.
2. Protects public open space, property rights, interests and easements.
3. Enhances and funds regional collaboration and coordination of conservation efforts.
4. Promotes the use of urban infill and urban growth boundaries to avoid sprawl and prevent pressure on developing open spaces and further encroachment into the wildland-urban interface and open space buffer areas.
5. Expands and restores protected open space lands to enhance biodiversity, climate change resilience, and scenic, rural character.
6. Ensures that the zoning of permanently protected lands supports activities that further the District's mission (preservation, natural resource protection, public access and education, agriculture).
7. Enhances the District's ability to create and pursue opportunities to acquire an integrated greenbelt of protected open space, trails and habitat corridors.
8. Protects natural and working lands from future development threats.

Goal 2: Protect the positive environmental values of open space lands

1. Ensures reasonable setback requirements that allow minimum defensible space clearances to be met by private property owners to prevent catastrophic fires that damage habitats and pose a high public safety hazard.

2. Furthers implementation of Senate Bill 32 (2016), the Global Warming Solutions Act that establishes a greenhouse gas (GHG) reduction target for the state of 40 percent below 1990 levels by 2030.
3. Recognizes and incentivizes the use of natural and working lands for the purpose of carbon sequestration.
4. Supports effective and comprehensive Districtwide, regional and statewide measures that respond to sea level rise and other effects of climate change and enhance ecological and community resilience.
5. Enhances or streamlines the integration of wildlife corridors into transportation infrastructure and promotes its ongoing maintenance within District lands and adjacent entities, which may extend to statewide and international linkages.
6. Promotes advance mitigation programs to enhance wildlife corridor networks.
7. Connects habitats that support a diverse array of native plants and animals.
8. Encourages public road management agencies to control invasive plant populations and incorporate safe pedestrian and wildlife crossings across roadways and highways.
9. Eliminates the use of second-generation anticoagulant rodenticides.
10. Supports increased knowledge, management and ultimately the eradication of Sudden Oak Death disease.
11. Provides permit exemptions for natural resources protection and restoration projects from regulations aimed to protect the natural environment from typical development projects.
12. Supports maintaining state and federal lists of endangered species justified through conclusive biological evidence.
13. Helps efforts to protect, conserve, restore and enhance the natural resources of the District, its coast, and adjacent waters for environmentally sustainable and prudent use by current and future generations.
14. Enables Native American communities' involvement in cultural and land management practices to restore and protect natural resources and enhance landscape resilience.
15. Protects and restores watersheds, water quality, natural water courses, wetlands and hydrologic processes consistent with the District's Resource Management Plan.
16. Promotes expedited removal of select trees and brush by public agencies for fire protection, public safety and enhanced climate resilience, while minimizing potential impacts to rare and endangered species and the risk of exacerbating the spread of invasive species.
17. Supports wildland fire management to become a more natural component of the ecosystem and minimizes its negative effects on the community and environment.
18. Supports working farms and ranches on public open space land that further conservation and climate resilience goals.
19. Supports the creation of and repairs to farm labor housing to foster farm operation sustainability that ultimately furthers conservation and climate resilience goals.

20. Incentivizes agricultural operations to invest in energy-efficient and water-efficient irrigation technologies that reduce greenhouse gas emissions and water use.
21. Aids enforcement of marijuana laws related to the implementation of Prop 64 (2016) to protect natural lands from the destruction caused by illegal marijuana grows.
22. Protects natural lands from the destruction caused by illegal marijuana grows, prohibits marijuana grows on public lands, and restores damaged habitats.

Goal 3: Connect people to open space and a regional environmental protection vision

1. Helps expand educational opportunities for underserved and non-English speaking communities about natural resources and the benefits of open space.
2. Promotes volunteer involvement and engagement of diverse communities in ongoing conservation, restoration, enhancement and interpretation of the District's natural resources.
3. Engages children and parents in the enjoyment and appreciation of outdoor open spaces to inspire the next generation of conservation champions.
4. Funds and enables programs that hire youth to work in parks and open space and encourages them to consider careers in conservation.
5. Keeps preserves safe, clean, accessible and inviting for healthy exercise and enjoyment.
6. Promotes awareness and access to programs and activities that increase outdoor physical activity.
7. Protects and helps fund the protection and public interpretation of cultural and historic resources located on natural open space and working lands.
8. Helps fund and streamline emergency repairs to District infrastructure, including trails and public access amenities.
9. Increases public access to preserved land regionwide.
10. Helps link preserve trails to other regional trails and ultimately to the places where people live and work.
11. Improves local transportation to enable better connectivity between communities and open space preserves.
12. Limits public use of drones (unmanned aerial vehicles) consistent with Board policies to preserve the tranquility of outdoor experiences, natural activities, and minimize risk of wildfire.

Goal 4: Strengthen organizational capacity and long-term financial sustainability to fulfill the mission

1. Preserves existing tax revenues and tax authority.
2. Lowers the vote threshold for locally imposed special taxes from two-thirds to 55 percent.

3. Preserves tax-exempt status for municipal bonds on a state and federal level.
4. Expands state and federal incentives that promote the issuance of green bonds.
5. Preserves and promotes managerial discretion in effective and productive recruiting, hiring, firing and day-to-day oversight of staff at all levels.
6. Preserves and promotes open, transparent, accountable government administrative practices that promote the efficient and timely delivery of public services, facilitate public involvement, and support effective and timely decision-making.
7. Maintains prevailing wage exemptions for volunteers.
8. Enables statewide efforts to increase broadband connectivity to public agency infrastructure in remote areas.
9. Preserves and promotes cost-effective, fair, and efficient contracting practices that give taxpayers the best value for their dollar.
10. Enables streamlining of contracting and bidding processes and attracts greater contractor and vendor competition.
11. Provides funding and funding flexibility to achieve mission-related goals including, but not limited to:
    a. District operations and infrastructure
    b. Integrated Pest Management
    c. Programs that hire youth to work in parks and open space and encourages them to consider careers in conservation
    d. Partnership approaches to environmental education and public outreach efforts at local and state levels.
    e. Implementation of improvements that meet the Americans with Disability Act (ADA) and other accessibility standards in District preserves.
    f. The protection of prime and sustainable agricultural lands, including investments in agricultural-support infrastructure.
    g. Funding for local partners to receive technical support for agriculture and natural resources enhancement.
12. Promotes closer collaboration and coordination between regulatory agencies to enhance permit processing efficiency and reduces overall project costs.
13. Improves and streamlines permitting, CEQA review and compliance processes for emergency repairs, routine maintenance, habitat restoration, and public access projects.
14. Provides open space districts the authority to utilize a variety of contracting methods to construct projects, including design-build methodologies.
15. Promotes implementation of and education about sustainable design and construction, including but not limited to LEED buildings, stormwater treatment and runoff reduction, local (within 150-mile radius of project) contractor/consultant hiring, construction material reuse/recycling, and use of green/energy efficient materials and equipment.

2020 Regional/Local Priorities

Though there is a growing recognition of the importance of regional planning and coordination, local land use authority dominates California planning processes in both the built and natural environments.

In 2020, the District supports:

Plan Bay Area 2050

Ratification of the final preferred scenario of the Plan Bay Area 2050 that curbs urban boundary expansion, more tightly integrates open space preservation and stewardship, and funds District priorities in adopted Priority Conservation Areas (PCA).

San Francisco Bay Restoration Authority Measure AA Implementation

Grant program guidelines for SFBRA's Measure AA funds that enable implementation of District priority projects.

Santa Clara Valley Transportation Authority Measure B Implementation

Advance mitigation allocation guidelines for VTA's recently passed Measure B funds that enable implementation of District priority projects.

San Mateo County Transit District Measure W Implementation

Allocation guidelines that enable regional bicycle/pedestrian network connectivity with District projects and regional trail plans.

Regional Collaboration

Efforts to enhance and fund regional collaboration and coordination of conservation plans.

2020 Federal Legislative Priorities

Given the outcomes of the 2016 federal elections, active advocacy at the federal level may be most effectively directed toward protecting existing environmental priorities and regulations.

In 2020, the District will focus on the following:

Land and Water Conservation Fund

Fully funding the federal Land and Water Conservation Fund.

Infrastructure Investment

Inclusion of active transportation and parks-related projects in federal funding allocations for infrastructure.

National Monument Preservation

Policies that protect and designate national monuments within our region that are important to fulfilling the District's mission.

Wildlife Corridors

Policies that enhance habitat connectivity on nonfederal lands through wildlife crossings and other habitat connectivity projects.

Appendix A:

Midpeninsula Regional Open Space Strategic Plan for FY2020-21

Online at: https://www.openspace.org/sites/default/files/StrategicPlan_2021.pdf

Goal 1 – Promote, establish, and implement a regional environmental protection vision with partners

- Objective 1 – Continue implementation of the District's Vision Plan and communicate progress on projects through reporting results and building partner relationships
- Objective 2 –Build and strengthen diverse partnerships to implement a collaborative and science-based approach to regional environmental protection
- Objective 3 – Build and strengthen relationships with legislators to advocate environmental protection goals
- Objective 4 – Preserve open space lands of local and regional significance

Goal 2 – Protect the positive environmental values of open space lands

- Objective 1 – Take a regional leadership role in promoting the benefits of open space
- Objective 2 – Protect and restore the natural environment in a manner that expands regional resiliency and climate change adaptation to preserve healthy natural systems
- Objective 3 – Work with fire agencies and surrounding communities to strengthen the prevention of, preparation for and response to wildland fires for enhanced ecosystem resiliency and public safety
- Objective 4 – Support the viability of sustainable agriculture and character of rural communities

Goal 3 – Connect people to open space and a regional environmental protection vision

- Objective 1 – Communicate the benefits of a regional environmental protection vision
- Objective 2 – Refine and implement a comprehensive public engagement strategy, including the outreach to diverse communities and enhanced public education programs
- Objective 3 – Expand opportunities to connect people to their public open space preserves consistent with an environmental protection vision
- Objective 4 – Reflect the diverse communities we serve in the District's, staff, volunteers, and partners

Goal 4 – Strengthen organizational capacity and long-term financial sustainability to fulfill the mission

- Objective 1 – Provide the necessary resources, tools, training, and infrastructure, including technology upgrades and capacity building

- Objective 2 – Continuously evaluate and improve processes and business model to effectively and efficiently deliver Vision Plan projects and the District's ongoing functions
- Objective 3 - Build state of readiness for potential disruptions by completing a risk assessment and creating a business continuity plan
- Objective 4 – Continue to engage constituents for bond sales and via the work of the Bond Oversight Committee – "Promises made, promises kept."
- Objective 5 – Remain financially sustainable by pursuing and ensuring discretionary funding opportunities and partnerships to augment operating, capital, and bond funding sources, and ensure that large capital expenses and land acquisitions, including associated public access and land management costs, are evaluated within the long-term financial model and remain financially sustainable
- Objective 6 – Continue to recruit, develop and retain talented staff to implement the District's mission and strengthen our organizational capacity

ATTACHMENT 5

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT

CLIMATE ACTION PLAN

October 2018

MIDPENINSULA REGIONAL OPEN SPACE

CASCADIA CONSULTING GROUP

Acknowledgements

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ICLEI – Local Governments for Sustainability
Point Blue Conservation Science
Sonoma County Agricultural Preservation and Open Space District
San Mateo Resource Conservation District
Bay Area Air Quality Management District
Santa Clara Valley Open Space Authority
Santa Clara County Parks
Peninsula Open Space Trust
The Nature Conservancy

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT

CLIMATE ACTION PLAN

October 2018

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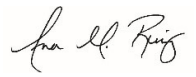
Foreword

With this Climate Action Plan, Midpen is taking action to minimize our own operational climate change impacts on our community and the surrounding natural environment. Climate change is putting at risk nearly 50 years of incredible conservation gains made by this organization and our partners. Changing temperatures are altering rainfall, vegetation, and ultimately the health of our local biodiversity. People are also witnessing and directly experiencing the wide-reaching impacts of climate change.

Midpen remains committed to protecting a regional greenbelt of open space that increases our community's ability to cope with climate change. Preserved forests and grasslands, and even the soil beneath them, continuously capture and store excess carbon in the atmosphere that originates from the burning of fossil fuels for transportation and energy. Open space lands buffer surrounding communities from catastrophic events such as sea level rise, flooding, and wildfire. Interconnected open space with wildlife corridors allows native plants and wildlife to move across the landscape, seeking livable habitats in response to changing conditions.

Midpen is seizing the opportunity to lead by example and be part of the solution**.** From the energy we use, to which lands we preserve, to how we manage open space, this Climate Action Plan is our roadmap to meeting aggressive voluntary greenhouse gas reduction goals. We invite you to join us in taking a few additional steps to further reduce your own carbon footprint. Collectively, our actions make a real and lasting difference.

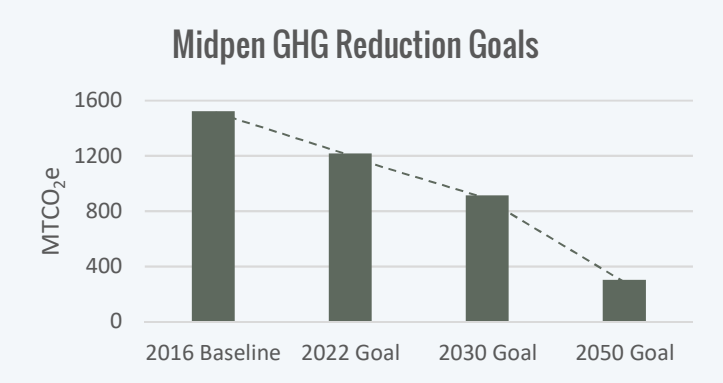


Ana María Ruiz
General Manager

Executive Summary

Climate change is a direct threat to Midpeninsula Regional Open Space District's (Midpen's) mission to acquire and preserve a regional greenbelt of open space land *in perpetuity*. Climate change is affecting temperatures, precipitation, weather patterns, species ranges, and wildfire risk, thereby affecting Midpen lands. Midpen believes that action on climate change must start from within and aims to lead by example by reducing its carbon footprint as an agency. The Climate Action Plan serves as a roadmap to meet Midpen's ambitious commitment to:

Reduce administrative greenhouse gas (GHG) emissions 20% below 2016 baseline by 2022, 40% by 2030, and 80% by 2050.



This goal will be reached by implementing the following climate action strategies:

VEHICLE FLEET, EQUIPMENT, AND BUSINESS TRAVEL - 45% OF BASELINE ADMINISTRATIVE GHG EMISSIONS

Increase electric and alternative fuel vehicles and equipment, increase vehicle fuel economy, increase use of electric transportation options, reduce miles driven, and purchase carbon offsets for flights.

EMPLOYEE COMMUTE - 30% OF BASELINE ADMINISTRATIVE GHG EMISSIONS

Reduce the number of commute days, incentivize and enable low-emissions commute modes, and reduce commute distances.

FACILITIES - 13% OF BASELINE ADMINISTRATIVE GHG EMISSIONS

Move towards 100% renewable electricity for all Midpen facilities, maximize energy efficiency in new and existing buildings, and reduce solid waste generated through Midpen operations.

TENANT RESIDENCES - 12% OF BASELINE ADMINISTRATIVE GHG EMISSIONS

Move towards 100% renewable electricity for residences, increase energy efficiency, move towards cleaner heat sources, and improve data and guidance for decision-making.

In addition, Midpen seeks strategies to reduce or offset livestock emissions, enhance carbon sequestration, reduce visitor transportation emissions, and increase staff and visitor awareness and action on climate change.

The Climate Action Plan is designed to be a living document, serving as a starting point for a long-term commitment to address climate change. It is our hope that by taking steps to reduce GHG emissions internally, Midpen can draw attention to this critical issue, catalyze GHG reduction in our resident community and the broader environmental community, and contribute to local, state, and global progress on stabilizing the climate and protecting life in all its forms.

Introduction

Climate change is a direct threat to Midpeninsula Regional Open Space District's (Midpen's) mission to acquire and preserve a regional greenbelt of open space land **in perpetuity**. Now and in the future, climate change has wide-reaching consequences for the Bay Area's natural environment and the people who depend on it. Greenhouse gases (GHGs) released from burning fossil fuels for transportation and energy are changing the climate. As a result, the Bay Area is already seeing warmer temperatures, changes to plant and animal habitat ranges, more intense wildfires, sea level rise, and more frequent droughts and floods.

Midpen believes that action on climate change must start from within. The Climate Action Plan (CAP) presents a roadmap to reduce Midpen's carbon footprint. Midpen aims to further regional and global progress on climate change mitigation, draw attention to this critical issue, and catalyze community-wide greenhouse gas reductions by leading by example and demonstrating what solutions look like in practice.

The CAP summarizes Midpen's carbon footprint and outlines strategies to reduce it. Midpen has adopted an ambitious voluntary goal of **reducing greenhouse gas emissions 20% by 2022, 40% by 2030, and 80% by 2050**, in line with the State of California's goals. In pursuit of that goal, the CAP lays out a suite of greenhouse gas reduction strategies, actions, and performance indicators as well as an implementation and monitoring plan.

CLIMATE ACTION PLAN DEVELOPMENT PROCESS

In 2017, Midpen initiated a climate action planning process to assess and develop strategies to reduce agency greenhouse gas emissions. Midpen hired a management fellow through the City/County Managers Association of San Mateo and Santa Clara Counties to lead this work. Partner organizations like the Bay Area Open Space Council have commended Midpen's leadership in dedicating staff resources to climate change.

Staff at all levels have been involved in the development of the Climate Action Plan in order to create a roadmap that is feasible and balances climate goals with the important work done by Midpen staff. An interdepartmental climate project team was convened in November 2017 to guide the scope and content of the Climate Action Plan. This team of 12 representatives from seven departments met monthly throughout the project. In addition, three working groups composed of a total of 16 staff took a deep dive into the largest emissions sectors over the course of 14 brainstorming and prioritization meetings. The full staff was engaged in the project through all-staff and department presentations. Finally, 101 employees (56% response rate) responded to a survey on Climate Action Plan strategies to share their ideas and feedback. A majority of employees supported every single GHG reduction strategy in the survey, with support ranging from 65-97% across strategies.

The Board of Directors held three meetings to inform the development of the Climate Action Plan:

- March 28, 2018, to review Midpen's greenhouse gas inventory and forecast
- June 27, 2018, to provide feedback on Midpen's greenhouse gas reduction goals
- September 12, 2018, to provide feedback on the draft Climate Action Plan and draft Climate Change Policy

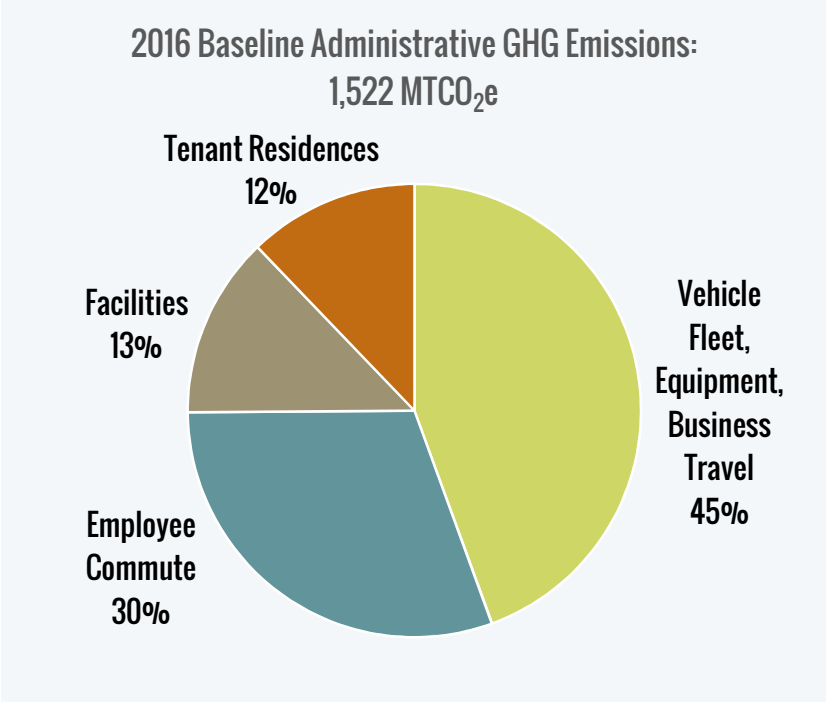
Baseline Summary

Greenhouse Gas Inventory

The baseline GHG Inventory is for the year 2016, the earliest year for which full data was available. Midpen is using an **administrative scope** that focuses on GHG emissions from Midpen administration and operations:

- Vehicle fleet, equipment, and business travel
- Employee commute
- Facilities (including electricity, heating fuels, solid waste, and wastewater)
- Tenant residences (including electricity and heating fuels)

In 2016, Midpen produced 1,522 metric tons of carbon dioxide equivalent ($MTCO_2e$). Vehicles, equipment, and business travel was the largest emissions sector at 45%. Employee commute was the second highest contributor at 30%. Facilities made up 13% of administrative emissions, followed by tenant residences at 12%. These administrative emissions sectors are the focus of Midpen's GHG reduction goals, and details on each sector can be found in the Greenhouse Gas Reduction Strategies and Actions section.

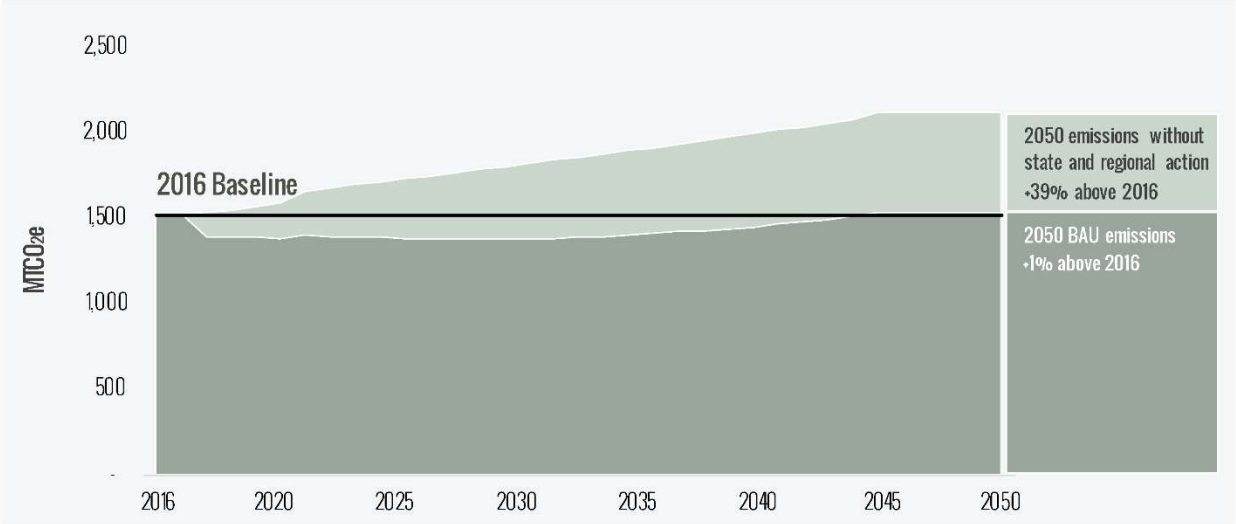


There are also non-administrative GHG emissions related to Midpen activities but that Midpen has less control over, such as livestock and visitor transportation to preserves. These non-administrative emissions sectors are discussed in Appendix 1. They represent areas for additional analysis to establish GHG emissions baselines and identify opportunities to reduce emissions above and beyond Midpen's administrative GHG reduction goals. Initial strategies to establish emissions baselines and reduce or offset emissions from livestock and visitor transportation are described in Appendix 1.

Business-as-Usual Emissions Forecast

The business-as-usual (BAU) emissions forecast projects greenhouse gas emissions through 2050 to provide a sense of how emissions will change over time if Midpen takes no action to reduce emissions. The forecast takes Midpen's significant organizational growth into account, including expected growth in staff, vehicles, office facilities, and land acquisition. The BAU forecast also factors in state and regional laws and policies that will affect emissions in the future, such as fuel efficiency and renewable energy standards.

Administrative GHG Emissions Forecast 2016-2050



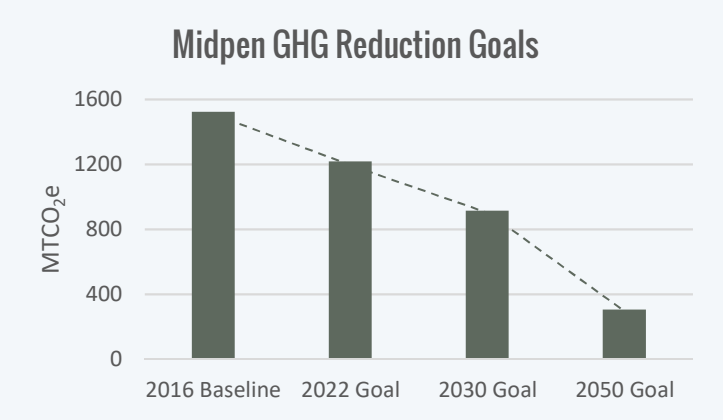
The BAU forecast indicates that planned organizational growth will be largely offset by regional and state changes to **electricity carbon intensity** and **vehicle fuel efficiency**. The result is an overall 1% increase in administrative emissions between 2016 and 2050. Without these planned policy changes at the regional and state level, Midpen's administrative emissions would grow 39% above the 2016 baseline by 2050, as shown in the figure above. The dip in emissions that can be seen in 2017-2018 is because Midpen facilities are being automatically enrolled in 50% renewable electricity from Silicon Valley Clean Energy and Peninsula Clean Energy.

Based on this business-as-usual emissions forecast, Midpen will have to take action that goes beyond regional and state initiatives to meet its goal to reduce emissions 20% by 2022, 40% by 2030, and 80% by 2050.

Greenhouse Gas Reduction Goals and Targets

A specific, numerical goal for greenhouse gas reduction will help drive progress and measure the success of Midpen's climate mitigation efforts. Midpen sets the following voluntary greenhouse gas reduction goals to be achieved by the Climate Action Plan:

Reduce administrative greenhouse gas (GHG) emissions 20% below 2016 baseline by 2022, 40% by 2030, and 80% by 2050.



Overall and sector-specific targets provide metrics for assessing progress towards climate action goals. Key indicators are also identified within each emissions sector to provide additional information on trends over time that may be enabling or inhibiting GHG reductions. Midpen staff will track progress towards reaching these targets by conducting a GHG Inventory update and providing reports to the Board every two years (see Implementation and Monitoring section).

CLIMATE ACTION PLAN GOALS	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **vehicle fleet, equipment, and business travel** emissions 20% by 2022, 40% by 2030, 80% by 2050	676 ($MTCO_2e$)	541 ($MTCO_2e$)	406 ($MTCO_2e$)	135 ($MTCO_2e$)
Reduce **employee commute** emissions 20% by 2022, 40% by 2030, 80% by 2050	463 ($MTCO_2e$)	371 ($MTCO_2e$)	278 ($MTCO_2e$)	93 ($MTCO_2e$)
Reduce **facilities** emissions 20% by 2022, 40% by 2030, 80% by 2050	197 ($MTCO_2e$)	158 ($MTCO_2e$)	118 ($MTCO_2e$)	39 ($MTCO_2e$)
Reduce **tenant residences** emissions 20% by 2022, 40% by 2030, 80% by 2050	185 ($MTCO_2e$)	148 ($MTCO_2e$)	111 ($MTCO_2e$)	37 ($MTCO_2e$)

STATE, NATIONAL, AND INTERNATIONAL CONTEXT

This target is aligned with the State of California and regional peers. California has set a statewide greenhouse gas reduction requirement **of 80% below 1990 baseline levels by 2050**. The California Legislature passed a mid-term 2030 reduction target to reduce emissions to **40% below 1990 baseline levels by 2030**.[1] Midpen uses a 2016 baseline rather than a 1990 baseline because 2016 is the earliest year for which full data

[1] "Climate Change Programs." California Air Resources Board, 2018.

was available. Best practices recommend setting a baseline year in this manner rather than attempting to "back-cast" emissions in 1990 with very minimal data.

Additionally, the 80% by 2050 reduction target is broadly accepted internationally by cities, states, and nations. This target is the foundation of the "Under2 MOU," an agreement initiated in 2015 and now signed by California and over 200 jurisdictions from around the world to meet the intentions of the Paris Agreement. The "Under2 MOU" requires signatories to commit to "limit emissions to below 80 to 95 percent below 1990 levels, or below 2 annual metric tons per capita, by 2050—the level of emission reduction believed necessary to limit global warming to less than 2 degrees Celsius."[2]

HOW WILL WE GET THERE?

The Climate Action Plan serves as an achievable roadmap to reduce administrative emissions 20% below baseline by 2022 and 40% below baseline by 2030. Achieving an 80% reduction by 2050 is a vision as important as it is challenging. Advances in technology, changes to everyday operations, and incorporating climate change into decision-making will all be required to meet this more ambitious long-term target. Midpen has an opportunity and a duty as an environmental agency to lead by example and confront this critical challenge head on.

[2] "The Under2 MOU." Under2 Coalition, 2018.

Effectiveness and Cost Analysis of 10 Sample Actions

GHG reductions and costs were modeled for ten sample Climate Action Plan actions that, if implemented, would reduce administrative GHG emissions by 40% (see table below). This analysis identifies one **pathway to reducing administrative emissions by 40% below baseline, exceeding Midpen's 2022 target and meeting Midpen's 2030 target**, but many other combinations of actions could achieve the same reduction. Therefore, the information presented in the table is not meant to be prescriptive but rather to illustrate that reaching the 40% reduction goal is possible. Costs and GHG reductions were not analyzed for the full list of actions in the Climate Action Plan.

The table below shows that some actions would result in ongoing annual operating costs, such as purchasing 100% renewable electricity ($1,534 per year) or providing a transit/carpool/bike incentive ($21,002 to $43,619 per year depending on participation). Some actions would require upfront capital costs that are paid back over time through cost savings, such as purchasing electric bikes or all-terrain vehicles for ranger patrol ($60,000 upfront cost, paid back in two years through vehicle fuel savings). Downsizing trucks would result in both capital savings (due to lower purchase price at the time of replacement) and operating savings (due to fuel savings). Finally, some actions would have no associated cost, such as expanding telecommuting and compressed work schedules. The addition of a solar panel system for the new Administrative Office (AO) is expected to result in a net cost savings on energy use. At this time, it is too early to know whether other direct and indirect costs would apply to improve the energy efficiency of the building.

Altogether, the ten sample actions analyzed would result in an **estimated net annual operating savings of $81,707** due to savings in fuel and energy use. Net upfront capital costs will depend on energy efficiency improvements and costs associated with the AO building.

SECTOR	ACTION	GHG REDUCTION FROM BASELINE	PAYBACK PERIOD (YEARS)	NET ANNUAL OPERATING COST*	NET UPFRONT CAPITAL COST*
Vehicles, Equipment, Business Travel	Switch to renewable diesel (Completed in September 2018)	6%	N/A	$0	$0
	Downsize F350 trucks at time of replacement (25% of trucks and 100% of trucks scenarios)**	2.5-10%	N/A	($13,952 - $55,807)	($34,729 - $138,915)
	Increase ranger patrol on electric bikes or all-terrain vehicles (ATVs)	4%	2	($33,434)	$60,000
	Purchase carbon offsets for all business travel	6%	No payback	$374	$0
Employee Commute	Transit/carpool/bike incentive (low and high scenarios)	3-6%	No payback	$21,002 - $43,619	$0
	Expand telecommuting (low and high scenarios)	2-5%	N/A	$0	$0
	Expand compressed work schedules (low and high scenarios)	1.5-3%	N/A	$0	$0
	Allow Administrative Office (AO) staff to work at new South Area Office (low and high scenarios)	0.3-0.8%	N/A	$0	$0
Facilities	Purchase 100% renewable electricity	5%	No payback	$1,534	$0
	New AO: Zero Net Energy (solar panel system plus 60% energy use reduction through renovation)	2%	TBD	($47,612)	TBD
TOTAL (RANGE)		32-48%		($49,471 - $113,943)	($79,915) - $25,271 + AO costs
TOTAL (AVERAGE)		40%		($81,707)	($26,822) + AO costs

**Negative values indicate net savings.*

***It may not be feasible to downsize all F350 trucks. Further analysis is required to assess whether smaller trucks could meet Midpen's operational needs for fire response and off-road patrol and maintenance. This table shows that downsizing F350 trucks has high GHG and cost savings potential.*

Employee Commute Scenario Assumptions

- *Transit/carpool/bike incentive: Low – 13% of employees shift to always alternative commute; High – 27% of employees shift to always alternative commute*
- *Expand telecommuting: Low – 50% of AO employees telecommute 1 day/week; High – 75% of AO employees telecommute 2 days/week*
- *Expand compressed work schedules: Low – 81% of employees on 9/80 schedule; High – all employees on 9/80 schedule plus 34% of employees shift to 4/10 schedule (changes modeled on top of current 34% of employees already on 9/80 schedule)*
- *Allow Administrative Office staff to work at new South Area Office: Low – 20% of AO employees 1 day/week; High – 25% of AO employees 2 days/week*

Greenhouse Gas Reduction Strategies and Actions

The following sections detail Midpen's GHG reduction strategies and actions by sector. Strategies are high-level approaches that specify how changes within that sector will reduce GHG emissions. Actions, nested within each strategy, provide a suite of specific implementation measures. In the following tables, strategies are shown as headers and actions are listed below each strategy. Prioritization and implementation are discussed in the Implementation and Monitoring section.

STRATEGIES AND ACTIONS TABLE KEY

LEAD DEPARTMENT/DIVISION

- **AS:** Administrative Services
- **E&C:** Engineering and Construction
- **HR:** Human Resources
- **IST:** Information Systems and Technology
- **L&F:** Land and Facilities
- **NR:** Natural Resources
- **PA:** Public Affairs
- **PL:** Planning
- **VS:** Visitor Services

TIMEFRAME

- **Complete:**
- **Ongoing:**
- **Short-term:** 1-3 years
- **Medium-term:** 3-6 years
- **Long-term:** 6-12 years

OFFICE FACILITIES

- **AO:** Administrative Office
- **CAO:** Coastal Area Office
- **FFO:** Foothills Field Office
- **SAO:** South Area Office
- **SFO:** Skyline Field Office

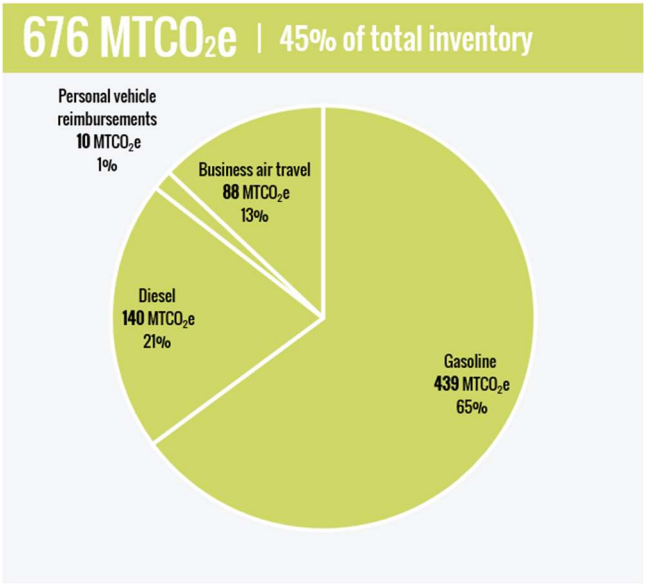
Vehicle Fleet, Equipment, and Business Travel

In total, vehicle fleet, equipment, and business travel account for the **largest portion of Midpen's administrative emissions, 45% in 2016**. Midpen uses vehicles to carry out maintenance activities, patrol open space preserves, provide emergency response, and transport employees. Maintenance equipment is used to build and maintain trails, structures, and facilities. Employees also travel for work, including flights to conferences. Air travel is a highly carbon-intensive mode of travel, and alone accounts for 6% of Midpen's administrative emissions.

Climate action strategies can reduce fleet and equipment emissions by transitioning to electric and alternative fuel vehicles and equipment, increasing fuel efficiency, and optimizing operations to reduce driving distances. To reduce business travel emissions, Midpen can reassess the need to attend far-away conferences and purchase carbon offsets for flights.

A key challenge in this sector is the operational demands of off-road vehicles. At present, there are few low-emissions options for trucks that can meet Midpen's patrol, maintenance, and emergency response needs. Tracking evolving technologies and testing new truck options as they emerge will be a key priority for greening the vehicle fleet.

Vehicles/Equipment GHG Emissions Breakdown



Midpen has already taken steps to reduce vehicle fleet, equipment, and business travel emissions by:

- Changing diesel fuel tanks to **renewable diesel** in September 2018.
- Installing electric vehicle chargers at the administrative office and acquiring a plug-in hybrid.
- Incorporating fuel efficiency into vehicle replacement guidelines.
- Replacing three F350 trucks with more efficient F150 trucks at time of replacement.
- Acquiring and testing electric maintenance equipment such as chainsaws and brush cutters.
- Acquiring and testing two electric bicycles at Skyline Field Office for transportation to maintenance activities.

First fueling with renewable diesel in September 2018.

GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

VEHICLE, EQUIPMENT, AND BUSINESS TRAVEL GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **vehicle fleet, equipment, and business travel** emissions 20% by 2022, 40% by 2030, 80% by 2050	676 ($MTCO_2e$)	541 ($MTCO_2e$)	406 ($MTCO_2e$)	135 ($MTCO_2e$)
Vehicle, Equipment, & Business Travel Indicators				
Average vehicle fuel economy (miles per gallon)	15.6			
Total fleet vehicle miles traveled (miles, WEX cards only)	883,713			
Proportion of equipment that is powered by renewable fuel or electricity (%)	0%			
Annual miles flown for business travel (miles)	50,000			

STRATEGIES AND ACTIONS

VEHICLE, EQUIPMENT, & BUSINESS TRAVEL STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Increase Electric and Alternative Fuel Vehicles and Equipment			
V1	Switch fuel tanks to renewable diesel.	L&F	
V2	Track technology development for hybrid, electric, or alternative fuel trucks. When a viable option comes on the market, acquire and test one truck as a pilot project.	L&F; VS	
V3	Install electric vehicle chargers at all field offices.	L&F	
V4	Acquire and test new electric equipment as technology develops. Update Maintenance Operations Manual to provide guidance to choose electric maintenance equipment when tasks allows.	L&F	
V5	As administrative vehicles are up for replacement, replace with electric or hybrid vehicles wherever possible.	L&F	
V6	Purchase one hybrid or long-range electric vehicle for each field office for highway/town travel and on-road maintenance projects.	L&F	
Increase Vehicle Fuel Economy			
V7	Evaluate fire response program and assess feasibility of alternative fire response models with lower emissions, such as acquiring brush trucks and downsizing F350s (e.g. City of Palo Alto).	VS; L&F	
V8	Update Maintenance Operations Manual to provide guidance to choose most fuel efficient vehicle possible for task.	L&F	
Increase Use of Alternative Electric Transportation Options			
V9	Acquire and test electric bikes, motorcycles, ATVs, or mules as technology develops. Stage electric transportation equipment at preserves to enable use.	L&F; VS	
V10	Expand ranger patrols on electric bikes, motorcycles, ATVs, or mules. Update Ranger Operations Manual to encourage this option and provide guidance.	VS	
V11	Update Maintenance Operations Manual to provide guidance to use electric transportation equipment to get to/from project site when tasks allows.	L&F	
Reduce Vehicle Miles Driven			
V12	Evaluate patrol and maintenance circulation routes to identify mileage reduction opportunities.	VS; L&F	
V13	Minimize driving to meetings and trainings through teleconferencing technology and efficient scheduling.	IST	
Purchase Carbon Offsets for Flights			
V14	Purchase carbon offsets for flights.	AS	

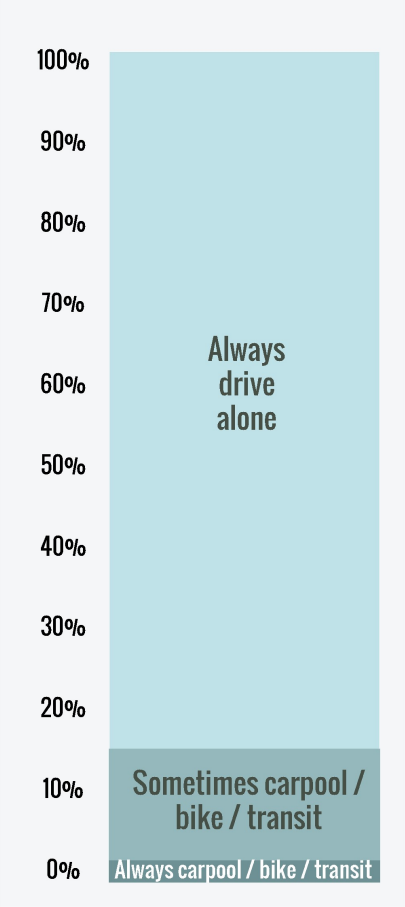
Employee Commute

Midpen employees commuted nearly 1.5 million miles in 2016, and this activity accounts for 30% of Midpen's administrative emissions. **Over 80% of employees always drive alone to work** due to high local housing costs and limited public transit options, particularly for field staff.

While employee commute choices are not under Midpen's control, Midpen can influence employee habits to reduce emissions by promoting alternative commute options like carpooling, public transit, and biking. Midpen will strive to create an environment conducive to efficient commuting by offering flexible work schedules, expanding telecommuting when possible, and pursuing opportunities to provide employees with Midpen-owned housing. Reducing employees' commute trips and providing employees with options for how they commute has significant co-benefits for employee morale and retention.

Midpen has already taken steps to reduce employee commute emissions by:

- Offering "9/80" compressed work schedules for some employees.
- Offering telecommuting one day per week for some employees.
- Installing electric vehicle chargers at the Administrative Office.
- Offering Commuter Checks for employees to use pre-tax dollars for public transit (as required by Bay Area Air Quality Management District). [3]
- Providing Midpen-owned housing to some employees.



GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

EMPLOYEE COMMUTE GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **employee commute** emissions 20% by 2022, 40% by 2030, 80% by 2050	463 ($MTCO_2e$)	371 ($MTCO_2e$)	278 ($MTCO_2e$)	93 ($MTCO_2e$)
Employee Commute Indicators				
Total drive-alone employee vehicle miles traveled (miles)	1,350,784			
Percent employees who always drive alone to work (%)	83%			
Percent employees who work a compressed 9/80 schedule (%)	32%			
Percent administrative employees who telecommute regularly (%)	9%			

[3] The Bay Area Air Quality Management District requires employers with more than 50 employees to either provide pre-tax Commuter Checks (Midpen's current approach) or provide a transit incentive of at least $75 per month to participating employees.

STRATEGIES AND ACTIONS

EMPLOYEE COMMUTE STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Reduce the Number of Commute Days			
C1	Expand and encourage telecommuting.	HR; IST	
C2	Expand and encourage compressed work schedules.	HR; VS; L&F	
C3	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
Incentivize and Enable Low-Emissions Commute Modes			
C4	Create an incentive for employees commuting via carpool, public transit, bike, or walking.	HR	
C5	Install electric vehicle chargers at all field offices.	L&F	
C6	Create intranet page with commute resources and carpool database.	HR	
C7	Offer competitive pricing for employee electric vehicle charging.	AS	
C8	Assess opportunities to partner with local employee shuttles (e.g., Chariot, San Mateo County, and tech companies).	HR	
C9	Create a guaranteed ride home safeguard to reimburse an employee's taxi or rideshare ride home in case of personal emergency or illness.	HR	
Reduce Commute Distances			
C10	Pilot project to allow administrative employees to work out of the new South Area Office two days per week.	L&F	
C11	Assess the feasibility of acquiring more Midpen-owned housing.	PL	

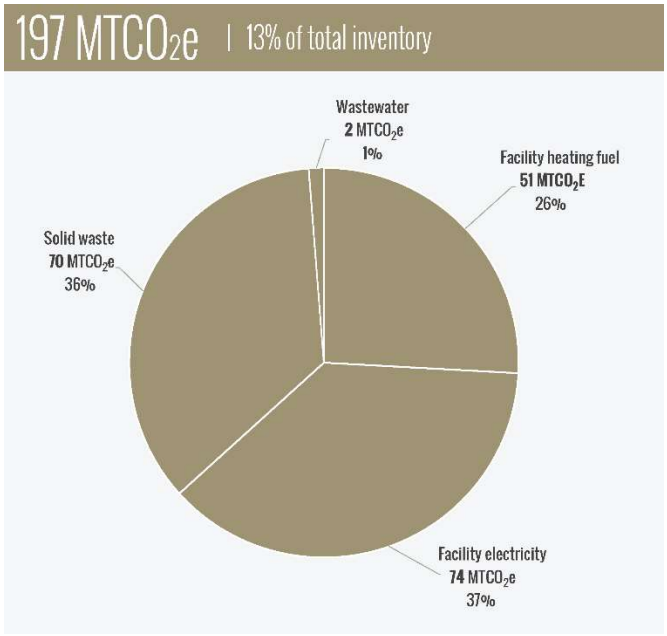
Specific supporting actions to expand and encourage telecommuting (Action C1) and compressed work schedules (Action C2) may include one or more of the following:

- For administrative employees:
  - Allow employees to do both a compressed schedule and telecommute.
  - Add a four 10-hour days (4/10) compressed schedule option.
  - Increase the number of days per week employees can telecommute to two.
  - Expand the job classifications that are eligible for telecommuting or compressed schedules.
- For field employees:
  - Expand 9/80 or 4/10 compressed schedules when feasible.
- Strengthen the telecommuting and compressed schedule programs by clarifying and reinforcing the framework, requirements, and expectations laid out in the existing policies through:
  - Trainings for managers and employees.
  - Formalizing workplace norms to minimize disruption such as ensuring all employees have their telecommute/off days in their Outlook and department calendars.
- Inform employees of the option to telecommute for half of time spent on transit (supports Action C4).

Facilities

Midpen occupies administrative and field offices that produce greenhouse gas emissions through energy use and waste generation. Electricity and heating fuels are used to make buildings comfortable, and both Midpen operations and visitors generate solid waste and wastewater. In total, facilities account for 13% of administrative emissions. As shown in the chart at right, the **top two contributors to facility emissions are electricity use and solid waste generation**.

Facilities GHG Emissions Breakdown



To reduce electricity emissions, Midpen can reduce electricity use and increase the portion of electricity generated by renewable energy. The top two electricity users are the AO and AO2-4. As Midpen plans a new Administrative Office, incorporating energy efficiency and renewable energy could have a substantial impact on Midpen's facility emissions. Taking steps to increase energy efficiency at other facilities, such as field offices and the Daniels Nature Center, can reduce the use of electricity and heating fuels like natural gas and propane. To reduce solid waste emissions, Midpen will work to divert recyclable materials and organic waste from the landfill. When organic material decomposes in a landfill, it releases methane, a potent greenhouse gas.

An odd dynamic in this sector is that, from a greenhouse gas accounting standpoint, once Midpen begins purchasing 100% renewable electricity, there is little to no additional GHG reduction to be gained from increasing energy efficiency or installing solar panels. This accounting quirk masks the significant resource costs of energy generation (such as transmission loss and water use) and the benefits of generating renewable energy on site locally (such as independence and contributing additional clean energy to the grid). Therefore, increasing energy efficiency and assessing the viability of installing solar panels are key facility recommendations despite their marginal contribution to GHG reduction on paper.

Midpen has already taken steps to reduce facility emissions by:

- Seeking an energy audit of AO, FFO, and SFO from Silicon Valley Energy Watch and Ecology Action.
- Reusing and recycling solid waste from routine maintenance activities.
- Creating a waste diversion policy and meeting waste diversion targets for capital projects.

GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

FACILITIES GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **facilities** emissions 20% by 2022, 40% by 2030, 80% by 2050	197 ($MTCO_2e$)	158 ($MTCO_2e$)	118 ($MTCO_2e$)	39 ($MTCO_2e$)
Facilities Indicators				
Administrative office electricity use per square foot (annual kWh/SQFT)	11.34			
Field office average electricity use per square foot (annual kWh/SQFT)	5.37			
Percent of electricity from renewable sources (%)	33%			
Solid waste diversion rate (% diverted)	34%			

STRATEGIES AND ACTIONS

	FACILITIES STRATEGIES AND ACTIONS	LEAD DEPARTMENT	TIMEFRAME
Move Towards 100% Renewable Electricity for All Midpen Facilities			
F1	Purchase 100% renewable electricity for Midpen facilities.	L&F	
F2	Assess the feasibility of rooftop/carport solar at the Foothills Field Office, Skyline Field Office, and preserve parking lots and implement where possible.	E&C	
Maximize Energy Efficiency in New and Existing Buildings			
F3	Implement energy efficiency upgrades at the Skyline and Foothills Field Offices, including measures identified in the Ecology Action Energy Audit.	L&F; E&C	
F4	Seek the highest level of energy efficiency and sustainability possible while planning for the new Administrative Office, including LEED standard and/or utilizing electric heating to achieve zero net energy.	E&C	
F5	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
Reduce Solid Waste Generated Through Midpen Operations			
F6	Implement office waste reduction measures: restart compost program, improve recycling, and minimize single-use disposables at events.	L&F	
F7	Study characterization of waste generated from maintenance activities; identify any additional opportunities to reuse or divert maintenance materials.	L&F	
F8	Update waste diversion policy and create contract language to incentivize contractors to use sustainable practices, such as reducing solid waste and fuel use, and provide documentation to Midpen.	E&C; AS	

Tenant Residences

Midpen owns 40 homes that are leased to employees, agricultural tenants, and members of the public. Emissions from tenant residences come from electricity use and heating. Heating fuels used in residences include natural gas, wood, and propane. While residences contribute a small portion to the total inventory—12% in 2016—there are opportunities to reduce greenhouse gas emissions and particulate matter. Switching residences from wood-fired heating to gas or preferably electric heating would have a positive impact on local air quality because burning wood releases harmful particulate matter into the air. Midpen can also reduce emissions by encouraging residents to purchase renewable electricity and increasing energy efficiency.

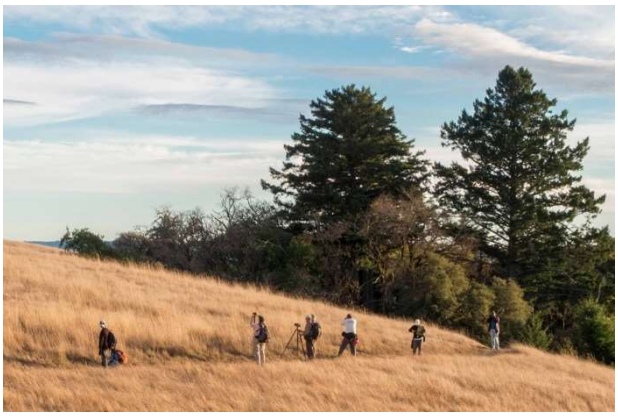
GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

TENANT RESIDENCES GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **tenant residences** emissions 20% by 2022, 40% by 2030, 80% by 2050	185 ($MTCO_2e$)	148 ($MTCO_2e$)	111 ($MTCO_2e$)	37 ($MTCO_2e$)
Tenant Residences Indicators				
Percent of tenant residences using electric heat (%)	32%			
Percent of tenants purchasing highest renewable option from utility (%)	0%			

STRATEGIES AND ACTIONS

	TENANT RESIDENCES STRATEGIES AND ACTIONS	LEAD DEPARTMENT	TIMEFRAME
Move Towards 100% Renewable Electricity for Residences			
R1	Encourage residents to purchase 100% renewable electricity. Assess viability of requiring as leases are renewed.	L&F	
R2	Assess the feasibility of rooftop solar on residences, including leasing or power purchasing agreements.	L&F; E&C	
Increase Energy Efficiency			
R3	Make basic energy efficiency upgrades such as installing weather stripping, LED lighting, and double-paned windows.	L&F	
R4	Assess the viability of more significant energy efficiency improvements such as heat pumps and insulation.	L&F	
Mover Towards Cleaner Heat Sources			
R5	Reduce woodstove use by installing or upgrading gas or preferably electric heating in homes with woodstoves.	L&F	
Improve Data and Guidance for Decision-Making			
R6	Ask tenants to share PG&E bills and other heat expenses with Midpen to improve data and GHG monitoring.	L&F	
R7	Create guidelines to incorporate sustainability into decisions about residence improvements.	L&F	

Education and Outreach



By taking steps to reduce GHG emissions internally, Midpen will serve as a model and inspire the broader community, visitors, and partner organizations to take action on climate change. Therefore, communicating the importance of climate change and what actionable steps individuals and organizations can take to reduce their impact is a key priority. Increasing awareness and action on climate change both internally and in the broader community will help Midpen be a leader on climate change. Internal education will help build momentum to implement the Climate Action Plan and enable staff and docents to communicate climate change effectively with the public. Educating visitors on climate change can influence their behavior within Midpen preserves and in their homes. Midpen has a unique opportunity as an environmental agency to reach thousands of visitors with credible messages about climate change.

Midpen has already taken steps to engage staff and visitors about climate change by:

- Creating a climate change page for the Midpen website.
- Providing the first ever climate change training session for docents.
- Partnering with Save the Redwoods League to develop a "Redwood Ecology and Climate Change" environmental education field learning program for high school students.
- Developing a draft climate change communications plan.
- Participating in climate change forums and initiatives such as California Climate Action Planning Conference, California Adaptation Forum, Global Climate Action Summit, Golden Gate National Parks Sustainability Summit, Adapting to Rising Tides, and SeaChange San Mateo County.

GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

EDUCATION AND OUTREACH GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Increase staff and visitor **awareness and action** on climate change	N/A	N/A	N/A	N/A
Education and Outreach Indicators				
Number of staff engaged through the Green Team or internal newsletter	Establish baseline			
Number of docents and other volunteers trained to discuss climate change	Establish baseline			
Number of press releases/newsletters/social media posts on climate change	Establish baseline			

STRATEGIES AND ACTIONS

EDUCATION AND OUTREACH STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Improve Internal Capacity to Address Climate Change			
E1	Establish a Midpen Green Team to implement the Climate Action Plan and continue improving sustainability efforts.	NR	
E2	Improve internal communication about climate change through an intranet page and newsletter on Midpen action, regional news, and resources for staff to improve their sustainability at home.	NR	
Educate Visitors and the Community About Climate Change			
E3	Provide training on climate change content and communication techniques to volunteers, rangers, and public affairs staff.	NR; VS	
E4	Incorporate climate change into docent-led interpretative activities and Public Affairs outreach events and materials. Encourage visitors to reduce their GHG emissions with messaging on tangible actions.	VS; PA	
E5	Use Climate Action Plan actions as demonstration projects to highlight via press releases, social media posts, informal visitor interactions, and signage (when project is in a public area).	PA; VS	
Participate and Play a Leadership Role in Regional and State Efforts			
E6	Support and influence regional and state climate change-related policies and funding allocations.	PA; AS	
E7	Support and participate in regional climate change initiatives, conferences, and general community of practice.	NR; PA	
E8	Foster partnerships to respond to climate change collaboratively and seek opportunities to share information with other agencies.	NR; PA	
E9	Seek grant opportunities to fund implementation of Climate Action Plan, carbon sequestration, and natural resource resilience efforts.	AS	

Implementation and Monitoring

The Climate Action Plan identifies a suite of actions that Midpen can implement to reach its goal of reducing emissions 20% by 2022 and 40% by 2030. The Climate Action Plan will be implemented through the annual Capital Improvement and Action Plan (CIAP) and Budget process. Each year, implementation actions will be selected based on Board-approved prioritization criteria. Annual prioritization and selection will allow Midpen to adapt to changes and advances in technologies, climate change response options, and funding opportunities. The selected actions and any associated funding will be subject to review by the General Manager's Office and approval by the Board. Departments will incorporate implementation actions for each fiscal year into their budget requests and resource loading for staff time.

Prioritization criteria for annual selection of CAP implementation actions are as follows:

- Greenhouse gas reduction effectiveness
- Cost
- Cost-effectiveness
- Availability of external funds, such as grants or rebates
- Operational impacts (for example, vehicle/equipment replacements need to be balanced with operational demands of off-road patrol and maintenance)
- Staff capacity
- Ease of implementation
- Ability to leverage other ongoing programs or projects for economy of scale
- Co-benefits to the public, staff, and environment
- Consistency with Measure AA, Vision Plan, Strategic Plan, and other Midpen goals and priorities
- Public feedback and requests

To track progress on implementing the Climate Action Plan and reducing administrative GHG emissions in line with Midpen's climate goals, staff will conduct a regular GHG Inventory approximately every two years and report findings to the Board. In addition to the key metric of GHG reduction, tracking and reporting should also include relevant indicators identified in the Climate Action Plan to illuminate underlying trends contributing to progress or challenges. These climate change response efforts will evolve over time as operations and solutions change, so monitoring approaches should be flexible and focused on collecting meaningful information that will help Midpen reach its climate change goals. The Climate Action Plan should be updated between 2025 and 2030 to assess progress and identify new strategies in pursuit of Midpen's goal of reducing emissions 80% below baseline by 2050. Managing and tracking the implementation of the Climate Action Plan is estimated to take approximately 0.5 of a full time equivalent (FTE) staff position.

Finally, the baseline GHG Inventory identified a number of areas where data was lacking or unavailable. Future GHG Inventory updates should strive to **improve data quality** to give more confidence to estimates of GHG emissions and GHG reduction strategies. Recommendations to improve data quality are as follows:

VEHICLE FLEET, EQUIPMENT, AND BUSINESS TRAVEL
Institute tracking of annual fuel use and mileage by vehicle
Create system for tracking business travel – capture all flights in one GL or through manual reporting, improve consistency of which GL is used for mileage reimbursement, scan all travel credit card receipts so flights/rental cars/gas can be parsed out
EMPLOYEE COMMUTE
Conduct regular employee commute survey with each GHG Inventory update that collects data on commute miles, office location, transportation mode by # days per week, telework/compressed schedule
Institute tracking for number of employees participating in telework and compressed schedule options
FACILITIES
Waste characterization study of field office solid waste from maintenance activities
TENANT RESIDENCES
Request PG&E bills or data from tenants
Request information on participation in community choice energy options from tenants
Request other data on heating costs (e.g. quantity of firewood) from tenants
OTHER DATA GAPS
Continue to seek livestock emissions factor data specific to California rangelands
Assess carbon sequestration in grazed and ungrazed rangelands to determine grazing effect on soil carbon
Determine visitor transportation emissions baseline using data on number of visitors (from car counters) and visitor origin (from preserve use survey)
Collect data on contractor solid waste (could come from Waste Management Plan required by county)
If possible, collect data on contractor fuel use
Collect data on volunteer transportation to work sites
Incorporate full materials lifecycle analysis as methodology becomes more accessible

Carbon Sequestration, Adaptation, and Resilience

Even if global greenhouse gas emissions stopped today, some amount of climate change is inevitable, and climate change impacts can already be observed on Bay Area natural resources and communities. Understanding and preparing for these impacts is referred to as climate adaptation. Midpen's goal in managing lands in a changing climate is to promote the resilience of natural resources to climate change impacts.

Climate change impacts have already been observed locally in the Golden Gate National Parks:[4]

- Increase in average annual temperatures of 1.2 °C (2.2 °F) between 1960 and 2010
- Northern shifts in winter bird ranges of 0.5 km (0.3 mi) per year between 1975 and 2004
- Upward shifts in elevation for 12% of endemic species and 27% of non-native species between the periods of 1895-1970 and 1971-2009
- Sea level rise of 22 cm (9 in) from 1854 to 2016
- Decrease in coastal fog by 33% between the periods of 1901-1925 and 1951-2008
- Increase in heavy storms by 25% between the periods of 1901-1960 and 1991-2000
- Human-caused climate change accounted for 10-20% of the 2012-2014 drought
- Climate was the dominant factor controlling the extent of wildfire burn areas between 1916 and 2003, even during periods of active fire suppression

While adapting to climate change impacts and increasing the resilience of natural resources is outside the scope of the Climate Action Plan, this work falls under the broader umbrella of Midpen's Climate Change Program.

KEY TERMS

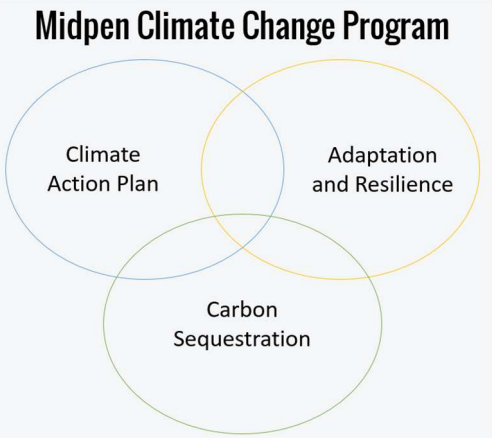
Climate mitigation: Actions that reduce greenhouse gas emissions, which contribute to climate change

Climate adaptation: Actions that increase the ability to withstand, respond to, or cope with climate change impacts

Climate resilience: The capacity of ecosystems to withstand and bounce back from climate stress and hazardous events

Carbon sequestration: Process by which carbon dioxide is moved from the atmosphere into other stores, such as plants and soils

Carbon store: Semi-permanent biological reservoir of carbon, such as plants and soils



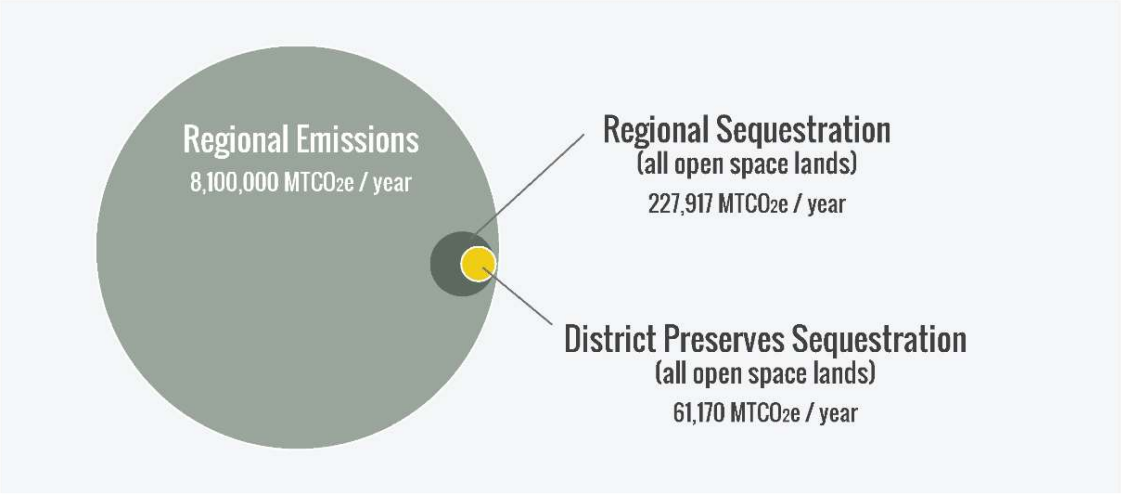
CARBON SEQUESTRATION

Progress to-date focused on a preliminary assessment of baseline carbon sequestration and storage in Midpen lands. Carbon sequestration is a related but distinct concept to climate mitigation (reducing emissions) and adaptation (preparing for impacts). Carbon sequestration removes carbon from the atmosphere and stores it in plant biomass and soils, functionally helping to reduce emissions. It is important to note that current levels of carbon sequestration in Midpen lands are considered a baseline, and to qualify for carbon offsets Midpen would need to undertake projects or acquisitions resulting in *additional* carbon

[4] Patrick Gonzalez, Ph.D. "Climate Change in the National Parks of the San Francisco Bay Area, California, USA." National Park Service and University of California, Berkeley, 2016.

sequestration. Creating carbon offsets to sell would require a more rigorous baseline assessment and verification of additional carbon sequestration. The assessment described below is intended to provide a general order of magnitude of Midpen's carbon sequestration to inform the direction of future work.

In 2018, GIS staff used plant biomass data from the LANDFIRE data set, provided by the California Air Resources Board, and soil carbon data from the Natural Resources Conservation Service to conduct a preliminary assessment of baseline carbon storage and sequestration in Midpen lands. This assessment was a conservative estimate because complete data was not available. The assessment found that **Midpen lands store, or hold in a semi-permanent biological reservoir, about 372 $MTCO_2e$ per acre** in plant biomass and soils, for a total of 23 million $MTCO_2e$ across all preserves. This semi-permanent store of carbon is best thought of as *potential emissions* that could be released through wildfire or development. The assessment also found that **Midpen lands sequester, or take in through photosynthesis, about 1 $MTCO_2e$ per acre per year** for a total of 61,000 $MTCO_2e$ per year across all preserves. This ongoing movement of carbon from the atmosphere to plant biomass is best thought of as *emissions being removed* from the atmosphere. Sequestration data was not available for many vegetation types, leading to a known underestimate. While Midpen lands take in far more carbon than is emitted by Midpen operations each year, open space preserves act as a breathing lung for the entire region. The residents within Midpen's jurisdictional boundary produce about 8 million $MTCO_2e$ every year,[5] which means that **Midpen lands take in less than 1% of Midpen residents' GHG emissions**. Combining Midpen lands with all other open space lands within Midpen's jurisdictional boundary, regional carbon sequestration only takes in 3% of regional emissions. This finding underscores the need to significantly reduce GHG emissions as an agency and contribute to community and regional efforts to mitigate climate change.



[5] "Greenhouse Gas Emission Inventory." California Air Resources Board, 2018.

This finding is consistent with a recent study by The Nature Conservancy that found that maximizing land conservation and stewardship across the globe could "provide 37% of cost-effective CO_2 mitigation needed through 2030" to meet the goals of the Paris Climate Agreement.[6] Both land-based carbon sequestration and storage *and* ambitious efforts to significantly reduce GHG emissions are needed to prevent catastrophic climate change.

Carbon sequestration is an important ecosystem service Midpen can incorporate as it balances managing land for multiple benefits. Actions that increase carbon sequestration, such as restoring forests or riparian areas, may also help prepare for climate impacts and increase resilience. Midpen can also take steps to prevent the release of landscape carbon from catastrophic wildfire, such as fuel reduction and prescribed burns. Refining Midpen's data on landscape carbon, using that information in planning and decision-making, and implementing projects to increase carbon sequestration are key climate action priorities.

ADAPTATION AND RESILIENCE

Going forward, adaptation and resilience efforts will focus on assessing the vulnerability of natural resources to climate change, identifying land management strategies to increase resilience, continuing biological monitoring, and implementing restoration projects. This work is closely tied to much of what the Natural Resources Department manages, including prescribed and wildland fire, forest restoration, special status species, integrated pest management, and ongoing monitoring and restoration.

[6] "Natural Climate Solutions." Proceedings of the National Academy of Sciences, October 2017.

Glossary

DEPARTMENTS/DIVISIONS

- AS: Administrative Services
- E&C: Engineering and Construction
- HR: Human Resources
- IST: Information Systems and Technology
- L&F: Land and Facilities
- NR: Natural Resources
- PA: Public Affairs
- PL: Planning
- VS: Visitor Services

OFFICE FACILITIES

- AO: Administrative Office
- CAO: Coastal Area Office
- FFO: Foothills Field Office
- SAO: South Area Office
- SFO: Skyline Field Office

CLIMATE CHANGE TERMINOLOGY

- **Administrative emissions/administrative scope**: Midpen emissions from administration and operations (vehicles, equipment, business travel, employee commute, facilities, and tenant residences) for which Midpen is setting a quantitative GHG reduction goal
- **Carbon sequestration**: Process by which carbon dioxide is moved from the atmosphere into other stores, such as plants and soils
- **Carbon store**: Semi-permanent biological reservoir of carbon, such as plants and soils
- **Climate adaptation**: Actions that increase the ability to withstand, respond to, or cope with climate change impacts
- **Climate mitigation**: Actions that reduce greenhouse gas emissions, which contribute to climate change
- **Climate resilience**: The capacity of ecosystems to withstand and bounce back from climate stress and hazardous events
- **Greenhouse gas (GHG)**: Climate change-causing gases such as carbon dioxide, methane, and nitrous oxide, named for the warming "greenhouse effect" they have on the atmosphere by absorbing infrared radiation
- **Metric ton of carbon dioxide equivalent ($MTCO_2e$)**: Standard unit of measurement for greenhouse gases

Appendix 1: Non-Administrative Emissions - Livestock & Visitor Transportation

In addition to the administrative GHG emissions discussed in the Climate Action Plan, there are also non-administrative GHG emissions related to Midpen activities but that Midpen has less control over, such as livestock and visitor transportation to preserves. Livestock emissions are not included in the administrative scope because livestock serve a very different function than vehicles and facilities, provide community benefits, and exist within a complex biological system. Likewise, visitor transportation emissions are not included in the administrative scope because Midpen has limited control over visitor transportation.

These sectors represent opportunities for additional analysis to identify strategies to reduce emissions above and beyond Midpen's administrative GHG reduction goals. Initial strategies to reduce or offset emissions are described in the following sections. An emissions baseline of 876 $MTCO_2e$ in 2016 was determined for livestock. However, emissions are highly variable across cattle depending on region, diet, age, weight, and other factors. The Intergovernmental Panel on Climate Change estimates that the uncertainty for cattle emissions factors is between ± 20% and ± 50%.[7] Therefore, refining data on livestock emissions and associated carbon sequestration in grazed areas is a recommendation in the Climate Action Plan. A visitor transportation emissions baseline has not been established, but the necessary data is available and establishing a baseline is a recommendation in the Climate Action Plan.

ADMINISTRATIVE GHG EMISSIONS 2016 BASELINE ($MTCO_2E$)	
Vehicle Fleet, Equipment, Business Travel	676
Employee Commute	463
Facilities	197
Tenant Residences	185
NON-ADMINISTRATIVE GHG EMISSIONS 2016 BASELINE ($MTCO_2E$)	
Livestock	876
Visitor Transportation	TBD

NON-ADMINISTRATIVE EMISSIONS GOALS	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce or offset **livestock** emissions and enhance soil carbon sequestration	876 ($MTCO_2e$)	N/A	N/A	N/A
Reduce **visitor transportation** emissions	Establish baseline	N/A	N/A	N/A

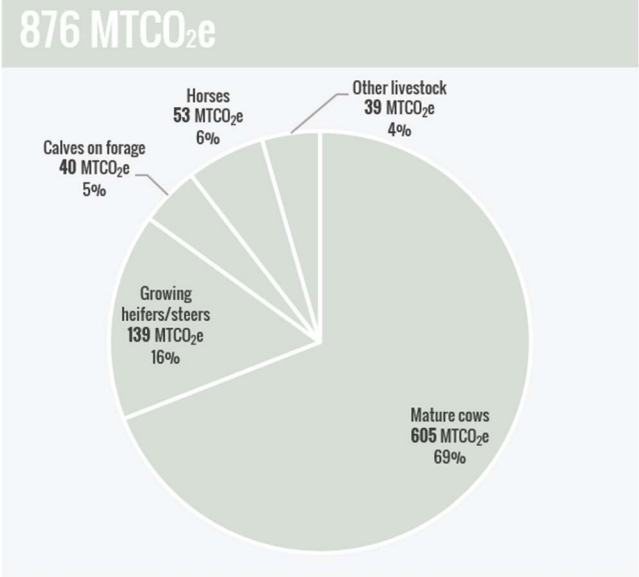
Livestock

Midpen uses conservation grazing to manage fuel (flammable vegetation) for fire protection, enhance the diversity of native plants and animals, help sustain the local agricultural economy, and foster the region's rural heritage. As part of the Coastside Protection Area Service Plan, Midpen has committed to conserving open space and agricultural land, preserving agricultural operations on the coast, and encouraging viable agricultural use of Midpen-owned lands. Currently, Midpen has tenants grazing about 400 cattle on 10,800 acres. One grazing tenant also keeps other livestock, such as horses, sheep, pigs, and chickens; however, the majority of grazing livestock are cattle.

[7] "IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories." Intergovernmental Panel on Climate Change, 2006.

Ruminant animals like cattle produce and release methane when they digest grass. Methane is a strong greenhouse gas that has almost thirty times the impact of carbon dioxide on the atmosphere. While there are few opportunities to change the quantities of methane that rangeland cattle release, Midpen will ensure the grazing program is meeting land management objectives and work to maximize the carbon sequestration potential of rangeland. Point Blue Conservation Science suggests that "methane production be acknowledged as an intrinsic trade-off to beef production that may be justified by the role cattle play as a means to manage and protect rangelands."[8]

Livestock GHG Emissions Breakdown



Livestock emissions are excluded from the administrative scope for the GHG Inventory and GHG reduction goals because livestock serve a very different function than vehicles and facilities, provide community benefits, and exist within a complex biological system. The effect of cattle grazing on soil carbon varies widely depending on the grazing regime. While conventional commercial grazing can result in a net loss of soil carbon, prescribed grazing can increase soil carbon, perhaps even enough to offset some portion of the cattle's methane emissions from digestion.[9] There are also a number of land management strategies to increase carbon sequestration in grazed areas, such as applying compost amendments and restoring stream habitat.[10] Key next steps for addressing livestock emissions include gaining a better understanding of current carbon sequestration and the impact of the current grazing regime, and assessing the viability of land management practices to increase carbon sequestration.

[8] "Methane Emissions from Livestock." Point Blue Conservation Science Issue Brief, 2018.
[9] "Methane Emissions from Livestock." Point Blue Conservation Science Issue Brief, 2018.
[10] "Carbon and Greenhouse Gas Evaluation for NRCS Conservation Practice Planning." Natural Resources Conservation Service, 2018.

Midpen has already taken steps to reduce livestock emissions by:

- Conducting ongoing monitoring of vegetation and environmental quality in grazed areas to ensure grazing practices are in compliance with prescribed grazing plans.
- Meeting with partners at TomKat Ranch and San Mateo Resource Conservation District for initial talks on developing a carbon farm plan and projects to increase soil carbon sequestration.

GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

LIVESTOCK GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **livestock** emissions and enhance soil carbon sequestration	876 ($MTCO_2e$)	N/A	N/A	N/A
Livestock Indicators				
Number of animals with high enteric emissions (year-round equivalent cattle, excluding calves on milk)	374			
Number of animals with low enteric emissions (year-round equivalent horses, sheep, pigs, goats, alpacas, donkeys)	177			
Annual additional landscape carbon sequestration due to grazing ($MTCO_2e$)	Establish baseline			
Percent of annual livestock emissions offset by carbon sequestration projects (%)	0%			

STRATEGIES AND ACTIONS

	LIVESTOCK STRATEGIES AND ACTIONS	LEAD DEPARTMENT	TIMEFRAME
Maximize Soil Carbon Sequestration and Storage			
L1	Assess current carbon sequestration in grazed and ungrazed rangelands to determine effect of grazing on soil carbon.	NR	
L2	Partner with San Mateo Resource Conservation District to develop carbon farm plan.	NR; L&F	
L3	Implement carbon sequestration projects identified in carbon farm plan.	NR; L&F	
Ensure Grazing Program is Attaining Land Management Objectives			
L4	Continue monitoring grazing impact on invasive species and fuel reduction objectives.	NR	
L5	Where agricultural sustainability is not a leading factor, assess alternative grassland management techniques such as mowing, prescribed burns, and use of other livestock such as goats.	NR	

Visitor Transportation

Emissions associated with visitor transportation were not included in the baseline greenhouse gas inventory, so strategies in this sector include establishing an emissions baseline. Visitor travel is likely a large source of emissions over which Midpen has minimal influence. However, Midpen can support the use of alternative transportation through infrastructure and education. Midpen can also address inequity in communities' access to open space by increasing transportation options for people who do not own cars. Increasing access to Midpen preserves via biking, walking, and transit will benefit Midpen's climate efforts as well as community health.

Midpen has already taken steps to reduce visitor transportation emissions by:

- Initiating Rancho San Antonio Carrying Capacity and Multimodal Access Study to engage stakeholders and partner agencies in exploring non-motorized mobility, transit options, and parking alternatives.
- Installing visitor use counters at 13 locations in 2017 to collect data on preserve visitation.
- Conducting preserve use survey in 2017 that included questions on transportation.
- Providing bike racks at preserve parking lots.

GOALS, TARGETS, AND KEY PERFORMANCE INDICATORS

VISITOR TRANSPORTATION GOAL	BASELINE (2016)	TARGET (2022)	TARGET (2030)	TARGET (2050)
Reduce **visitor transportation** emissions	Establish baseline	N/A	N/A	N/A
Visitor Transportation Indicators				
Total visitor miles to and from preserves (miles)	Establish baseline			
Percent of visitor trips made via transit, bike, or electric vehicle (%)	Establish baseline			

STRATEGIES AND ACTIONS

	VISITOR TRANSPORTATION STRATEGIES AND ACTIONS	LEAD DEPARTMENT	TIMEFRAME
Collect Data on Visitor Transportation			
T1	Establish visitor transportation emissions baseline.	NR	
T2	Complete Rancho San Antonio Carrying Capacity and Multimodal Access Study, implement results, and identify relevant findings that could be applied to other preserves.	PL	
Increase Visitor Use of Electric Vehicles, Bikes, and Public Transit			
T3	Install electric vehicle chargers at preserve parking lots.	L&F	
T4	Install bike racks at preserves without racks where bikes are allowed.	L&F	
T5	Partner with San Mateo County Parks to identify lessons learned from their parks shuttle pilot project.	PL	

Appendix 2: Full Strategies and Actions List by Sector

VEHICLE, EQUIPMENT, & BUSINESS TRAVEL STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Increase Electric and Alternative Fuel Vehicles and Equipment			
V1	Switch fuel tanks to renewable diesel.	L&F	
V2	Track technology development for hybrid, electric, or alternative fuel trucks. When a viable option comes on the market, acquire and test one truck as a pilot project.	L&F; VS	
V3	Install electric vehicle chargers at all field offices.	L&F	
V4	Acquire and test new electric equipment as technology develops. Update Maintenance Operations Manual to provide guidance to choose electric maintenance equipment when tasks allows.	L&F	
V5	As administrative vehicles are up for replacement, replace with electric or hybrid vehicles wherever possible.	L&F	
V6	Purchase one hybrid or long-range electric vehicle for each field office for highway/town travel and on-road maintenance projects.	L&F	
Increase Vehicle Fuel Economy			
V7	Evaluate fire response program and assess feasibility of alternative fire response models with lower emissions, such as acquiring brush trucks and downsizing F350s (e.g. City of Palo Alto).	VS; L&F	
V8	Update Maintenance Operations Manual to provide guidance to choose most fuel efficient vehicle possible for task.	L&F	
Increase Use of Alternative Electric Transportation Options			
V9	Acquire and test electric bikes, motorcycles, ATVs, or mules as technology develops. Stage electric transportation equipment at preserves to enable use.	L&F; VS	
V10	Expand ranger patrols on electric bikes, motorcycles, ATVs, or mules. Update Ranger Operations Manual to encourage this option and provide guidance.	VS	
V11	Update Maintenance Operations Manual to provide guidance to use electric transportation equipment to get to/from project site when tasks allows.	L&F	
Reduce Vehicle Miles Driven			
V12	Evaluate patrol and maintenance circulation routes to identify mileage reduction opportunities.	VS; L&F	
V13	Minimize driving to meetings and trainings through teleconferencing technology and efficient scheduling.	IST	
Purchase Carbon Offsets for Flights			
V14	Purchase carbon offsets for flights.	AS	

EMPLOYEE COMMUTE STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Reduce the Number of Commute Days			
C1	Expand and encourage telecommuting.	HR; IST	
C2	Expand and encourage compressed work schedules.	HR; VS; L&F	
C3	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
Incentivize and Enable Low-Emissions Commute Modes			
C4	Create an incentive for employees commuting via carpool, public transit, bike, or walking.	HR	
C5	Install electric vehicle chargers at all field offices.	L&F	
C6	Create intranet page with commute resources and carpool database.	HR	
C7	Offer competitive pricing for employee electric vehicle charging.	AS	
C8	Assess opportunities to partner with local employee shuttles (e.g., Chariot, San Mateo County, and tech companies).	HR	
C9	Create a guaranteed ride home safeguard to reimburse an employee's taxi or rideshare ride home in case of personal emergency or illness.	HR	
Reduce Commute Distances			
C10	Pilot project to allow administrative employees to work out of the new South Area Office two days per week.	L&F	
C11	Assess the feasibility of acquiring more Midpen-owned housing.	PL	

FACILITIES STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Move Towards 100% Renewable Electricity for All Midpen Facilities			
F1	Purchase 100% renewable electricity for Midpen facilities.	L&F	
F2	Assess the feasibility of rooftop/carport solar at the Foothills Field Office, Skyline Field Office, and preserve parking lots and implement where possible.	E&C	
Maximize Energy Efficiency in New and Existing Buildings			
F3	Implement energy efficiency upgrades at the Skyline and Foothills Field Offices, including measures identified in the Ecology Action Energy Audit.	L&F; E&C	
F4	Seek the highest level of energy efficiency and sustainability possible while planning for the new Administrative Office, including LEED standard and/or utilizing electric heating to achieve zero net energy.	E&C	
F5	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
Reduce Solid Waste Generated Through Midpen Operations			

F6	Implement office waste reduction measures: restart compost program, improve recycling, and minimize single-use disposables at events.	L&F	
F7	Study characterization of waste generated from maintenance activities; identify any additional opportunities to reuse or divert maintenance materials.	L&F	
F8	Update waste diversion policy and create contract language to incentivize contractors to use sustainable practices, such as reducing solid waste and fuel use, and provide documentation to Midpen.	E&C; AS	

TENANT RESIDENCES STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Move Towards 100% Renewable Electricity for Residences			
R1	Encourage residents to purchase 100% renewable electricity. Assess viability of requiring as leases are renewed.	L&F	
R2	Assess the feasibility of rooftop solar on residences, including leasing or power purchasing agreements.	L&F; E&C	
Increase Energy Efficiency			
R3	Make basic energy efficiency upgrades such as installing weather stripping, LED lighting, and double-paned windows.	L&F	
R4	Assess the viability of more significant energy efficiency improvements such as heat pumps and insulation.	L&F	
Mover Towards Cleaner Heat Sources			
R5	Reduce woodstove use by installing or upgrading gas or preferably electric heating in homes with woodstoves.	L&F	
Improve Data and Guidance for Decision-Making			
R6	Ask tenants to share PG&E bills and other heat expenses with Midpen to improve data and GHG monitoring.	L&F	
R7	Create guidelines to incorporate sustainability into decisions about residence improvements.	L&F	

EDUCATION AND OUTREACH STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Improve Internal Capacity to Address Climate Change			
E1	Establish a Midpen Green Team to implement the Climate Action Plan and continue improving sustainability efforts.	NR	
E2	Improve internal communication about climate change through an intranet page and newsletter on Midpen action, regional news, and resources for staff to improve their sustainability at home.	NR	
Educate Visitors and the Community About Climate Change			
E3	Provide training on climate change content and communication techniques to volunteers, rangers, and public affairs staff.	NR; VS	
E4	Incorporate climate change into docent-led interpretative activities and Public Affairs outreach events and materials. Encourage	VS; PA	

	visitors to reduce their GHG emissions with messaging on tangible actions.		
E5	Use Climate Action Plan actions as demonstration projects to highlight via press releases, social media posts, informal visitor interactions, and signage (when project is in a public area).	PA; VS	
Participate and Play a Leadership Role in Regional and State Efforts			
E6	Support and influence regional and state climate change-related policies and funding allocations.	PA; AS	
E7	Support and participate in regional climate change initiatives, conferences, and general community of practice.	NR; PA	
E8	Foster partnerships to respond to climate change collaboratively and seek opportunities to share information with other agencies.	NR; PA	
E9	Seek grant opportunities to fund implementation of Climate Action Plan, carbon sequestration, and natural resource resilience efforts.	AS	

LIVESTOCK STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Maximize Soil Carbon Sequestration and Storage			
L1	Assess current carbon sequestration in grazed and ungrazed rangelands to determine effect of grazing on soil carbon.	NR	
L2	Partner with San Mateo Resource Conservation District to develop carbon farm plan.	NR; L&F	
L3	Implement carbon sequestration projects identified in carbon farm plan.	NR; L&F	
Ensure Grazing Program is Attaining Land Management Objectives			
L4	Continue monitoring grazing impact on invasive species and fuel reduction objectives.	NR	
L5	Where agricultural sustainability is not a leading factor, assess alternative grassland management techniques such as mowing, prescribed burns, and use of other livestock such as goats.	NR	

VISITOR TRANSPORTATION STRATEGIES AND ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Collect Data on Visitor Transportation			
T1	Establish visitor transportation emissions baseline.	NR	
T2	Complete Rancho San Antonio Carrying Capacity and Multimodal Access Study, implement results, and identify relevant findings that could be applied to other preserves.	PL	
Increase Visitor Use of Electric Vehicles, Bikes, and Public Transit			
T3	Install electric vehicle chargers at preserve parking lots.	L&F	
T4	Install bike racks at preserves without racks where bikes are allowed.	L&F	
T5	Partner with San Mateo County Parks to identify lessons learned from their parks shuttle pilot project.	PL	

Appendix 3: Full Strategies and Actions List by Department

	LAND AND FACILITIES ACTIONS	LEAD DEPARTMENT	TIMEFRAME
Complete			
V1	Switch fuel tanks to renewable diesel.	L&F	
Ongoing			
C2	Expand and encourage compressed work schedules.	HR; VS; L&F	
F6	Implement office waste reduction measures: restart compost program, improve recycling, and minimize single-use disposables at events.	L&F	
V5	As administrative vehicles are up for replacement, replace with electric or hybrid vehicles wherever possible.	L&F	
Short-Term			
C5/ V3	Install electric vehicle chargers at all field offices.	L&F	
F1	Purchase 100% renewable electricity for Midpen facilities.	L&F	
F3	Implement energy efficiency upgrades at the Skyline and Foothills Field Offices, including measures identified in the Ecology Action Energy Audit.	L&F; E&C	
L2	Partner with San Mateo Resource Conservation District to develop carbon farm plan.	NR; L&F	
R1	Encourage residents to purchase 100% renewable electricity. Assess viability of requiring as leases are renewed.	L&F	
R6	Ask tenants to share PG&E bills and other heat expenses with Midpen to improve data and GHG monitoring.	L&F	
T3	Install electric vehicle chargers at preserve parking lots.	L&F	
V2	Track technology development for hybrid, electric, or alternative fuel trucks. When a viable option comes on the market, acquire and test one truck as a pilot project.	L&F; VS	
V7	Evaluate fire response program and assess feasibility of alternative fire response models with lower emissions, such as acquiring brush trucks and downsizing F350s (e.g. City of Palo Alto).	VS; L&F	
V9	Acquire and test electric bikes, motorcycles, ATVs, or mules as technology develops. Stage electric transportation equipment at preserves to enable use.	L&F; VS	
Medium-Term			
C10	Pilot project to allow administrative employees to work out of the new South Area Office two days per week.	L&F	
F7	Study characterization of waste generated from maintenance activities; identify any additional opportunities to reuse or divert maintenance materials.	L&F	
L3	Implement carbon sequestration projects identified in carbon farm plan.	NR; L&F	

R2	Assess the feasibility of rooftop solar on residences, including leasing or power purchasing agreements.	L&F; E&C	
R3	Make basic energy efficiency upgrades such as installing weather stripping, LED lighting, and double-paned windows.	L&F	
T4	Install bike racks at preserves without racks where bikes are allowed.	L&F	
V4	Acquire and test new electric equipment as technology develops. Update Maintenance Operations Manual to provide guidance to choose electric maintenance equipment when tasks allows.	L&F	
V8	Update Maintenance Operations Manual to provide guidance to choose most fuel efficient vehicle possible for task.	L&F	
V11	Update Maintenance Operations Manual to provide guidance to use electric transportation equipment to get to/from project site when tasks allows.	L&F	
V12	Evaluate patrol and maintenance circulation routes to identify mileage reduction opportunities.	VS; L&F	
Long-Term			
C3/ F5	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
R4	Assess the viability of more significant energy efficiency improvements such as heat pumps and insulation.	L&F	
R5	Reduce woodstove use by installing or upgrading gas or preferably electric heating in homes with woodstoves.	L&F	
R7	Create guidelines to incorporate sustainability into decisions about residence improvements.	L&F	
V6	Purchase one hybrid or long-range electric vehicle for each field office for highway/town travel and on-road maintenance projects.	L&F	

NATURAL RESOURCES ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
E1	Establish a Midpen Green Team to implement the Climate Action Plan and continue improving sustainability efforts.	NR	
E3	Provide training on climate change content and communication techniques to volunteers, rangers, and public affairs staff.	NR; VS	
E7	Support and participate in regional climate change initiatives, conferences, and general community of practice.	NR; PA	
E8	Foster partnerships to respond to climate change collaboratively and seek opportunities to share information with other agencies.	NR; PA	
L4	Continue monitoring grazing impact on invasive species and fuel reduction objectives.	NR	
T1	Establish visitor transportation emissions baseline.	NR	
Short-Term			
E2	Improve internal communication about climate change through an intranet page and newsletter on Midpen action, regional news, and resources for staff to improve their sustainability at home.	NR	

L1	Assess current carbon sequestration in grazed and ungrazed rangelands to determine effect of grazing on soil carbon.	NR	
L2	Partner with San Mateo Resource Conservation District to develop carbon farm plan.	NR; L&F	
Medium-Term			
L3	Implement carbon sequestration projects identified in carbon farm plan.	NR; L&F	
L5	Where agricultural sustainability is not a leading factor, assess alternative grassland management techniques such as mowing, prescribed burns, and use of other livestock such as goats.	NR	

VISITOR SERVICES ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
C2	Expand and encourage compressed work schedules.	HR; VS; L&F	
E3	Provide training on climate change content and communication techniques to docents, rangers, and public affairs staff.	NR; VS	
E4	Incorporate climate change into docent-led interpretative activities and Public Affairs outreach events and materials. Encourage visitors to reduce their GHG emissions with messaging on tangible actions.	VS; PA	
Short-Term			
V2	Track technology development for hybrid, electric, or alternative fuel trucks. When a viable option comes on the market, acquire and test one truck as a pilot project.	L&F; VS	
V7	Evaluate fire response program and assess feasibility of alternative fire response models with lower emissions, such as acquiring brush trucks and downsizing F350s (e.g. City of Palo Alto).	VS; L&F	
V9	Acquire and test electric bikes, motorcycles, ATVs, or mules as technology develops. Stage electric transportation equipment at preserves to enable use.	L&F; VS	
Medium-Term			
E5	Use Climate Action Plan actions as demonstration projects to highlight via press releases, social media posts, informal visitor interactions, and signage (when project is in a public area).	PA; VS	
V10	Expand ranger patrols on electric bikes, motorcycles, ATVs, or mules. Update Ranger Operations Manual to encourage this option and provide guidance.	VS	
V12	Evaluate patrol and maintenance circulation routes to identify mileage reduction opportunities.	VS; L&F	

HUMAN RESOURCES ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			

C1	Expand and encourage telecommuting.	HR; IST	
C2	Expand and encourage compressed work schedules.	HR; VS; L&F	
Short-Term			
C4	Create an incentive for employees commuting via carpool, public transit, bike, or walking.	HR	
C6	Create intranet page with commute resources and carpool database.	HR	
C9	Create a guaranteed ride home safeguard to reimburse an employee's taxi or rideshare ride home in case of personal emergency or illness.	HR	
Long-Term			
C3/ F5	Assess the feasibility of a weekly or biweekly administrative office closure (compressed schedules or telework on closure day).	L&F; HR	
C8	Assess opportunities to partner with local employee shuttles (e.g., Chariot, San Mateo County, and tech companies).	HR	

ENGINEERING AND CONSTRUCTION ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Short-Term			
F3	Implement energy efficiency upgrades at the Skyline and Foothills Field Offices, including measures identified in the Ecology Action Energy Audit.	L&F; E&C	
F4	Seek the highest level of energy efficiency and sustainability possible while planning for the new Administrative Office, including LEED standard and/or utilizing electric heating to achieve zero net energy.	E&C	
Medium-Term			
F2	Assess the feasibility of rooftop/carport solar at the Foothills Field Office, Skyline Field Office, and preserve parking lots and implement where possible.	E&C	
F8	Update waste diversion policy and create contract language to incentivize contractors to use sustainable practices, such as reducing solid waste and fuel use, and provide documentation to Midpen.	E&C; AS	
R2	Assess the feasibility of rooftop solar on residences, including leasing or power purchasing agreements.	L&F; E&C	

ADMINISTRATIVE SERVICES ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
E6	Support and influence regional and state climate change-related policies and funding allocations.	PA; AS	
Short-Term			
C7	Offer competitive pricing for employee electric vehicle charging.	AS	

E9	Seek grant opportunities to fund implementation of Climate Action Plan, carbon sequestration, and resilience efforts.	AS	
V14	Purchase carbon offsets for flights.	AS	
Medium-Term			
F8	Update waste diversion policy and create contract language to incentivize contractors to use sustainable practices, such as reducing solid waste and fuel use, and provide documentation.	E&C; AS	

PUBLIC AFFAIRS ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
E4	Incorporate climate change into docent-led interpretative activities and Public Affairs outreach events and materials. Encourage visitors to reduce their GHG emissions with messaging on tangible actions.	VS; PA	
E6	Support and influence regional and state climate change-related policies and funding allocations.	PA; AS	
E7	Support and participate in regional climate change initiatives, conferences, and general community of practice.	NR; PA	
E8	Foster partnerships to respond to climate change collaboratively and seek opportunities to share information with other agencies.	NR; PA	
Medium-Term			
E5	Use Climate Action Plan actions as demonstration projects to highlight via press releases, social media posts, informal visitor interactions, and signage (when project is in a public area).	PA; VS	

PLANNING ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
T2	Complete Rancho San Antonio Carrying Capacity and Multimodal Access Study, implement results, and identify relevant findings that could be applied to other preserves.	PL	
Long-Term			
C11	Assess the feasibility of acquiring more Midpen-owned housing.	PL	
T5	Partner with San Mateo County Parks to identify lessons learned from their parks shuttle pilot project.	PL	

INFORMATION SYSTEMS AND TECHNOLOGY ACTIONS		LEAD DEPARTMENT	TIMEFRAME
Ongoing			
C1	Expand and encourage telecommuting.	HR; IST	
V13	Minimize driving to meetings and trainings through teleconferencing technology and efficient scheduling.	IST	

Appendix 4: Full List of Performance Indicators

VEHICLE, EQUIPMENT, & BUSINESS TRAVEL INDICATORS	BASELINE (2016)
Average vehicle fuel economy (miles per gallon)	15.6
Total fleet vehicle miles traveled (miles, WEX cards only)	883,713
Proportion of equipment that is powered by renewable fuel or electricity (%)	0%
Annual miles flown for business travel (miles)	50,000

EMPLOYEE COMMUTE INDICATORS	BASELINE (2016)
Total drive alone employee vehicle miles traveled (miles)	1,350,784
Percent of employees who always drive alone to work (%)	83%
Percent of employees who work a compressed 9/80 schedule (%)	32%
Percent of administrative employees who telecommute regularly (%)	9%

FACILITIES INDICATORS	BASELINE (2016)
Administrative office electricity use per square foot (annual kWh/SQFT)	11.34
Field office average electricity use per square foot (annual kWh/SQFT)	5.37
Percent of electricity from renewable sources (%)	33%
Solid waste diversion rate (% diverted)	34%

TENANT RESIDENCES INDICATORS	BASELINE (2016)
Percent of tenant residences using electric heat (%)	32%
Percent of tenants purchasing highest renewable option from utility (%)	0%

EDUCATION AND OUTREACH INDICATORS	BASELINE (2016)
Number of staff engaged through the Green Team or internal newsletter	Establish baseline
Number of docents and other volunteers trained to discuss climate change	Establish baseline
Number of press releases/newsletters/social media posts on climate change	Establish baseline

LIVESTOCK INDICATORS	BASELINE (2016)
Number of animals with high enteric emissions (year-round equivalent cattle, excluding calves on milk)	374
Number of animals with low enteric emissions (year-round equivalent horses, sheep, pigs, goats, alpacas, donkeys)	177
Annual additional landscape carbon sequestration due to grazing ($MTCO_2e$)	Establish baseline
Percent of annual livestock emissions offset by carbon sequestration projects (%)	0%

VISITOR TRANSPORTATION INDICATORS	BASELINE (2016)
Total visitor miles to and from preserves (miles)	Establish baseline
Percent of visitor trips made via transit, bike, or electric vehicle (%)	Establish baseline

Midpeninsula Regional Open Space District

R-10-71
Meeting 10-15
June 9, 2010

AGENDA ITEM 9

AGENDA ITEM

Resolution in Opposition to the Proposed Development of the Redwood City Salt Ponds.

GENERAL MANAGER'S RECOMMENDATION

Approve Resolution Opposing Development of Redwood City Salt Ponds.

SUMMARY

The proposed development of a 1,436-acre salt harvesting site in Redwood City on the shores of San Francisco Bay within the jurisdictional boundaries of the District runs counter to the need to protect the area's fragile ecosystems. Accordingly, the General Manager recommends that the Board of Directors adopt a resolution opposing the plan.

DISCUSSION

DMB Associates, a developer from Arizona, is proposing to build the largest housing development on the shores of San Francisco Bay since Foster City was constructed 50 years ago. The project, which DMB hopes to start in 2013, is to partly develop and partly restore a 1,436-acre salt harvesting site in Redwood City with up to 12,000 homes for about 30,000 people on land owned by Cargill Salt. Most of the area would be developed with homes, businesses and sports fields, and less than one third, 436 acres, would be restored wetlands.

As the U.S. Environmental Protection Agency has pointed out in a letter about the proposal: "San Francisco Bay and its adjacent waters are critically important aquatic resources that warrant special attention and protection" which is perhaps why this project has motivated over 100 current and former elected officials from all nine Bay Area counties and organizations and agencies such as Audubon California, the Sierra Club and the West Bay Sanitary District to communicate their fervent opposition to the plan.

There are several reasons for the District to be concerned that the proposed development, which is within the District's jurisdictional boundary, adjacent to and within the authorized expansion boundaries of the Don Edwards National

Wildlife Refuge and adjacent to the Bair Island Ecological Preserve, runs counter to the need to protect and restore the area's fragile ecosystems:

- Only five percent of the former salt marsh habitat is left and today supports numerous endangered species such as the California Clapper Rail and the Salt Marsh Harvest Mouse.

- If the project were to go forward, less than one third of the salt marsh area would be restored, the remaining area would be permanently destroyed.

- The salt ponds are part of the bay and, rather than paved, they should be restored to tidal marsh for wildlife habitat, natural flood protection and cleaner water. The bay's salt ponds provide the best opportunity to restore a portion of the 150,000 acres of valuable wetlands converted to other land uses by previous generations.

- Currently, the bay land in question is zoned as a tidal plain which means that housing is not permitted on this sea-level, bay front property. Tidal plain allows for salt production, parks and other open space uses, not for housing.

- A floodplain at sea level is an inappropriate location for housing during a time of global warming because climate change could lift the bay's water level up to 55 inches by the end of the century.

- No infrastructure currently exists on the shallow salt ponds that dot the area. The proposed development would require the building of 223 acres of paved city streets in addition to transit, sewage and other infrastructure.

The fragile environment of San Francisco Bay and the long-term environmental degradation that can occur from a development of this scale in this fragile environmental context are reasons to oppose the plan and urge that these open space areas remain as open space forever.

FISCAL IMPACT

No fiscal impact is anticipated from the adoption of this resolution.

PUBLIC NOTICE

Notice was provided pursuant to the Brown Act. No additional notice is necessary.

CEQA COMPLIANCE

No compliance is required as this action is not a project under CEQA.

NEXT STEP

If approved by the Board, staff will send the resolution to the Redwood City Council.

Attachment:
Resolution

Prepared by:
Rudy Jurgensen, Public Affairs Manager

Contact person:
Same as above

RESOLUTION 10-21

RESOLUTION OF THE BOARD OF DIRECTORS OF MIDPENINSULA REGIONAL OPEN SPACE DISTRICT OPPOSING THE DEVELOPMENT OF REDWOOD CITY'S SALT PONDS

The Board of Directors of Midpeninsula Regional Open Space District does resolve as follows:

WHEREAS, a large housing development with up to 12,000 homes for 30,000 people has been proposed on a 1,436-acre salt harvesting site in Redwood City on the shores of San Francisco Bay; and

WHEREAS, over 100 current and former elected officials from all nine Bay Area counties and organizations and agencies such as Audubon California, the Sierra Club and the West Bay Sanitary District are opposed to the plan; and

WHEREAS, the salt ponds are part of the bay and, rather than paved, should be restored to tidal marsh for wildlife habitat, natural flood protection and cleaner water; and

WHEREAS, the bay's salt ponds provide the best opportunity to restore a portion of the 150,000 acres of valuable wetlands destroyed by previous generations.

WHEREAS, the land is zoned as a tidal plain where housing is not permitted; and

WHEREAS, a floodplain at sea level is an in appropriate location for housing during a time of global warming; and

WHEREAS, housing should not be built at sea level because climate change could lift the bay's water level up to 55 inches by the end of the century.

THEREFORE BE IT RESOLVED, the Midpeninsula Regional Open Space District opposes the development of Redwood City's salt ponds.

IN WITNESS WHEREOF, we, the Board of Directors of Midpeninsula Regional Open Space District do hereby adopt this resolution this, the 9th day of June, 2010.

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