Attachment 3

Environmental Sustainability Program Assessment

RESULTS OF TASK A

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Prepared for:

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Executive Summary

The City of Mountain View has a mature environmental sustainability program that has achieved substantial results related to both community-wide and municipal sustainability. However, the City is not on track to reach one of its most challenging current goals, the reduction of greenhouse gas (GHG) emissions by 80% relative to 2005 by 2050. As of 2015, the City was 21% behind its target. This Program Assessment sets out to assess the impacts that the City's core Environmental Sustainability programs are having, identify opportunities for internal and external collaboration, identify constraints that are inhibiting further progress, identify actions and strategies employed by peer benchmark cities that could be transferable to Mountain View, and identify process improvements that the City could implement to extend its impact.

Greenhouse gas (GHG) emissions are increasing in Mountain View, whereas emissions have decreased in most of the benchmark cities reviewed, despite them also experiencing significant population and job growth. The City needs a clear vision, innovative solutions, and strong collaborations to counteract the effects of rapidly growing residential and service populations, otherwise it stands little chance of achieving its GHG reduction goals. To address anticipated shortcomings in sustainability outcomes, the City of Mountain View is developing a strategic plan and is exploring options for possible levels of response that will help it prudently achieve its long-term climate change and other sustainability goals.

Several factors make achieving the City's greenhouse gas goals (and managing other environmental impacts) more challenging. Given recent and anticipated future population growth expected in Mountain View there is significant upward pressure on emissions. To counterbalance growth, emissions reduction efforts must be especially effective. The adoption of Silicon Valley Clean Energy as the default retail electricity choice for consumers in the City has had a tremendous impact and fundamentally shifts the priority of additional actions to achieve the 2050 goal, increasing the importance of thermal electrification and sustainable transportation as primary levers for reducing emissions. Given the large proportion of emissions from transportation, the development of aggressive and holistic approaches to transportation sustainability will need to be a major focus for the City. This must include careful tracking of metrics associated with not only the vehicles in use and their energy supply, but also travel behavior and overall demand. These sustainable transportation metrics may prove especially challenging because they are fundamentally related to long-term land use, urban form, and even cultural patterns, and because regional solutions are needed in order to support Mountain View's own transportation sustainability initiatives.

To provide ideas for sustainability programs, structures, and models that could be adapted to work in Mountain View, research was conducted on ten peer cities around the U.S. These cities were selected for their similarity to Mountain View in size, growth, climate commitments, and mature sustainability programs in key topical areas of interest. This research included 1) a review of programs in place and their results with a focus on areas of interest for Mountain View, 2) a review of governance approaches in these cities (including organizational structure, roles, funding, departmental collaboration, accountability, and more), and 3) the collection of deeper insights and advice from the sustainability leaders in each of these cities through a series of interviews ("benchmark city interviews").

Through interviews with Mountain View staff ("city staff interviews"), this Environmental Sustainability Assessment project has determined that there is widespread support for increased action in Mountain View, although there are many uncertainties and concerns about how this could be feasible for staff whose capacity is already constrained by a high workload of essential responsibilities. The support for sustainability goes beyond greenhouse gas emissions and many City leaders are actively wrestling with the intersection of social sustainability and environmental sustainability, particularly as related to affordability in Mountain View, development priorities, and factors such as jobs/housing balance. Interviews helped identify key assets and constraints related to sustainability progress, as well as future opportunities and future threats.

Synthesizing from the city staff interviews (which uncovered shared elements of their visions, priority focus areas, and strategic opportunities) interviews of sustainability staff in peer cities, and a review of the City's two Climate Action Plans (CAPs), Environmental Sustainability Action Plans, progress reports, memos, and other documents, the project team developed preliminary recommendations. These recommendations fall into three broad categories: (1) vision alignment recommendations, which relate to aligning departmental expectations with a clear shared vision for sustainability, (2) structure and process recommendations, which cover topics of interdepartmental coordination and collaboration, organizational structure, and roles and accountability, and (3) programmatic recommendations, which relate to specific policies and programs and priority areas where Mountain View may benefit from investing additional effort due to alignment with departmental leadership insights and passions. Eight key preliminary recommendations are highlighted here.

Top 8 Recommendations for Expanding Impact of the Environmental Sustainability Program

1. **Articulate a shared vision for sustainability, as a central prerequisite for developing a sustainability strategic plan.** To develop a Strategic Sustainability Plan for the City of Mountain View, several key decisions must be made by City leadership, including:
    a. Whether/how to adopt and implement Triple Bottom Line sustainability (including environmental, economic, and social equity considerations) and regenerative

sustainability (shifting from doing less harm to doing good, through encouraging closed-loop processes and re-investing in natural ecosystems[1]),

b. how to account for and manage environmental sustainability actions unrelated to greenhouse gas emissions,
c. how to clearly identify the staff responsible for implementing sustainability actions and how staff should prioritize environmental sustainability among their numerous responsibilities,
d. how the core sustainability staff should interface with staff across the organization in the implementation of sustainability initiatives, and
e. what the options are for varying levels of response to climate change, i.e. how quickly and substantially can and should the City of Mountain View work to achieve its sustainability goals.

2. **Elevate and make explicit the importance of sustainability to help staff prioritize sustainability actions.** Mountain View is falling quite short of its interim GHG reduction targets, and aside from purchasing verified carbon offsets to reach our reduction goals, there is no clear pathway to getting on track without expanded effort. Furthermore, our review indicated that many staff didn't have clear prioritization guidance for sustainability projects to help them justify devoting additional energy to new initiatives or learning and operationalizing new, more sustainable ways of conducting current responsibilities. Methods for elevating the priority of sustainability could include: executive level articulation that sustainability is a priority; elevating the role of the leader of the sustainability program to a higher position in the City organizational structure and providing staff resources aligned with the mandate for the office; housing critical sustainability coordinating functions within the CMO; identifying and tracking metrics across the organization (as noted in #3 below); incorporating sustainability responsibilities into job descriptions; evaluating potential new

ADDITIONAL RECOMMENDATIONS INCLUDE

- Ensure that future ESAPs include priority actions for all departments
- Conduct a social equity analysis of significant sustainability actions
- Leverage the CMO to drive policy at state and regional levels
- Celebrate successes in a strategic manner
- Explore new funding models
- Give departments more lead time due to staffing constraints
- Incorporate sustainability discussion into inter-departmental coordination processes

[1] Defining sustainability broadly so that it achieves social equity and economic vibrancy is an important way to ensure that support for sustainability initiatives is reinforced and strengthened over time, as the benefits are broadly shared. At the October workshop, staff articulated the connection of inclusive communities, livability, affordability, and active transportation to sustainability, both in their personal visions and in how their work addresses sustainability. Our working hypothesis entering the January 29th workshop is that the staff is generally aligned with a Triple Bottom Line and regenerative approach.

hires for sustainability expertise and motivation; and developing a broadly-shared sustainability vision for the City government and community. Which of these steps makes the most sense will be explored during the development of the Strategic Sustainability Plan. The Cadmus team recognizes that the question of priorities cannot be discussed in a vacuum. In order to elevate the priority of sustainability in an actionable way, it will be necessary to align expectations with overall responsibilities and resources. In other words, where there are capacity constraints, either resources can be increased, or other responsibilities can be de-prioritized. The question of resources is further addressed in #4 below.

3. **Identify metrics for sustainability progress that are aligned with department missions, develop a tracking plan, and set targets for each metric**. Our interviews indicated that many City staff have an appetite for increasing sustainability efforts in their functional areas and for tracking their progress. Mountain View has high-level sustainability targets (e.g. GHG reductions and waste diversion), but no comprehensive plan for tracking metrics that contribute to the attainment of the high-level GHG reduction targets. For instance, while there are **mode share targets** for North Bayshore, there are no community-wide targets. Nor are there **targets for VMT reduction, EV adoption, market share of efficient electrified heating,** or other key contributors to GHG emission reduction progress. Once metrics and associated targets are agreed upon, departments should be given responsibility for managing progress based on defined frequencies for collecting and reporting data, and resources to deploy in support of their efforts. Many comparable cities are implementing public online dashboards on key sustainability metrics.

4. **Identify and provide internal and external resources necessary to accelerate progress.** Resources could come in the form of **skills and funding**, both of which could be **internal** to City government (e.g. more program budgets, more staff hires) **or external** (e.g. grants, capacity-building and technical assistance, consulting, local business community initiatives). Our assessment of the four areas that have the highest GHG reduction potential and the least progress to date are transportation technology, transportation demand, building heating technology, and building heating demand. A sizable portfolio of actions in each of these areas is necessary to achieve significant progress. Since the vast majority of emissions in Mountain View are from the community, not municipal operations, substantial outreach is needed, requiring a significant time investment. More rapid action to incent community usage of active and shared modes of transportation through changes to the streetscape is critical at this time of rapid growth and change to the physical landscape of the City. The expertise and capacity for implementing these actions is needed across many functions in the City, and key departments have noted significant capacity constraints associated with fulfilling their core duties, making the pursuit of new and innovative actions for sustainability difficult to prioritize.

5. **Strive for increased cross-functional collaboration on key sectors responsible for the most remaining emissions in Mountain View, transportation and heating.** For sustainable transportation, functions are spread between two departments, including several sub-groups in Public Works and Community Development/Planning. To significantly impact commutes and general driving behavior, many transportation system improvements and policies must be taken

in a coordinated manner, both changing the choice environment (financial and non-financial costs and benefits of each transportation mode) and providing options and services that reduce the need to travel in single-occupant vehicles. Similarly, multiple departments have a role in facilitating and encouraging the adoption of efficient and electric building heating, and coordination will improve policy and program design and implementation.

6. **Develop a strategic transportation sustainability master plan to create a unified vision for decarbonizing the sector.** Stemming the growth in transportation emissions will not only benefit the planet but also contribute to quality of life improvements if done well, improving air quality and public health. The City is currently investing significant effort in this space, but functions are spread between departments, as noted above. The Comprehensive Modal Plan (under development) addresses many elements of the demand side of transportation, but consideration of advancing cleaner fuels, electrification, and vehicle efficiency should also be studied as part of the City's efforts. Mountain View should also evaluate the pros and cons of consolidating transportation functions and how to maximize coordination.

7. **Create capacity for learning and innovation.** A thriving sustainability program needs to be a living lab where ideas can be tested and where failure of individual initiatives is acceptable and expected. Programs should be designed to maximize the opportunity for learning, and honest appraisals of success are critical to allocating resources in the most effective places. Another ingredient for fostering a culture of innovation is to actively seek opportunities to celebrate successes, which will create positive affirmation of staff contributions to new ideas and initiatives, which can increase motivation and development of new ideas. The City could also seek and encourage innovations externally. Mountain View has historically been "humble" about its achievements and would capture several benefits from such internal and external communication efforts. Unfortunately, staffing constraints in many departments do not leave room for pursuit of innovative ideas.

8. **Regional collaboration will be necessary to scale solutions, particularly in transportation.** The City is constrained by the regional context. If the Bay Area is to manage its collective GHG inventory, cities must collaborate to address the jobs/housing balance and the increase in transportation demand region-wide. This may lead to some cities having more emissions on their ledgers in the short and medium term, as they contribute to improving transit-oriented infill development and housing near jobs, but the City Council needs to specifically decide whether to continue favoring development at the expense of meeting its GHG reduction goals. There appears to be strong interest from City staff in convening nearby municipalities, regional organizations, and the largest technology companies in the area to address transportation demand and emissions in ways that will also improve quality of life for constituents.

Program Assessment and City Benchmarking

Introduction

Project Context and Goals

Project Background

The City of Mountain View has a long history of progress and innovation in environmental sustainability programming. The City wishes to develop a strategic plan for the City's Environmental Sustainability Program. This report, the Environmental Sustainability Assessment, provides a foundation for a strategic plan by cataloguing progress made, drawing on operational insight from in-depth interviews and engagement of city leadership, and benchmarking against comparable cities nationwide. The City will incorporate this assessment together with additional stakeholder input and consultant advice to develop the strategic plan in Spring 2019.

Environmental sustainability has consistently been one the of the City Council's Major Council Goals in recent years. Dedicated and consistent efforts of the sustainability office and collaborating City departments have resulted in significant achievements that have led to more sustainable development in Mountain View, helped homeowners and constituents adopt more sustainable actions and technologies, and created a strong foundation for further action. These efforts have been guided by a three-year cycle of Environmental Sustainability Action Plans (ESAPs) with shared responsibilities across many Mountain View departments. Sustainability achievements highlighted as noteworthy by staff include 1) the adoption of short- and long-term greenhouse gas (GHG) reduction targets; 2) the implementation of three sequential ESAPs with numerous policy and program achievements; 3) the development of three climate action plans; 4) the adoption of a green building code; 5) Energy Upgrade Mountain View, which engaged over 2,000 households; 6) significant waste diversion achievements and a zero-waste goal; 7) numerous studies and programs to help achieve sustainable transportation; 8) implementing (and planning expansion of) a recycled water system; 9) reducing water use community-wide; 10) directing development to co-locate jobs and housing through several Precise Plans; and 11) collaborating with other local jurisdictions to form Silicon Valley Clean Energy to dramatically reduce the carbon-intensity of the City's electricity supply.

Despite this substantial progress, Mountain View emissions have grown. The community generated 768,365 metric tons of carbon dioxide equivalent (MT CO_2e) communitywide in 2015. Total 2015 emissions were 9.1 percent higher than the 2005 baseline, and 21.3 percent above the 2015 reduction target of 10 percent. Transportation remains the largest fraction of emissions, which continue to grow, followed by building emissions, which are decreasing. The City has an upcoming 2020 reduction target of 15-20 percent, and it appears that Mountain View is poised to miss this target by a wide margin, due to its efforts not being sufficient to offset the impact of continued community growth.

In spring 2017, the Council voted to establish a second Environmental Sustainability Task Force (ESTF-2) to focus on developing strategies and projects that reduce greenhouse gas emissions. As was the case

during the formation of the first Environmental Sustainability Task Force, there was substantial investment from community stakeholders, with dozens of participants investing hundreds of hours in research, analysis, and outreach on a volunteer basis to suggest opportunities for the City to take action. The purpose of ESTF-2 was to (1) evaluate and recommend whether and how current City sustainability plans and goals should be modified based on new technologies and processes for addressing climate change, and (2) extend the capacity of City sustainability staff in the areas of residential and business outreach and regional collaboration and advocacy to meet the City's climate goals.[2]

ESTF-2, comprised of 33 community members, held 17 general meetings, multiple working group meetings, and conducted extensive community outreach. Following this activity, ESTF-2 reported findings to the City Council in June 2018, including its recommendation to increase the Environmental Sustainability staffing and program budget to help achieve the City's sustainability goals. The City is taking the ESTF-2 recommendations into careful consideration and has commissioned the current Environmental Sustainability Program Assessment to help the City determine the effectiveness of the City's sustainability efforts and what opportunities exist to enable the program to move forward on the ESTF-2 recommendations and expand its impact. Additionally, as part of the FY 2018-19 work plan, City sustainability staff has reviewed and validated the analysis provided with the ESTF-2 recommendations, and staff is working to propose draft actions for its next Environmental Sustainability Action Plan, ESAP-4, in early 2019. This sustainability program assessment and strategic plan will help inform the actions included in ESAP-4 and will also inform the budgeting process for sustainability and sustainability-related efforts in the City.

Scope of Sustainability within this Report

Sustainability is a complex concept, and as a result, it typically holds different meaning for different people. One of the most commonly cited definitions of sustainability comes from the United Nations *Brundtland Commission Report*, which states: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[3] While this definition of sustainability focuses on limiting adverse impacts of human actions on future generations, the recently emerging discussion of *regenerative* sustainability focuses on enabling social and ecological systems to maintain a healthy state and continue to regenerate, in the hopes of leaving a future ecological system that is not only uncompromised but also improved.[4]

Recent references to sustainability increasingly emphasize that environmental sustainability is inextricably intertwined with both economic sustainability and social equity. This is typically referred to

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[2] City of Mountain View RFP document for Environmental Sustainability Consultant

[3] *Our Common Future: Report of the World Commission on Environment and Development*. http://www.un-documents.net/our-common-future.pdf. Development in this context refers to the "progressive transformation of economy and society," and applies equally to sustainability in all countries whether considered "developed" or "developing."

[4] http://www.eurestore.eu/wp-content/uploads/2018/04/Sustainability-Restorative-to-Regenerative.pdf

as the triple bottom line. Proponents of triple bottom line sustainability thinking argue that failure to address each "pillar" of sustainability will likely lead to suboptimal outcomes for all three pillars.

While each dimension of sustainability is important, this report will specifically focus on the environmental sustainability progress in the City. Interviews and meetings with City staff demonstrate that many members of the leadership team are intuitively and explicitly connecting environmental sustainability considerations with both economic considerations and equity considerations, and it is expected that a triple bottom line approach to sustainability may be the subject of discussion and deliberation in the development of the Sustainability Strategic Plan. However, the environmental component of sustainability is the sole focus of the current assessment report.

Approach

This assessment is being conducted through a close collaboration of the City of Mountain View staff and the Cadmus Group. City staff has provided insights into the history of sustainability collaborations in Mountain View and the ways in which the City and its staff operate. The project started with the development and refinement of research questions and objectives with representatives of the City Manager's Office and the Sustainability Office. Research questions include:

1) What impacts are the City's current core Environmental Sustainability programs having?
2) What opportunities for collaboration could be leveraged (e.g. cross-departmental, regional, and with external partners and funders)?
3) What constraints are inhibiting further environmental sustainability progress?
4) What notable actions are cities of similar size, environmental sensibilities, development patterns, and intellectual capital pursuing? To what extent are they succeeding at their sustainability objectives? What elements of their strategies and structures could be transferrable to Mountain View?
5) What process improvements could the City implement to extend its impact? What measurement tools and processes could improve monitoring of progress?

To address these research questions, the team conducted the following activities:

1) Hosted a **kickoff meeting** for a broad cross section of City leadership to understand their perspectives on and visions for sustainability and to unpack the most salient challenges and opportunities identified by City leadership,
2) Conducted a **series of sixteen interviews** with City staff to understand what activities and functions they oversee related to environmental sustainability, and to assess their vision, interest in, and capacity to focus on future sustainability efforts, gather their perception of what has been working and what has not, learn about how departments collaborate, and probe barriers to further progress,
3) Debriefed and **synthesized City staff interview findings** to develop initial ideas for process improvements,
4) Performed **desk research on city sustainability programs from ten comparable cities**, including review of sustainability commitments, climate action plans, roadmaps, metrics, and progress reports, and,

5) Conducted **nine interviews of sustainability directors** from these cities covering staffing levels and structures, governance models, funding and finance strategies, key program successes, success factors, and lessons learned.

The synthesis of these activities informed the development of initial process improvement ideas and the framing of key decision points that the City should address as internal stakeholders assemble to develop the Strategic Plan in early 2019. These are presented at the end of this report.

Sustainability in Mountain View

History of Sustainability Efforts and Community Growth;

As a growing city with a thriving tech economy, Mountain View has seen its population and its service population grow substantially in recent years. The Mountain View population grew from approximately 74,000 people in 2010 to approximately 81,500 in 2017.[5] The thriving tech, biotech, and information industries have led to rapid job growth and a large service population, with large employers such as Google/Alphabet, Microsoft, Intuit, Symantec, LinkedIn, NASA Ames Research Park, and more.[6] These companies and others have contributed to an influx of workers into the city; City officials cite an increase in the city's worker population from 64,061 workers in 2010 to 96,026 in 2017, a 50% increase over seven years. By some estimates, Mountain View now has 3 to 6 times as many workers in certain broad industry categories as would be expected for the average location of this size.[7] This growth in jobs has come with the need for significant residential growth if a jobs/housing balance is to be maintained in reasonable proximity to the new jobs. The growth in these jobs has also exacerbated housing affordability challenges.

This increased population and workforce amplifies the challenge of managing overall community environmental impacts for several reasons. First, in the absence of other factors, higher population leads to more resource consumption, such as energy consumption, food consumption, materials consumption, and water consumption. Second, City staff resources are stretched thinner in the fulfillment of their daily responsibilities and have less capacity to engage in additional activities to improve the resource efficiency of their own operations.

The question of growth leads to interesting considerations regarding how greenhouse gas impacts should be measured and how goals should be set at different jurisdictional levels. The City of Mountain View could focus on absolute GHG reduction targets or GHG efficiency targets (e.g., normalized to population or service population). On the one hand, absolute GHG goals provide accountability to direct environmental outcomes, which relate to total GHG pollution, while per capita GHG accounting provides an "excuse" if emissions are not reduced to an absolute level proportional to the standard the rest of the world should be held to. On the other hand, if GHG emissions are appropriately addressed at the

[5] United States Census. https://www.census.gov/quickfacts/mountainviewcitycalifornia

[6] https://www.mountainview.gov/depts/comdev/economicdev/default.asp

[7] Data USA. https://datausa.io/profile/geo/mountain-view-ca/#intro

region, state, federal, and international level, per capita measures at the local level may be sufficient and may allow the City to focus on contributing to other regional needs such as jobs/housing balance that could otherwise conflict with absolute GHG goals. The City adopted GHG targets in 2009 with support from ICLEI and these targets are framed as absolute reductions from a 2005 baseline, including 10% below 2005 levels by 2015, 20% below by 2020, and 80% below by 2050.

As noted above, 2015 emissions missed Mountain View's target by over 21%, and it appears that Mountain View is poised to miss its 2020 GHG target by a wide margin, due to its efforts not being sufficient to offset the impact of continued community growth.

Metrics

The City has established and tracked various metrics to measure the success of its sustainability programs and policies. Metrics that are tracked include, but are not limited to, community-wide greenhouse gas emissions, mode-share, potable water use, and waste diverted from landfill. Each of these metrics can be looked at from the perspective of community-wide total impacts and municipal operations impacts.

It is important to note that the City has a varying degree of control over the attainment of its goals due to a number of factors, including (1) the possibility that jurisdictional authority may reside primarily at a higher level of government (e.g. state policy), (2) limitations of available regulatory tools (e.g. when dealing with community-wide emissions, the City can mandate efficiency via building codes, provided they are deemed cost-effective, but has more limited methods for encouraging day-to-day conservation), and (3) limitations of currently available clean technologies (e.g. are the clean technologies that are necessary to achieve the goal cost effective and desired by constituents?). The City can mandate, create targets for its own operations, incent sustainable action, educate/perform outreach, facilitate financing, and perform market development activities. However, the first two categories of actions are the only ones that give the City direct control over outcomes.

Mountain View currently places significant importance on metrics related to emissions and related to sectors contributing to emissions. Table 1 lists these metrics, as well as additional metrics that do not appear to be prioritized by the City at the current time, but which could be considered as part of an environmental sustainability plan. This table is intended to create a broad view of metrics that **could** be tracked and whether the City has direct control, strong influence, or weak influence over each, which is a subjective but important distinction. Tracking is classified as "active" if there is a regular repeating process for assessing the progress for each metric, regardless of the frequency.

Table 1. Example Potential Metrics and Whether They Are Tracked by the City of Mountain View

Category	Metric	Degree of Control over Outcome	Form of Tracking by Mountain View	Mountain View Goal Determined
Overall greenhouse gas emissions	Community-wide GHG emissions	Influence	Active	Yes (80% by 2050 relative to 2005)
	GHG emissions from municipal operations	Control	Active	Yes (80% by 2050 relative to 2005)
Air quality	Local criteria air pollutant levels (e.g. NOx, SOx, PM, ozone, and more)	Weak Influence	By other agencies[8]	Not apparent in our review
Environmental quality	Trees – number, species diversity, and canopy cover	Control	Active	Yes (increase canopy to 22.7% by planting 11,000 trees)
	Acres of open space	Control	Active	Yes (3.00 acres of open space per 1,000 residents)
Transportation	Vehicle miles traveled	Weak Influence	Through GHG inventory process	Not apparent in our review
	Single-occupancy vehicle mode share	Influence	Active	Yes, in North Bayshore (45%)
	Transit ridership mode share	Weak Influence	Active	Yes, in North Bayshore (35%)
	Ridesharing mode share	Weak Influence	Active	Yes, in North Bayshore (10%)
	Active transportation mode share	Influence	Active	Yes, in North Bayshore (10%)
	Trip Reduction (for entities required to submit TDM plans)	Weak Influence	By other agencies	Goals vary by entity
	EV market share	Weak Influence	By other agencies	Not apparent in our review
	City fleet fuel consumption and emissions	Control	Active	Recommended by MOCAP, but not clear if implemented

[8] In addition to Federal air quality standards maintained by EPA, California Air Resources Board maintains a series of maps of nonattainment areas for the California standards, and Mountain View is in nonattainment areas for several of them. https://www.arb.ca.gov/desig/adm/adm.htm

Category	Metric	Degree of Control over Outcome	Form of Tracking by Mountain View	Mountain View Goal Determined
Buildings	Community building energy use	Influence	Through GHG inventory process	Not apparent in our review
	Market share of efficient thermal electrification technologies (e.g. heat pumps)	Influence	Not apparent in our review	Not apparent in our review
	City facility energy consumption and emissions	Control	Active	Not apparent in our review
Water	Community-wide potable water usage	Influence	Active	Not apparent in our review
	City facilities potable water usage	Control	No	Not apparent in our review
	Water quality	Influence	Active	Yes (by EPA and Water Board)
Waste	Landfill diversion rate	Influence	Active	Yes (90% diversion by 2020)
	City operations diversion rate	Control	Not apparent in our review	Recommended by MOCAP, but not clear if implemented
Climate Resilience[9]	Percent of community protected from sea level rise	Control	Not part of our review	Not part of our review[10]
	Percent of critical facilities served by resilient microgrids	Control	Not part of our review	Not part of our review
	Degree of preparedness for wildfire and/or wildfire indirect impacts	Control	Not part of our review	Not part of our review
	Degree of preparedness for flood and stormwater control	Control	Not part of our review	Not part of our review
	Measures of protection of disadvantaged populations: Households displaced, Quantity of affordable housing available, and other affordability metrics	Influence	Not part of our review	Not part of our review

[9] Although adaptation and resilience are not the major focus of this assessment, a large number of worthy metrics have been assembled by NAACP.

[10] From review of the most recent CIP, it is apparent Mountain View is taking action on sea level rise protection, but it is unclear how progress will be measured.

Category	Metric	Degree of Control over Outcome	Form of Tracking by Mountain View	Mountain View Goal Determined
Social Sustainability [11]	Measures of inclusive stakeholder engagement in climate adaptation/sustainable communities planning: locations of meetings, timing of meetings, languages used, participant socioeconomic diversity	Control/ Influence	Not part of our review	Not part of our review
	Measures of shared benefits: e.g. percentage of beneficiaries of local sustainability programs who are in low income or disadvantaged groups	Influence	Not part of our review	Not part of our review

As noted above, this table is designed to highlight the wide range of metrics that could be considered as part of a response to climate change, and it is neither comprehensive, nor does this assessment currently recommend tracking any specific metrics from this list. However, in the discussion of what the sustainability program could mean and impact in the long run, it is worth presenting a broader menu of ideas.

Program Resources

The location and size of sustainability offices varies among cities but is largely dependent on the roles and responsibilities the office is tasked to fulfill and the extent to which sustainability tasks are also embedded within other departments. Situated within the City Manager's Office, the Sustainability Program works to develop policies and implement programs that reduce carbon emissions and other environmental impacts. Its scope includes sustainability strategy, GHG emissions measurement, renewable energy development, and community engagement on sustainability. It collaborates with other departments to support implementation of other sustainability efforts. Such collaborations include interactions with the 19 interdepartmental employees outside the sustainability office whose jobs include at least one substantial and continuous sustainability role, as well as interactions with employees whose roles do not explicitly include any sustainability responsibilities.[12]

[11] Social sustainability and equity are also not the major focus of this report, but for more worthy metrics, Cadmus's primer on Equitable Clean Energy Program Design provides some suggestions (see its Table 2), in addition to the NAACP report referenced in the footnote above. Santa Monica's sustainability data portal includes additional suggestions.

[12] These 19 staff include the Assistant City Manager, three members of the Community Development Department covering planning and building codes, and 15 members of the Public Works Department covering topics such as recycling and zero waste, sustainable transportation, water conservation, forestry, and parks and open space.

The current staffing of the City's Sustainability Program is roughly 2.5 FTEs, including a full-time Sustainability Coordinator, a full-time Analyst II focused on analytical and program support, and a part-time, limited period Analyst I focused on community outreach. Sustainable operational and policy considerations are also central to the role of many staff in Mountain View who are not directly part of the sustainability office. The Public Works Department manages the City's recycling and zero waste programs, as well as the City's transportation network that covers all transportation modes, including pedestrians, bicycles, transit, and motor vehicles. Additionally, the Community Development Department has significant impact on transportation emissions and sustainable travel behaviors through its land use planning functions that emphasize mixed-use development, transit-oriented development, jobs/housing balance, affordable housing, and more. The Community Development Department is also responsible for the review of development and building activity to ensure compliance with the California Environmental Quality Act (CEQA).

Strategic Program Assessment

This section critically reviews sustainability progress made by the City of Mountain View from the perspective of historical achievements and gaps, current assets and constraints that support and impede additional progress, and future opportunities and threats to achieving sustainability goals in the City. This assessment is not intended to draw prescriptive conclusions from any comparisons with other similar cities, as it must be emphasized that each city implementing a sustainability program is doing so in the unique context of its constraints and opportunities. Nonetheless, comparisons and examples from other cities are provided where valuable. Additionally, in discussing opportunities and potential recommendations, this assessment attempts to provide observations that are relevant regardless of what goals the City of Mountain View may pursue and what strategic framework it may develop during the stakeholder process in early 2019.

Achievements

As noted above, the City has a longstanding sustainability program with knowledgeable staff, supportive constituents who are eager to contribute, and a City Council that has repeatedly prioritized sustainability as a key goal. The sustainability program has worked with City departments and City constituents to implement programs and projects across a broad array of sustainability topics, including buildings/energy efficiency, energy supply, waste reduction, water conservation, and sustainable transportation, among other topics. These programs have addressed both municipal operations and community-wide environmental impacts.

It is not a goal of this assessment to provide information on every sustainability program or policy implemented by the City, however several notable achievements are briefly summarized below.

Buildings and Energy Efficiency

To reduce building-related emissions, the City has implemented a number of successful energy efficiency policies and programs. As of August 2011, the Mountain View Green Building Code (MVGBC) has amended the State-mandated California Green building code (CalGreen) to include local green building standards and requirements by building type.

For its own portfolio of buildings and properties, the City has long implemented energy efficiency projects out of a carve out of its Capital Improvement Plan, including energy audits, lighting retrofits, controls, cool roofs, and HVAC retrofits. The City Council also established a policy requiring all public new construction and renovation projects over 5,000 square feet to be Leadership in Energy and Environmental Design (LEED) Silver certified or better.

From April 2011 to December 2014, the City implemented its Energy Upgrade Mountain View program to encourage residents to reduce home energy use. The program increased awareness of household energy use through a customized website that allowed residents to easily see how much energy they were using and track their progress as they implemented simple home efficiency measures. Additionally, the program provided free home energy audits and energy-saving devices, informational materials, and workshops. The program engaged over 2,000 households, and, on average, participants reduced their electricity use by 6%, their natural gas use by 16%, and their energy costs by 4%. This is equivalent to avoiding approximately 1,400 metric tons of carbon dioxide emission over the duration of the program.[13]

Additionally, the City has authorized Property Assessed Clean Energy (PACE) programs to enable property owners to access affordable financing for energy improvements to their facilities.

Energy Supply

To further reduce emissions and meet their climate goals, the City led in the creation of Silicon Valley Clean Energy (SVCE), a Community Choice Aggregator (CCA) that provides cleaner and cheaper energy than Pacific Gas and Electric (PG&E), the incumbent utility. Residents are automatically enrolled into SVCE's 50 percent renewable "GreenStart" program, which is 100% carbon free. They have the option of either remaining with GreenStart, opting in to SVCE's 100 percent renewable "GreenPrime" program for an added cost, or opting out of the CCA and remaining with PG&E's electricity service.[14] As a result of joining SVCE, electricity emissions are expected to decline to represent just 1% of overall community-wide emissions after full program rollout in early 2018, a tremendous drop from 2005.[15]

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[13] Buildings and Energy Efficiency. https://www.mountainview.gov/depts/manager/sustain/buildingsenergyefficiency.asp

[14] Ibid.

[15] https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=23340

While SVCE has by far the largest impact on energy supply, other local actions are still notable and beneficial, since solar that is generated within Mountain View frees up the clean energy developed in SVCE to be sold elsewhere. Mountain View has contributed in two major ways. First, for its own facilities, the City of Mountain View generates approximately 700 kW of solar power from solar systems located at four city facilities: California/Bryant Street parking garage, Shoreline Golf Pro Shop, Shoreline Maintenance Facility, and the Municipal Operations Center. By producing carbon-free electricity, these installations eliminate approximately 630 metric tons of carbon dioxide annually.

Second, in support of clean energy on privately-owned property, the City has adopted streamlined permitting and reduced fees for solar, as required by AB2188.[16] Additionally, over-the-counter solar permitting is available to owners of one-to-two family buildings through the City's One Stop plan check process.[17]

Waste Reduction

In 1999, Mountain View created a Source Reduction & Recycling Element to identify the various waste reduction, reuse, recycling, compost, and other programs to divert waste away from the landfill. To date, the guide has helped the City create new diversion programs and services, the progress of which is measured through CalReycle's Annual Jurisdictional Diversion Report. Mountain View has always exceeded the State's minimum requirements of a 50 percent diversion rate, achieving 52 percent diversion in 2002, 72 percent diversion in 2006, and 78% diversion in 2017.[18]

In 2009, the City Council adopted an Environmental Sustainability Action Plan that called for the creation of a Zero Waste Plan. The resulting Plan builds upon earlier efforts and seeks to further reduce the per capita disposal rate for residential and commercial waste and reduce the carbon emissions of the waste sector. The two goals proposed to measure the City's progress in achieving the 2025 Zero Waste Vision include residents and businesses diverting 80% of materials from landfills by 2015, and 90% of materials by 2020.[19]

Water Conservation

The City has established multiple programs and incentives to encourage water conservation. Since 2000, the City has given away 7,600 free water-saving devices, provided rebates for or directly installed 4,500 low-flow toilets and urinals, provided rebates for 4,500 clothes washers and 400 sub-meters, conducted 2,300 home audits/irrigation surveys (approximately 7 percent of all homes within the City's jurisdiction[20]), and rebated 150 pieces of irrigation equipment.

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[16] AB2188 required local governments to adopt a local solar ordinance by September 30, 2015 that creates a simplified and streamlined permitting process for solar to help lower the cost and increase the accessibility of solar installations.

[17] https://www.mountainview.gov/depts/manager/sustain/renewable_energy.asp

[18] https://www.mountainview.gov/depts/pw/recycling/zero/default.asp

[19] https://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=9203

[20] Based on a population of approximately 33,000 households (US Census)

In 2009, the City completed installation of recycled water pipelines throughout the North Bayshore Area that allow customers to use recycled water for landscape irrigation, offsetting up to 270 million gallons of potable water annually. Additionally, in 2010, the City adopted new "Water Conservation in Landscaping Regulations" for development projects that require the implementation of water-saving practices. As a result of the City's water conservation programs and other factors, potable water use has decreased 15% from historical levels (FY 2013-2014 compared to the baseline years of 1995-2004).[21]

Sustainable Transportation: Multi-Modal Transportation Planning

The City has implemented multiple strategies to reduce reliance on single occupancy vehicles (SOV) and encourage the use of alternative travel modes to ease traffic congestion and reduce vehicular emissions. In 2013, the City adopted commute mode-share targets for the North Bayshore Area (SOV: 45%, public and private transit: 35%, active transportation: 10%, and ride-sharing: 10%). To further support multi-modal travel, the City participates in the regional planning for bike infrastructure and programs and has implemented a dockless bike share pilot program. The City has also adopted and updated a Bicycle Transportation Plan to improve and encourage bicycle travel in the City; and it has developed, constructed, and continues to oversee approximately 50 miles of class I, II, and III bikeways/multi-use paths.[22] As of the 2017 Bicycle Transportation Plan Update, 84% of the high priority bike pathway projects have already been budgeted out,[23] and work has commenced on 22 of the medium and high priority actions from the plan.[24]

In addition to the tangible achievements listed above, the City is actively planning additional sustainable transportation efforts. In 2017, the City prepared a Transit Center Master Plan that aims to improve the safety, capacity, and multi-modal access of the Transit Center, which serves as a transit hub for pedestrians, bicyclists, Caltrain commuter rail services, VTA light rail, and public and private shuttles. The City recently completed an Automated Guideway Transportation (AGT) feasibility study to assess how the development of an automated guideway transportation system may serve as a solution to mobility challenges within the City, and how such a system could be integrated into the City's existing transportation improvement strategies.[25] The City is also currently working on a Comprehensive Modal Plan that will integrate the various existing transportation plans and studies into a single, comprehensive plan that will allow the Council to prioritize improvements and services and evaluate funding strategies.[26]

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[21] Climate Protection Roadmap. https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=19516

[22] Climate Protection Roadmap.

[23] https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=18294

[24] https://mountainview.legistar.com/LegislationDetail.aspx?ID=3766817&GUID=B5F001EA-B49C-4006-BAA4-81B72F6F3616

[25] https://mountainviewagtfeasibility.com/

[26] Analysis of ESTF-2 Recommendations.

Sustainable Transportation: Transportation Demand Management Program

The City of Mountain View has a significant history of promoting Transportation Demand Management (TDM) policies and programs. In December 2014, the City adopted a new North Bayshore Precise Plan, which provided standards and guidelines for new development in the North Bayshore district. Among other things, the Plan calls for the development of complete neighborhoods with over 9,000 new housing units and guidelines and standards which seek to minimize traffic impact of new development through demand management. As a result, the Mountain View Transportation Management Association (MTMA), a nonprofit organization run by Mountain View business and landowners, was created to help its members and the surrounding community reduce congestion and improve connectivity by pooling resources and developing coordinated transportation strategies. MTMA is a membership organization run by a Board of Directors, supported by a consulting staff, and funded by contributions of its member companies[27]. Key functions of MTMA include creating and managing a coordinated employee shuttle service that is also open to the public, coordinating the monitoring and reporting of data on TDM measures and progress towards trip reduction and SOV targets, as well as developing transportation system and demand management strategies. To assess the success of TDM policies and track progress towards company trip reduction targets, member companies are conducting annual commute surveys that include data on mode share for all commuters. Several company surveys indicate that single occupancy trips have been significantly below the caps established in their Environmental Impact Reports.[28]

Sustainable Transportation: Fleet Procurement

The City vehicle fleet is used to perform a range of services, including police patrols, police and fire department emergency responses, maintenance at water and wastewater facilities, public works project inspections, and community building inspections and code enforcement. According to the Municipal Operations CAP, the City vehicle feet is responsible for approximately 11% of the City's greenhouse gas emissions. 71 light duty vehicles in the City's fleet have been converted to hybrids or electric vehicles as of fall 2018, representing 23% of the city's overall fleet. The City has also begun installing alternative fuel infrastructure, including electric vehicle charging stations, and has current City Council support to significantly increase its investment in public charging stations. Additionally, the City looks for the most fuel-efficient vehicle available for a given task during the procurement process and downsizes vehicles when possible.[29]

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[27] Member companies include: Google, Intuit, LinkedIn, Microsoft, MV Camus Owner, Symantec, Sares Regis Group of Northern California, Sobrato Organization, Broadreach Capital Partners, and the City of Mountain View

[28] Data provided by City of Mountain View staff.

[29] Municipal Operations Climate Action Plan. https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=19517

Gaps

Despite the notable programs described above, there remain a few areas where the City's efforts have not resulted in progress that aligns with its goals. This section includes gaps relative to sustainability goals explicitly adopted by the City and gaps in other sustainability considerations.

Gaps Relative to Explicitly Adopted Goals

The City is falling behind its goals on GHG reduction, one of the highest priority sustainability goals identified by the City, and to a lesser extent the City is somewhat behind its Zero Waste target timeline.

Zero Waste

Although the zero-waste program was listed above as a notable accomplishment for the City, with very high landfill diversion rates, it must also be noted that Mountain View is a few years behind its interim timeline to achieve its Zero Waste Plan diversion goal. That plan states that Mountain View residents and businesses will need to divert 80% of materials from landfill by 2015, whereas a diversion rate almost this high (78%) was achieved two years behind schedule, in 2017. The City's ultimate community-wide goal for waste is 90% diversion by 2020, approximately one year from the date of this assessment.

Emissions

In 2015, total community-wide emissions were 9.1% higher than in 2005 (the baseline year), while the 2015 reduction target was 10%. Significant residential and commercial growth has occurred since 2015, and the goal for 2020 is 15-20% below 2005, a target that appears unlikely to be met at this time. Since 2015, the formation of Silicon Valley Clean Energy, which provides a 100% carbon-free electricity supply that covers a substantial majority of electricity usage in the community, has significantly reduced the contribution of electricity to the City's GHG inventory. This change places increased focus on the transportation sector and the building heating sector (both space heating and water heating) as key opportunities to reduce emissions, particularly to the extent which these sectors can be electrified.

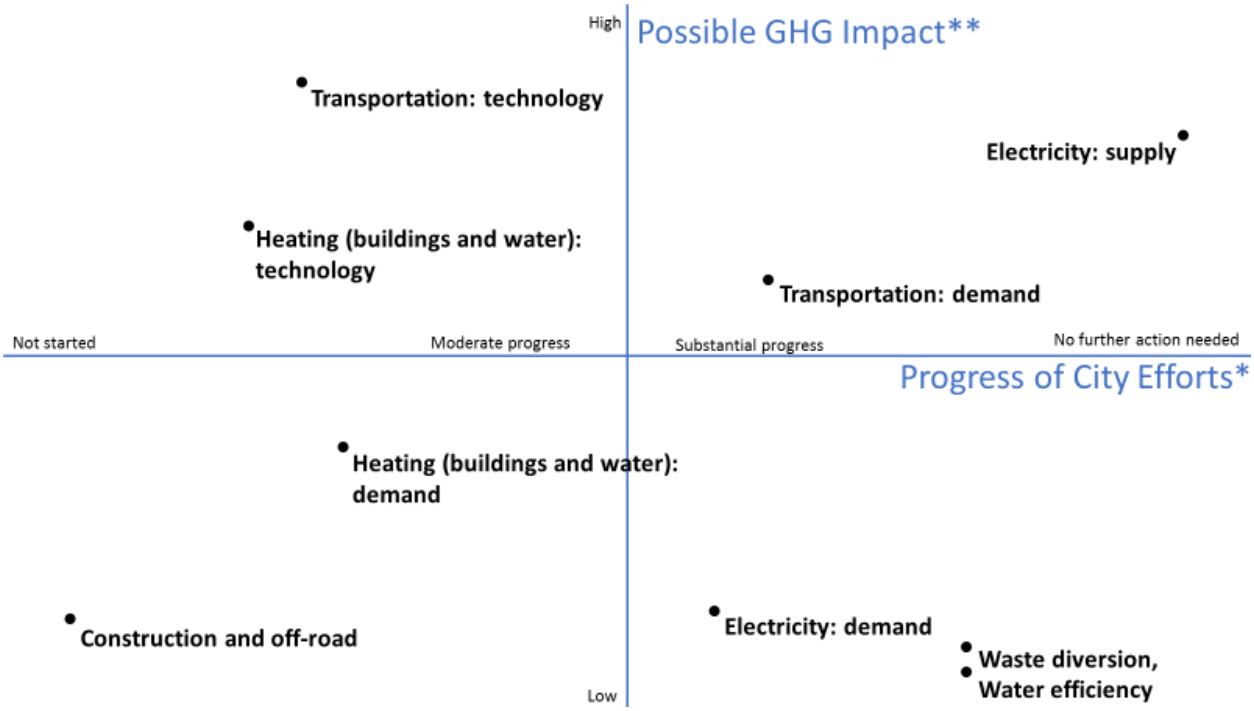
The largest driver of the increase in emissions is the fact that the transportation sector's emissions, the largest sector in Mountain View, continue to grow, increasing by 22% between 2005 and 2015. Despite the investment of substantial effort in transportation programs, as described above, the City is faced with the reality that a larger number of residents and a larger service population will lead to an increase in transportation demand and vehicle trips, in the absence of very effective programs to curtail this growth. City leadership indicates it is aware of the criticality of transportation sustainability to addressing overall emissions in Mountain View. Comprehensive, holistic, and aggressive approaches (including fuel switching, vehicle efficiency improvements, and travel behavior changes) will be needed to bring transportation emissions to a level that is compatible with the City's overall emissions goals.

This new context for evaluating GHG impacts is summarized below in Table 2 and Figure 1. The three biggest sectors are broken out into a "supply/technology" side and a "demand/behavior" side for the purposes of this figure. Table 2 provides an explanation of what is meant within the "supply/technology" and "demand/behavior" sides. The Cadmus team's assessment of Mountain View's progress is on the x-axis, while potential GHG impact is on the y-axis.

Table 2. Defining the Terms Used in Figure 1.

Sector	Supply/Technology Side	Demand/Behavior Side
Transport-ation	Progress improving efficiency of vehicles and carbon-intensity of fuels Examples: • Fuel economy: Scrap and Replace programs, new vehicle standards (primarily at the state and federal level) • EV and alternative fuel market share: promoting and procuring EVs, biodiesel blends, and other alternative fuels; developing EV infrastructure	Progress reducing number of vehicle miles traveled (VMT) in modes that emit GHGs Examples: • VMT (behavior-focused actions): transportation demand management programs, parking pricing • VMT (urban-form focused actions): policies to maximize transit-oriented development, improve jobs-housing balance, and reduce travel needs • Mode share: shuttle services, single-occupant vehicle trip caps
Electricity	Progress procuring emissions-free electricity Examples: • Percent carbon-free grid electricity: promote SVCE, encourage Direct Access customers to procure 100% carbon-free electricity • Local generation: outreach and education on solar	Progress reducing electricity consumption in residential, commercial, and industrial settings Examples: • Electricity consumption per capita: green building code updates, requiring energy audits, education
Space and Water Heating	Progress implementing efficient, renewable, and electric options in space and water heating Examples: • Market share of heat pumps: bulk purchasing campaigns, streamlined permits, incenting or mandating replacement of fossil fuel-based heating equipment at end of life	Progress reducing demand for space heating and water heating Examples: • Energy consumption for heat per capita: insulation and building envelope campaigns, smart thermostat deployment, energy audits, retro-commissioning

Figure 1. Potential Impact and Progress to Date (approximate).



** Progress is not relative to other cities but relative to the amount of action already taken and what else could be done. It is an approximate subjective judgment, spanning the numerous possible actions that would fit within any of these topics.*

*** The extent to which GHG reductions are ascribed to the "demand" side for each of these topics depends on how clean the sector's supply has become (e.g. with 100% carbon free electricity, the impact of energy efficiency is greatly reduced, which is why it is shown as having a low GHG impact in this figure. Similarly, with 100% EVs on a clean grid in the future, reducing VMT has less GHG impact).*

Gaps That do not Relate to Explicitly Defined Sustainability Goals

The City of Mountain View's sustainability programs focus on environmental sustainability. However, many sustainability practitioners argue that sustained progress on environmental sustainability is contingent on adequate attention to triple bottom line thinking, and that sustainability should also consider economic sustainability and social sustainability (equity).

The decrease in affordability of living in Mountain View is a gap in triple bottom line sustainability outcomes for the City. Just as with the gaps identified above related to environmental sustainability goals, this gap is not for lack of dedicated City effort on policies and programs. To the contrary, the City has subsidized apartment costs for low- and moderate-income residents[30], requires a percentage of new units to be affordable, and offered a City employee homebuyer assistance program as a component of a

[30] https://www.mountainview.gov/depts/comdev/preservation/homebuying/default.asp

recent multi-family development application, among other actions. Nonetheless, the City Council has identified protecting vulnerable populations and preserving the socioeconomic and cultural diversity of Mountain View as one of its key goals for FY17 to FY19, in recognition of the severity of the lack of affordable housing options for constituents. The affordability challenges that Mountain View faces directly relate to environmental sustainability, in the context of regional transportation challenges in Mountain View and surrounding communities. As people of low and moderate incomes continue to be priced out of living in the region, their commutes get longer, and labor gets scarcer. Given that approximately 60% of Mountain View's community-wide emissions are transportation-related, achieving overall emissions reductions will be significantly harder as travel demand increases. Additionally, several City staff noted in interviews that they were having trouble finding candidates to fulfill the basic job functions of their departments, a phenomenon they attributed to the high cost of living in and around Mountain View. The difficulty in finding staff capacity ultimately impedes sustainability progress because sustainability functions and initiatives that must be implemented by the departments are postponed in deference to immediate functional responsibilities.

Process Gaps

Mountain View's City Council goals for FY2017-2019 include, "Promote environmental sustainability with a focus on measurable outcomes." Despite this stated objective, city staff interviewees indicate that it is unclear what level of prioritization they should give sustainability initiatives relative to their other responsibilities. They cite a lack of mandate to expand their sustainability work, particularly given the capacity constraints faced by their staff. These constraints make it challenging to advance the numerous actions identified in the ESAP, which are not currently formally integrated into departmental workplans.[31] Many of these actions also require cross-departmental collaboration, but there is not currently a structure through which to engage in this work. City staff interviewees indicated that having sustainability as a standing agenda item on leadership and management meetings or establishing a separate governance structure for this work (e.g. Green Team, or a higher-level sustainability committee with appointed members) would help coordination. Another gap in the collaborative process identified by staff is that the sustainability office often does not have an early seat at the table when projects that connect to sustainability are discussed (for instance, the sustainability office was not involved in the paid parking study despite the connection between parking pricing and the volume of people who will decide to drive to the area being studied).

While Mountain View tracks its greenhouse gas emissions, the city does not require departments to track other key sustainability metrics. These other sustainability metrics are sometimes better aligned with departments' other priorities (e.g. measuring vehicle miles traveled as a metric that contributes to sustainability and also reduces congestion). The sustainability office is responsible for summarizing

[31] Staff indicated that the ESAP process involves significant engagement of each department prior to the assignment of ESAP actions to the department. Once Council has approved the ESAP, each of the departments receive a copy of the final plan, but there has not been a process where City leadership requires detailed execution plans or progress reporting from the departments.

progress on numerous actions that are the responsibility of other departments for ESAP updates, which can create an administrative burden that takes focus away from other sustainability office functions.

In addition to these existing gaps in governance, city staff interviewees noted that Mountain View may not be utilizing available external sustainability resources to the fullest. While the city has pursued some grants, utilization of innovative financing structures, state resources, and philanthropic funding remains limited. New approaches could help alleviate some of the capacity constraints mentioned by city staff. Additionally, regional collaboration with other cities, transit agencies, and regional bodies on transportation and mobility has been limited.

Finally, city staff interviewees noted that because Mountain View is often "humble" about their accomplishments, it can be hard for staff, community members, and potential funders to know about the positive sustainability work that is occurring. A communications plan could help generate enthusiasm, provide positive recognition for staff accomplishments, increase engagement of the broader community, and potentially make the City more competitive for external funding applications.

Assets

This section outlines current advantages that Mountain View can leverage for future sustainability success. Many of these topics arose from City staff interviews.

Longstanding Sustainability Program with Knowledgeable Core Staff

Successful change management for sustainability requires sustainability leaders that have a wide range of skills and knowledge, strong relationships, and a deep understanding of their organization and how to work most effectively within it. As sustainability offices mature, they often acquire much more nuanced understanding of how to work with each partner or potential partner both within and beyond City government. Mountain View is fortunate to have had continuity in its sustainability office since 2008, with the same lead staff member, who has gained operational knowledge about what approaches align best with City work styles, processes, and opportunities and constraints across many departments. The sustainability office's time in Public Works and in Community Development and in the CMO have provided opportunities to deepen its staff's understanding of operations in each of these functional areas and offices in the City.

City staff interviewees cited effective outreach that the sustainability office had conducted to local businesses to develop new collaboration opportunities, notably including the development of a time-saving GHG inventory process with Google and the Environmental Insights Explorer, also with Google.[32] City staff interviewees also noted that the sustainability office had provided them technical expertise and capacity to research topics like sustainable facilities opportunities, particularly around renewable

[32] For more information on these projects, view the 11-5-18 presentation on this collaboration: https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=27840

energy. The sustainability office staff also possess strong knowledge of external stakeholder priorities and engagement techniques that can help channel volunteer expertise in productive directions.

Strongly Supportive Stakeholders with Significant Desire for Action

The City of Mountain View's sustainability program benefits from support at several levels. First, there has been a groundswell of public support and alignment with sustainability visions. Second, City Council members have consistently included sustainability in their major goals. And third, departmental leadership has demonstrated an interest in broader thinking on sustainability and sees potential alignment with some of their goals.

Mountain View residents continue their long history of energetic engagement in Mountain View's sustainability efforts. In February 2008, the Mayor convened the first Environmental Sustainability Task Force (ESTF) of more than 60 residents and business leaders. These volunteers worked to shape the City's near- and long-term sustainability goals, drawing on their diverse and broad professional expertise. The initial ESTF had a broad mandate to address a wide range of sustainability topics including emissions, adaptation, physical waste, water, natural ecosystems and biodiversity, sustainable quality of life, and more. More recently, the Environmental Sustainability Task Force 2 (ESTF-2) established by City Council in 2017 focused more explicitly on greenhouse gas emissions. This Task Force was also a major volunteer effort led by 33 community members who met regularly over the course of nine months with dozens of working group meetings, significant community outreach, and extensive research and analysis to present recommendations to the City. In addition to the ESTF groups, there is a history of active community groups pushing for sustainability in and beyond Mountain View, as well as implementing programs such as EV group buys, sustainability outreach initiatives, and more. These groups include 350 Silicon Valley, Carbon Free Mountain View, Citizens' Climate Lobby, Friends of Caltrain, Great Streets Mountain View, Green Mountain View, Mountain View Coalition for Sustainable Planning, the Silicon Valley Climate Action Alliance, Transform, and others. The community continues to be actively following the City of Mountain View sustainability activities and continues to actively support the recommendations of ESTF-2 and other sustainability priorities.

City Council has also consistently provided support for sustainability, by including sustainability goals within their major goals in four of the five most recent goal cycles. The support for sustainability from Council is reinforced by support from constituents, who often attend Council meetings and Council subcommittee meetings voicing support for specific initiatives. In the current goal cycle (FY17-18 through FY18-19), the environmental sustainability goal explicitly calls on staff to "Promote Environmental Sustainability with a Focus on Measurable Outcomes." In the previous goal cycle, the sustainability goal was framed as "Enhancing Environmental Sustainability Efforts." The addition of the language focusing on measurable outcomes recognizes the importance of committing to tangible progress toward achieving the goal of sustainability. Additionally, it is worth noting that taking a triple bottom line approach, all the current Council goals address at least some element of sustainability, as shown in Table 3. To the extent to which environmental sustainability actions can be designed with triple bottom line approaches, it would appear they would have especially strong support from Council.

Table 3. Major City Council Goals and Their Relation to Sustainability

FY17-18 through FY18-19 Goal	Element of Sustainability
Goal 1: Promote Strategies to Protect Vulnerable Populations and Preserve the Socioeconomic and Cultural Diversity of the Community	Social sustainability
Goal 2: Improve the Quantity, Diversity and Affordability of Housing with an Added Focus on Middle-Income and Ownership Opportunities	Economic sustainability, Social sustainability
Goal 3: Develop and Implement Comprehensive and Coordinated Transportation Strategies to Achieve Mobility, Connectivity and Safety for People of All Ages	Economic sustainability, Social sustainability, Environmental sustainability
Goal 4: Promote Environmental Sustainability with a Focus on Measurable Outcomes	Environmental sustainability

Engaged Departmental Leadership with Goal Alignment on Some Key Sustainability Metrics

Interviews of City staff revealed that departmental leaders are thinking critically about sustainability, particularly as relates to their own operational purview, but also in many cases in a broader way. Departments are already pushing forward with their own sustainability and sustainability-related goals and programs. In particular, departments outside of the sustainability office have direct responsibility over areas such as

- Energy efficiency
- Zero waste programs (including recycling and composting)
- Sustainable and multi-modal transportation
- Land use planning
- Parks, open space, and habitat
- Water conservation and infrastructure
- Sea level rise

Additionally, leadership of these departments candidly described the challenges they foresee in meeting their goals related to these topics. Some of them have been pursuing key staff increases (e.g. for sustainable transportation planning), and many of them expect fundamental changes to the way budgets are allocated and priorities are assigned will be necessary to achieve the goals. Several city staff interviewees stressed the cross-departmental nature of collaboration that will be necessary to solve shared challenges.

Supportive Planning Processes

Mountain View has designed planning processes to facilitate accountability and progress on action items. While there may be opportunities for improvement in the allocation of resources and

accountability mechanisms, several beneficial processes have been effectively utilized. First, the City of Mountain View has shown consistent dedication to advancing sustainability actions through their Environmental Sustainability Action Plan process, which ensures that staff and Council are brought together to develop a more shared understanding of priority sustainability actions. Now entering its fourth iteration, the 2019 ESAP-4 builds on the first three plans from 2009 and 2012 and 2016, as well as the Climate Protection Roadmap and the Municipal Operations Climate Action Plan which articulate the city's vision for achieving greenhouse gas reduction targets through 2050. The ESAP process is particularly beneficial because it is typically developed through extensive stakeholder engagement processes with City Council, City staff, and the public. ESAP provides accountability through the required periodic Council updates on each action, and for new actions, it provides Council with clarity about the level of effort, funding, cost, potential financial savings, and GHG reduction for each of the actions considered. When Council approves the ESAP plan and associated prioritizations, it does so in an informed manner, and this creates a solid foundation from which Mountain View is advancing sustainable actions.

Second, the City has an established process for identifying priority non-discretionary and discretionary projects that improve the sustainability and efficiency of its own operations through the Capital Improvement Plan (CIP) process. The adopted CIP has consistently included as a *non-discretionary* item "Project xx-25: Annual New Energy Conservation Measures" (the xx stands for the fiscal year). This stability and predictability of funding has enabled the city to steadily chip away at energy projects in its own facilities, including LED lighting, building management system upgrades, HVAC upgrades, and more. This carveout alternates between approximately $190,000 and $100,000 per year. If a larger facility upgrade is required, there is often energy efficiency and water efficiency money provided as part of the capital funds for the associated renovation and does not come out of this carveout. In addition, to Project xx-25, the CIP has historically included many projects that improve environmental outcomes in Mountain View. The current list of non-discretionary projects in the CIP, for instance, includes a Forestry Maintenance Program and Street Tree Replanting Project, a Landfill Gas System Repairs and Improvements Project, Annual Traffic Studies, Neighborhood Traffic Management Program Improvements, and Bicycle Counts, data collection to support transportation demand management goals, and annual bike and pedestrian improvements.[33] At least one interviewee indicated that the City should develop a sustainability metric to assign to proposed CIP projects, with a focus on GHG reductions.

Strong Economy

Another asset that supports Mountain View's capacity to implement sustainable practices is the strong regional economy. The City has experienced significant economic growth alongside its Silicon Valley neighbors. The types of new development that have been expanding in Mountain View have demonstrated commitment to partnering with the City on sustainability initiatives. For instance, Google has partnered with the City on a free community shuttle, to help streamline the City's GHG inventory process, and other initiatives.

[33] Notably, staff have indicated that work has commenced on 22 of the 104 high- and medium-priority projects in the 2015 Bicycle Transportation Plan update.

While the strong economy is a major contributor to several sustainability challenges in Mountain View (growth comes with more environmental impact and emissions), the strength of the economy has also provided Mountain View with sufficient municipal financial resources for its term-limited investments. Major revenue sources and accounts associated with recent strong economic growth include:

- the Shoreline Community Development Impact Fee, from which funds have been allocated to support sustainable transportation initiatives, water recycling, forestry maintenance, and more.[34]
- the Shoreline Regional Park Community Fund (current balance $32M), a separate legal entity created for the development and support of the Shoreline Regional Park and to economically and environmentally enhance the surrounding North Bayshore Area.[35]
- revenue from rental of publicly owned real property to private entities.[36]
- a Transit Oriented Development Fund (current balance ~$1M), which can support multi-modal transportation infrastructure such as the planned Class I trail connecting Ellis Street to light rail.[37]

Despite strong growth, the City has sought to manage fiscal resources to create stability. This includes carefully assessing revenue to distinguish between sources and trends that can be considered ongoing versus of a limited duration and using the latter only for expenses of a limited duration. It also includes developing long term projections to assess the sufficiency of ongoing revenues to meet ongoing expenses into the future, planning as well as possible for inevitable cycles of economic downturn. From interviews with City staff it was clear that many members of the leadership team appreciate this fiscal approach to ensure that the City does not face more painful decisions when the economy becomes less strong.

Existing and Potential Collaborators

Mountain View is fortunate to have a highly educated constituent base that includes individuals and businesses with substantial expertise in sustainability. Mountain View has been able to tap into this expertise in both the ESTF and ESTF-2 processes, since members of the two task forces work in sustainability jobs and others perform consulting on transportation planning, green building codes, and other topics.

Mountain View also has a history of working with regional and Federal entities, including the Metropolitan Transportation Commission (MTC), the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and others in pursuit of grants and in support of these regional organizations' sustainability goals. Among other projects, Mountain View has collaborated with:

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[34] https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=27008

[35] Interview with Patti Kong.

[36] Ibid

[37] https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=27008

- Santa Clara County and almost 50 other Silicon Valley cities, towns, and counties, and Joint Venture Silicon Valley, to secure reduced-price solar PV systems through the 2007 Silicon Valley Renewable Energy Procurement (SV-REP) program
- Three surrounding cities to develop an innovative regional approach to promoting solar through the U.S. Department of Energy Solar America Cities program
- The U.S. Department of Energy, through their American Recovery and Reinvestment Act (ARRA) stimulus program, to upgrade the City's landfill microturbines and implement a residential energy conservation program (Energy Upgrade Mountain View) for more than 2,000 families
- Alameda County and 17 other Bay Area public agencies, and Joint Venture Silicon Valley, to secure reduced-price solar PV systems through the 2011 Regional Renewable Energy Program (R-REP) program.
- ABAG and representatives from cities in nine Bay Area counties on their Regional Residential Building Retrofit Program
- Santa Clara County and five other municipalities on the Multiple Jurisdiction Climate Action Planning Project that was funded by PG&E
- Six surrounding cities on an EV charging station grant through the 2015 Bay Area Charge Ahead Project
- Twelve other Santa Clara County government agencies to launch Silicon Valley Clean Energy (SVCE), with Mountain View serving as one of the four founding agencies
- Santa Clara County and five surrounding cities on the Driving to Net Zero EV readiness project through a Strategic Growth Council grant

In addition to these collaborations with other local governments, Mountain View has a history of working with technology companies operating in the City. In particular, collaboration with Google has led to the optimization of the process of developing the community-wide and municipal GHG inventories, and the development of a community stakeholder map. Google has also collaborated with Public Works, including contributions to the recycled water fund, discussion of implementing their own recycled water system, running microturbines to generate electricity using the City's landfill gas, and funding a free community shuttle. Google has also been working on technology projects related to more sustainable concrete and tiny house design, which may provide future collaboration opportunities. The City sustainability office meets with Google quarterly, noting that they have a long list of ideas for collaboration but that there must be a match with Google's interests as well.

In addition to Google, numerous other technology companies operate in Mountain View, participate in the Transportation Demand Management program, and could be approached for further collaboration. Such companies include a rapidly growing automotive technology sector, which holds promise for collaboration on local transportation sustainability, and many established technology companies including Google, Symantec, Synopsys, Intuit, Microsoft, LinkedIn, Samsung, and others. Some preliminary ideas for collaboration are listed in Appendix B.

Organizational Constraints

Despite the substantial assets that Mountain View can leverage to enable sustainability progress, many factors must be addressed or overcome to achieve Mountain View's sustainability goals. These constraints were identified through interviews with City staff and include a lack of vision alignment on

sustainability, important competing organizational commitments, structural limitations, and process limitations. In addition to these organizational constraints, several external factors that are less directly within the City's control threaten sustainability progress. These other factors will be described in the section on "Threats" below.

Vision Alignment and Competing Organizational Commitments

The City of Mountain View is currently trying to define its level of sustainability ambition, with the resulting priority informing various potential paths forward, and the necessary level of staffing and resources to achieve these goals. While the City has a long-term greenhouse gas goal equivalent to many peer jurisdictions, it is not on track to achieve this goal and the City has not put in place accountability procedures that would direct staff attention toward this disconnect with greater urgency. Many peer jurisdictions that are also experiencing community growth have seen their emissions begin to decline, whereas Mountain View's emissions have been increasing (for more details, reference the benchmark cities section). Interviews with City staff indicated that there was a widespread desire for Mountain View to maintain and accelerate sustainability progress, but there were differing ideas on what leadership in sustainability means and how best to achieve more sustainable outcomes. City staff interviewees indicated uncertainty about where sustainability actions should fit within the numerous commitments and responsibilities of their departments. A critical goal of the current project is to develop more substantial vision alignment and clarity to enable coordinated action.

Competing commitments were also cited by city staff interviewees as major factors that inhibit further progress. One interviewee said that he personally cared about sustainability efforts, but they were approximately 1% of his scope of work. This sentiment was echoed by numerous other city staff interviewees, who cited significant capacity constraints. These city staff interviewees emphasized that their biggest responsibility was to maintain excellent operations and services for constituents, and that the years of rapid community growth had strained their staff's ability to meet their own basic scope of work, let alone to devote extra time to new initiatives aligned with City Council major goals. Other city staff interviewees noted that the City Council goals around preserving cultural and socio-economic diversity and housing affordability are a substantial near-term priority and sustainability initiatives that integrate consideration of these interrelated challenges would be particularly well-received by staff.

Additionally, as will be described in more detail in the section on Future Threats to sustainability in Mountain View, the City's commitment to addressing the jobs/housing imbalance (to the degree that it can) and its continuing approval of additional residential and non-residential development projects can be viewed as competing with sustainability priorities, since rapid and continuing growth has been a significant driver of Mountain View's increasing GHG emissions. Mountain View must determine a way to grow sustainability, or development and sustainability will continue to be at odds. Measurement of progress on these important issues is exacerbated by the different ways that Mountain View tracks its emissions. The Greenhouse Gas Reduction Program (GGRP) measures reductions on a per-service population metric, whereas the Climate Protection Roadmap (CPR) measures absolute GHG emissions. Guidance from leadership on how to reconcile these alternate ways of viewing the effectiveness of the City's greenhouse gas actions will be needed to determine the best paths forward for its sustainability program and overall growth strategy.

Structural Constraints

Structural issues that appear to challenge Mountain View's sustainability goals include delineation of responsibilities, fiscal limitations, talent acquisition challenges, and a hesitancy devote the resources required to be innovative.

Delineation of Responsibilities

While Mountain View's planning documents mainly identify responsible departments and supporting departments for proposed **actions**, there is less clarity about which departments are responsible for managing overall processes to achieve desired **outcomes**, as measured by key metrics of interest for the City. For instance, it was widely agreed among city staff interviewees that addressing the sustainability of the transportation sector was a key priority for Mountain View moving forward, particularly in terms of addressing vehicle miles traveled and the single occupancy vehicle mode share. This objective requires coordinated efforts from many City departments, including setting TDM requirements through CDD/Planning, improving the street infrastructure for bicycles, pedestrians, and transit users through Public Works/Engineering, implementing policies that enable and incent more sustainable travel behavior through Public Works/Transportation section, engaging and educating residents, and much more. However, no one department appears to be responsible for reporting transportation emissions and prioritizing policies outside of the ESAP process.

Additionally, even individual sustainability actions often involve enough cross-departmental collaboration that greater clarity could benefit the implementing departments. To an outsider reviewing the documents that assign responsibility for each action, it is unclear how the departments share responsibility when multiple departments are listed as responsible. It is possible that in many cases the roles are well-defined and articulated by the collaborating departments, and if that is the case, it may be beneficial for this more detailed planning to be communicated for purposes of internal City evaluation of its own progress.

Fiscal Limitations

Staffing was cited by city staff interviewees as another challenge, both in terms of staffing of the departments and staffing of the sustainability office itself. As described above, staff and department leaders cited varying levels of capacity constraints. Attitudes toward these constraints ranged from one stakeholder stating that they were contributing to staff retention challenges and burnout, to another stakeholder stating that his department was staffed enough for capacity not to be a major concern. Many of the city staff interviewees felt that their departments were overworked, but that the addition of a modest amount of new staff would likely alleviate their challenges. Many city staff interviewees voiced support for, or appreciation of the value of, the City's overall approach toward hiring. Some city staff interviewees described this approach as fiscally conservative or fiscally responsible. Some city staff interviewees stated that they moderated their requests for new staff resources in response to the fiscal strategies of the City with the knowledge that development and the burdens that it places on municipal staff is "spiky" and that a future economic downturn may result in the need for layoffs if not for a fiscally cautious approach.

The City has not yet thoroughly explored opportunities for multi-year limited budget period staff augmentation, which may enable discrete one-time projects to proceed without creating lasting fiscal

obligations, or other initiatives that could enable projects and initiatives to be funded faster. Such arrangements could include:

- an increased level of consulting projects on one-time research and planning that would enable the City to adopt new policies (e.g. reach code evaluation, TMA projects, building electrification market development strategies, electric vehicle market deployment strategies, and more)
- temporary realignment of staff resources into "work teams" with a mandate to address high priority challenges[38]
- term-limited positions, either hired directly by the City or through a contractor
    - in the sustainability office
    - in the other departments
- usage of more fellowship programs for promising early career professionals to tackle discrete challenges over a one- or two-year time scale (funding is available for a range of fellowships including Local Government Commission CivicSpark, Environmental Defense Fund Climate Corps, and others)
- pending further research on legality and desirability, the development of a volunteer labor-for-property-tax-abatement swap program for qualified community members to perform certain rote functions in the departments, freeing up long term staff to focus on strategic priorities[39]
- establishment of a revolving fund that could accelerate the rate of new sustainability projects being implemented, either in City facilities or community-wide

For many of the staffing-focused strategies above, talent acquisition may present a challenge, and City programs to help potential staff find and afford suitable locations to rent (or buy) may make it easier to lure prospective applicants.

Talent Acquisition Challenges

Another staffing constraint that was brought up by city staff interviewees was talent acquisition. Two city staff interviewees cited a lack of qualified candidates willing to apply for the jobs they needed to fill. The explanation provided for this phenomenon was that affordability has become such a constraint in Mountain View and surrounding communities that costs and/or commute times were driving applicants away.

Additionally, it was noted that the hiring process does not explicitly affirm City sustainability efforts, in the recruitment and selection of candidates. While certain recent hires have been made to extend sustainability expertise in the departments (notably the recent hire of a transportation policy manager), there is no process to select for applicants who are aligned with the City's sustainability goals.

[38] This option appears appealing in theory, given the significant interest in tackling sustainability challenges from leadership staff in City departments, particularly related to solving Mountain View's sustainable transportation challenges. However, this would likely require easing participants' burdens from other job responsibilities for the duration of the "work team" time horizon.

[39] Further research is necessary to determine whether this is legally feasible in California. Models can be found in Maine, Massachusetts, Connecticut, and Washington State from an initial scan.

Staffing as a constraint is not unique to Mountain View. Among peer cities that Mountain View selected for its benchmark sample, nearly all the sustainability offices interviewed cited staffing constraints either in their own office or in the offices of departments they collaborate closely with. All these cities are experiencing rapid growth and development to varying degrees. Sustainability staffing varied significantly across benchmarked cities, as did the staffing of key departments. These differences were reflective of the varying roles and responsibilities sustainability offices are expected to fill. Some sustainability offices stated that they often prioritize and support staff requests for departments they collaborate with over their own staffing needs because they know that implementation of sustainability objectives will suffer if capacity is not allocated appropriately.

Talent acquisition challenges may be more acute for the limited-term staff augmentation strategies outlined in the preceding section on "Fiscal Limitations." The underlying affordability challenge that makes it more difficult to find strong candidates to take jobs in public service in Mountain View may be more acute for term-limited positions if these positions do not compensate employees highly enough to make renting or buying property close enough to Mountain View financially attractive.[40]

For more discussion of staffing approaches, refer to the "Benchmark Analysis Findings" section of this report.

Hesitancy To Devote the Resources Required To Be Innovative

A thriving sustainability program needs to be a living lab where ideas can be tested and where failure of individual initiatives is acceptable and expected. Programs should be designed to maximize the opportunity for learning, and honest appraisals of success are critical to allocating resources in the most effective places. Capacity-constrained staff members have trouble being innovative. When there is limited time to get something done, it must be done "right" the first time. This often leads to sticking with business as usual practices that are proven and safe. Creating a culture that fosters innovation requires not only alleviating critical staffing constraints but also communicating to staff that the organization is supportive of staff taking limited risks to pilot and learn from new approaches. Interviews with Mountain View city staff indicated that they would like to try innovative approaches to the sustainability challenges they face but would need more time or resources than currently available.

Process Constraints

In addition to the vision alignment, competing commitments, and structural constraints inhibiting additional sustainability progress in Mountain View, city staff interviewees identified several process-related elements of decision-making and coordination that they felt limited sustainability progress. These included the lack of expectations for departmental sustainability progress reporting, the need for

[40] Furthermore, if the City were to scale up its efforts to address transportation and land use sustainability by hiring additional support, these new employees may be more likely than an average employee to desire the opportunity to live close to their work location because (1) people inclined to work on transportation sustainability may be disproportionally inclined toward shorter, walkable, bikeable, or transit commutes, and (2) an employee working on regional transportation challenges may face cognitive dissonance if they themselves must commute from hours away.

more cross-departmental collaboration, and the lack of calculation of the sustainability impacts of potential policies and programs.

Progress Reporting

Sustainability progress reporting by departments is not currently expected directly from the department. It appears that the major sustainability reporting efforts come from the ESAP updates, which are prepared by the sustainability office with extensive input from departments across Mountain View. Because the sustainability office is tasked with providing updates on dozens of projects that are led by other departments, the dynamic is such that the sustainability office must request a large amount of information from many stakeholders in order to relay it to City leadership and the City Council. At least one interviewee indicated that last-minute requests from the sustainability office were a burden on staff and more lead time would be appreciated. If departments were directly required to report on progress toward metrics and progress on specific actions, it would free sustainability staff to spend more time offering assistance and collaborating with departments.

Cross-Department Collaboration

There is no formal cross-departmental process for departmental leadership to discuss sustainability strategy formally. Most – but not all – of the benchmark cities have a formal cross-departmental collaboration process, which provides venues for broader problem-solving. Some city staff interviewees indicated that adding sustainability as a standing agenda item on the bi-weekly "Managed Meetings" would be a beneficial way to improve coordination without adding more meetings to their schedules. One interviewee suggested that lower staff levels were a better forum for these conversations, saying that less senior staff could come up with solutions and implementation strategies that could then be approved by leadership. From 2008 to 2010, the sustainability office ran a Green Team, comprised of volunteers from any level within the City organization. Despite significant accomplishments, including projects that are saving the City approximately $50,000 every year, the Green Team fizzled out in 2010. Several city staff interviewees suggested that a Green Team that was comprised of individuals at least at the Manager level within the City would be an effective way to uncover collaboration opportunities and communicate both up and down in order to get these ideas executed.

Calculation of Sustainability Impacts of Policies/Programs

Greenhouse gas and sustainability impacts are not calculated in the development of most policy and program options, save for actions explicitly within an ESAP. Multiple city staff interviewees suggested that developing a procedure for including greenhouse gas impacts in the evaluation of options would help them contribute to the City's sustainability goals. If the City is to maintain that GHG reduction is a high priority goal, understanding the impacts of other City policies on the City's ability to meet the goal is an important step toward anticipating what it will take to meet the goal. Many of the decisions made by City departments have a significant impact on future GHGs. For instance, if the City continues to welcome growth in jobs and housing, there will be new emissions generated by this growth, and the City's strategies to mitigate GHG emissions through other means may need to be strengthened, or the acceptance of growth and development must be done in such a way to maximize the City's ability to achieve its GHG goal. Other cities have announced the intention to review all decisions for their sustainability impacts. For instance, as early as 2012, the City of Denver advertised that the Mayor's

vision was of "a community that considers all decisions through a sustainability lens."[41] Operationalizing such a policy may be challenging and there would likely need to be a threshold below which no major GHG impacts were expected and therefore no analysis would be required.

Future Opportunities

A discussion of future opportunities is somewhat contingent on how Mountain View defines its sustainability program and what it wishes to accomplish, and numerous pathways forward could be advantageous. Accordingly, this section will not comprehensively cover all opportunities that could amplify current sustainability efforts. Instead, based on a review of current and historical programs and interviews of staff, it will highlight some potential areas of alignment of staff interest with areas where Mountain View is also poised to make progress.

Increase Utilization of Grants

Mountain View could accelerate its rate of applying for funding for sustainability programs. Given the abundance of federal, state, regional, and foundation funding programs and given Mountain View's historical competitiveness and high success rate in receiving grants that it applies for, it appears that Mountain View would likely win additional grant money if it increased the number of grants it applied for. Given that grants take time to pursue and to manage, limitations to the capacity of the sustainability office and other allied departments may be limiting the number of grants that can be received. If the program is to be scaled up, there may be value in allocating staff effort to pursuing more awards of funding and/or technical assistance. Several of the benchmark cities we interviewed indicated that they had found grants to be a highly beneficial way to temporarily augment their staffing and level of effort without committing to long-term costs.

Partnerships with the Private Sector

Mountain View could increase efforts to develop partnerships with private entities willing to invest in sustainability-related initiatives. Multiple city staff interviewees noted that the sustainability office was doing a good job of pursuing these collaborations and has generated multiple process improvements. However, they also noted that additional staff could be deputized to explore broader collaboration with a larger number of local companies. For instance, Economic Development could increase collaboration with technology companies on sustainable mobility solutions. Or Community Development could increase its interaction with developers and increase engagement on green topics. One interviewee pointed out that there are more than 3,600 business interests in Mountain View, and while not all of them will be active in innovative sustainability problem-solving, they could all play a role in community sustainability. This interviewee also cited the untapped potential associated with Mountain View's automotive technology sector, including the potential to expand collaboration with Waymo and others in support of capturing the benefit of shared mobility and electrification associated with increasing connected and autonomous features in vehicles. He noted that the biggest of the technology companies needed to all be "in the driver's seats" in discussions with Mountain View, other local governments, and regional entities to pioneer solutions to transportation challenges in Silicon Valley, noting that these companies are simultaneously a major cause of transportation problems, major victims of them, and

[41] http://agency.governmentjobs.com/denver/job_bulletin.cfm?JobID=414097

potentially the ones best equipped to innovate and solve them. See Appendix B for further discussion of preliminary ideas for collaboration.

Capitalize on Staff Interest in Sustainable Transportation Solutions

Mountain View has an opportunity to capitalize on immense staff interest in sustainable transportation solutions. As noted above, the transportation sector is the biggest component of Mountain View's community emissions and it continues to grow. Staff noted the need for a "transportation sustainability master plan," the development of a GHG metric to be applied to all transportation decision-making, fundamental changes to policy around topics like parking, and new innovative solutions yet to be explored in Mountain View. Some staff noted opportunities to leverage the TMA, expanding its scope to the whole city, including residential, and expanding the services it offers to make non-single-occupant vehicle travel more appealing. Other staff cited increased bicycle and pedestrian planning and the opportunity to pioneer innovative microtransit (following on the Automated Guideway Transit Feasibility Study, for instance).

Leverage Community Volunteers in Appropriate Roles

Mountain View could invest additional effort in channeling the energy of residents and constituents who are eager to see the City take on more responsibilities. Other benchmark cities interviewed for this project had similar experiences with highly-informed sustainability advocates helping develop priorities and plans for their communities. These city staff interviewees indicated the value and the challenge of such engaged residents – on the one hand, the residents were able to elevate sustainability priorities and identify best practices and valuable new ideas, while on the other hand these stakeholders were sometimes relatively naïve about implementation details and city government tools and constraints associated with their recommendations.[42] Given that there is a large volunteer base with a strong vested interest in the success of community emissions reductions, the City could define additional actions that these volunteers could take to help with community-wide sustainability, such as outreach and building awareness that will complement and support the City's efforts. For example, Palo Alto has actively engaged residents through the CoolBlock program which enlists block leaders to help reduce household carbon emissions. Berkeley co-convenes a Climate Action Coalition with a local non-profit, the Ecology Center. The Coalition includes local organizations and community members who initiate projects that support Berkley's Climate Action Plan.

[42] The ESTF-2 process in Mountain View included a large amount of visioning and identification and prioritization of recommendations. Interviews with City staff indicate that some of the recommendations were not viewed as feasible because they were not fully thought out or were overly detailed in implementation suggestions without understanding of the nuance and context of staff operations and constraints. The process of vetting and refining these recommendations through the sustainability office has been beneficial, and time-consuming.

Future Threats

Threats to the achievement of sustainable outcomes in Mountain View can be grouped into factors that amplify and exacerbate conditions that are already challenging, and factors that may reduce assets that Mountain View has at its disposal to achieve sustainability progress.

Amplification of Challenging Conditions

Community growth is one of the biggest challenges to the achievement of absolute GHG and waste reduction targets. Continued growth is likely to continue to increase emissions if policy and programmatic response is not sufficient to counterbalance the addition of residents and service population. Community growth also complicates accounting and measurement of progress. As noted elsewhere in this report, what may be good for Mountain View's own emissions profile (e.g. policies that restrict new residential and commercial development) may not be good for overall regional emissions. Several interviewees in the City emphasized the fact that Mountain View is committed to doing its part related to addressing the jobs/housing imbalance through requirements placed on developers to increase the proportion of development that is residential and affordable. The state-mandated Sustainable Communities Strategy developed for the Bay Area in response to Senate Bill 375 requires each local jurisdiction to meet its Regional Housing Needs Allocation (RHNA). Some interviewees voiced skepticism that other jurisdictions were on track to meet their RHNA responsibilities and that Mountain View's progress and policy decisions should be viewed in this context. However, it is not clear whether an alternate metric to replace **absolute** GHG emissions is likely to be developed[43] or what that metric should look like. Unlike local pollutants, GHGs are global pollutants and involve many levels of government jurisdiction in the management of emissions budgets.

Hiring difficulties and staff constraints present another challenge that is poised to increase, despite efforts that Mountain View is currently investing to counter them. As noted above, city staff interviewees indicated that talent acquisition has become more and more challenging recently, a phenomenon they attributed in part to the rising cost of living in and near Mountain View, and the lack of qualified candidates willing to either live nearby or face the long commutes that would be required to live in a more affordable location. Additionally, current staff workloads have constrained departments' abilities to do "non-core" sustainability project work. If staff retention becomes more challenging, capacity constraints may increase, and replacement staff may not perform job functions as efficiently as staff experienced in Mountain View's organization and processes.

Threats to Existing Assets

[43] Per capita GHG and waste targets (as opposed to absolute targets) can also obscure the true environmental impact of a city's emissions and waste. Whether or not targets are calculated on a per capita basis, the environmental impact remain proportional to the total amount of emissions or waste the city generates. Per capita targets could have the effect of removing accountability to a total emissions or waste "budget," needed to avoid negative climate change impacts. Removing accountability to these budgets further complicates planning efforts to reduce the city's environmental impact. On the other hand, if absolute impacts are successfully managed at a higher jurisdictional level (e.g., region or state), a per capita target can provide more region-wide flexibility in GHG reduction approaches.

Several existing assets that contribute to sustainability progress in Mountain View should not be taken for granted. Risks include development fatigue, changes in constituent demand for sustainability, changes in the City's fiscal condition, and changes in availability of external funding.

Development Fatigue

As noted above, city staff interviewees indicated that there is *currently* substantial community support for environmental and sustainability initiatives. Furthermore, there appears to be a certain amount of the population who reflect what can be colloquially referred to as a "Yes, in my backyard," or YIMBY, perspective on development, in contrast to the common NIMBY attitude that many homeowners may express about increased development that may change the character of their neighborhood. This development-friendly attitude, however it is motivated, gives the City latitude to pursue policies that could have a positive impact on transportation emissions reduction and more efficient and compact building patterns, such as transit oriented development and mixed-use infill development.

One interviewee noted that there is also a certain percentage of the population that sees the "urbanization" of Mountain View as an undesirable change in character. He also noted that there was a risk of a "shift in culture" that may come from increased "development fatigue" – since more development will very likely lead to more crowding and congestion, which may erode support for the very tools that City planners have at their disposal to address transportation demand. One interviewee expressed hope that the City could maintain the tone that "people are proud to be in a city that addresses homelessness [and other social equity concerns]." Another interviewee noted that a key challenge Mountain View faces going forward is mitigating the negative sides of development, like traffic and noise, and helping the community see density as a positive thing.

Changes in Constituent Demand for Sustainability

More generally, rapidly changing demographics could lead to unforeseen changes in culture or values of community, which could affect the constituent demand for sustainability. Mountain View currently has explicit City Council support that places sustainability as one of the top four City goals – future councils may emphasize other urgent priorities without connecting them to sustainability. Particularly in the face of strong equity and affordability challenges, investments in housing and affordability may compete for dollars against environmental sustainability investments.

Changes in the City's Fiscal Condition

Another asset at risk is Mountain View's abnormally strong fiscal condition, which stems from a booming technology sector and substantial development in recent years. Multiple city staff interviewees mentioned recession risk, although they felt that the City was in a good position to weather any potential downturn and one interviewee noted that the previous slowdown in the tech economy was not as impactful as it could have been, as Mountain View was the last place to be impacted and the first place to recover. Nonetheless, both the risk of an economic downturn and current fiscally cautious policies have the effect of limiting the amount that can be spent on sustainability objectives.

Changes in Availability of External Funding

Another asset somewhat at risk is future external funding opportunities and/or the reduced financial desirability of sustainability efforts and sustainable technologies. On the funding front, Mountain View has taken advantage of several federal grants in recent years, and it is unclear whether there will be

growth or reduction in federal investment in local sustainability action in the medium term and long term. The State of California has also made numerous grant streams available, many of which Mountain View has taken advantage of. Given the recent reaffirmation and strengthening of California's climate commitments in the 2018 Global Climate Action Summit and other recent policy trends, it does not appear that these funding sources are at risk of decreasing in the foreseeable future, although Mountain View's success at winning the grants that it does pursue may change as the state places increased emphasis on Disadvantaged Communities as defined in CalEnviroScreen in sustainability funding.[44] In terms of the risk associated with the future financial value of sustainability efforts, the cost of fuel and energy can have dramatic effects on constituent behavior. For instance, if the price of fuel stays low or decreases, it is likely more large vehicles will be owned by constituents and people will drive more miles. And federal incentives that have made clean technologies attractive are beginning to be phased out, for instance the Investment Tax Credit for solar installations and the EV tax credit.

Benchmarking Analysis Findings

Introduction

There is a strong culture of collaboration among sustainability offices across the country. Given the shared challenges they face, sharing best practices and lessons learned is common. Acknowledging that differences between cities affect the right approach to sustainability in any given jurisdiction, comparison to peer institutions can have value in providing ideas for sustainability office goals and metrics, structure, staffing, funding approaches, roles and responsibilities, and collaboration and engagement models. Mountain View staff indicated a strong interest in learning from their peers as an essential part of assessing the ways in which their own program could evolve. The City and the consultant team, in consultation with the Urban Sustainability Directors' Network (USDN), selected ten peer cities that shared important common features, including:

- Asheville, NC
- Berkeley, CA
- Boulder, CO
- Cambridge, MA
- Columbia, MO
- Evanston, IL
- Fort Collins, CO
- Palo Alto, CA
- Santa Monica, CA

[44] Mountain View has had a highly successful rate of winning grants. Mountain View received or participated in at least 8 successful sustainability grants, with only one grant application that was unsuccessful.

- Somerville, MA

As shown in Table 4 and Figure 1, these cities were selected because they had a similar population size to Mountain View, are experiencing a period of growth that places additional pressure on their sustainability goals, and/or have stated climate commitments and climate programs that aligned with ESTF-2 priority areas. For each of these ten cities, the Project Team conducted a review of publicly available program information to inform Mountain View on these cities' current sustainability goals, progress, key initiatives, and general planning context.

Table 4. Summary of Characteristics of Benchmark Cities and Mountain View

City	***Population[45]***	***Growth Profile 2010 - 2017[46]***	***Service Population (2015)[47]***	***Percent Change in Service Population 2005-2015[48]***	***Reported Emissions Reduction Progress***	***Long Term Emissions Goal[49]***
Asheville, NC	91,902	10.2%	167,820	19.5%	Asheville has achieved 31% of their 80% **municipal** emissions reduction goal.	80x50
Berkeley, CA	122,324	8.7%	181,715	20.0%	Berkeley has reduced emissions 12% between 2000 and 2015.	80x50
Boulder, CO	107,125	9.6%	183,981	19.0%	Boulder has reduced emissions by 13% since 2005.	80x50

[45] All population figures come from the US Census Quickfacts database- https://www.census.gov/quickfacts/fact/table/US/PST045217. Additionally, each of these are based on estimates from the 2017 American Community Survey, and the percent changes are between the 2010 Census count and the 2017 ACS estimate.

[46] Ibid

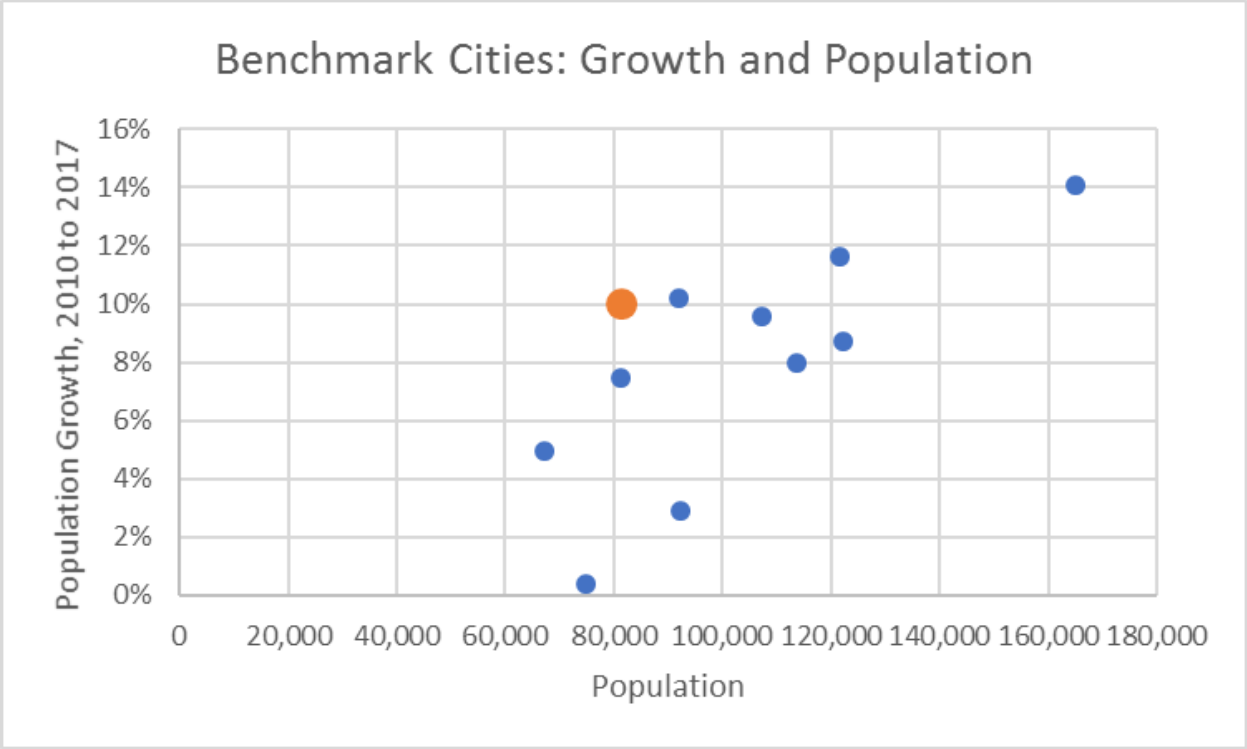
[47] Service population is the sum of residential population plus number of workers. The former is from the US Census Quickfacts database, https://www.census.gov/quickfacts/fact/table/US/PST045217 , and the latter is from the US Census OnTheMap tool- https://onthemap.ces.census.gov/. 2015 is the latest information available in OnTheMap.

[48] Ibid; note that n/a indicated 2005 service population unavailable for city.

[49] Note: Because of the variability of baseline years, approaches, and scopes associated with these long-term goals, we have provided direct links to the commitments and goals.

City	*Population*[45]	*Growth Profile 2010 - 2017*[46]	*Service Population (2015)*[47]	*Percent Change in Service Population 2005-2015*[48]	*Reported Emissions Reduction Progress*	*Long Term Emissions Goal*[49]
Cambridge, MA	113,630	8%	224,214	n/a	Cambridge is currently generating an updated inventory. The most recent information available, Cambridge's 2012 Greenhouse Gas Inventory showed a 20.1% decrease in **municipal** emissions since 2008.	80x50
Columbia, MO	121,717	11.6%	195,411	36.1%	Emissions in Columbia increased 17% between 2001 and 2015.	80x50 100x60
Evanston, IL	74,756	0.4%	118,916	19.4%	As of 2012, Evanston had reduced its emissions by 7% below 1990 levels, and as of 2017 it had reduced emissions by 19% compared to a 2005 baseline.	100x50
Fort Collins, CO	165,080	14.1%	234,552	26.1%	Fort Collins has reduced emissions 17% since 2005.	80x30 100x50
Palo Alto, CA	67,108	5.0%	173,261	n/a	Palo Alto has reduced emissions by 36% from 1990 levels as of 2016.	80x30
Santa Monica, CA	92,306	2.9%	172,601	14.8%	Santa Monica has reduced emission 20% below 1990 levels as of 2016.	80x50
Somerville, MA	81,360	7.5%	104,580	n/a	Somerville reduced its emissions by 5% between 2014 and 2016.	100x50
Statistics for Mountain View are presented here to show its similarities with the benchmark cities.						
Mountain View, CA	81,438	10.0%	149,745	19.2%	Mountain View's emissions increased by 9.1% between 2005 and 2015.	80x50

Figure 2. Mountain View (Orange) in Comparison with Selected Benchmark Cities



The team also interviewed the leaders of the sustainability programs in each of these cities. The goal of these interviews was to explore their governance structure, what factors influence their successes, and what have been their lessons learned surrounding the planning and implementation of their programs. The findings from these interviews are summarized here, including key themes, sustainability governance in the cities, notable programs, and best practice advice.

Key Themes From Interviews

The governance challenges that Mountain View seeks to address – including what is the right structure for a sustainability office and what role it should play in planning, advising, and implementing sustainability work with agencies and with the community – were echoed throughout discussions with peer city sustainability leaders. Many expressed that their offices had or were currently going through transitions. They stressed that finding the right balance of implementing, collaborating, consulting, and planning was a key and ongoing part of their role.

All benchmark city interviewees cited strong support for sustainability action in their community. Each referenced the role of both City Council and residents in advancing key priorities. Furthermore, in each city, the City Manager or Mayor had championed elements of the city's sustainability plans. Benchmark city interviewees expressed that there is often an evolving relationship between sustainability offices and these stakeholders. Some noted that there have been times when the sustainability office is taking

the lead, advancing climate priorities and bringing stakeholders on board, while in other instances stakeholder advocacy shapes and pushes the agenda of the sustainability office beyond their original ambitions, leading them to act more aggressively on priorities.

Despite broad support for sustainability in all the benchmarked cities, these interviewees noted that challenges remain in navigating and improving bureaucratic processes, accomplishing a large scope of work with limited resources, and finding the right balance of internal and external collaboration. All benchmark city interviewees stressed that interpersonal work across departments is a key part of success, indicating that the leaders of sustainability offices should:

- Determine how to fold sustainability into other city goals by working collaboratively to support integration of sustainable practices into department priorities
- Champion the accomplishments and ongoing work of other departments
- Include staff from outset of sustainability planning efforts to ensure collaboration on goal setting and resource allocation
- Engage community while making climate decisions to ensure broad perspective are included
- Support departments on their goals related to key sustainability metrics
- Convene people and create mechanisms for accountability on sustainability progress to city leadership (e.g. accountability to the City Manager or City Council)

While there is no one correct approach to structuring and implementing a sustainability agenda, interviews did tend to indicate that smaller sustainability offices tend to have a greater chance of success when they are given a stronger emphasis on strategic planning and coordination rather than also being tasked with significant implementation responsibilities. These small offices benefitted from the central locations and a perceived mandate for sustainability that came from being in the City Manager's Office or a similar location. Another important consideration was that the sustainability office ideally should not be situated in a way in which they are seen as an enforcer or seen as pushing departments to do things that they are not resourced to do.

The context of each city and the evolution of their sustainability programs have directly influenced how their sustainability offices have evolved over the years. The following information is provided to help illuminate various options and tradeoffs of different approaches but should not be considered a comprehensive assessment of any one of the benchmarked cities.

Governance of Sustainability in Benchmark Cities – Staffing, Organizational Structure, Roles, Scope, and Funding

Office Locations and Roles

The location of the sustainability office within city organizational structures is often driven by some combination of two major factors: 1) the city's vision of the appropriate role of sustainability staff relative to other departmental staff, and 2) the level of desire of certain departments to work more

closely with and/or absorb sustainability staff within their operations. The placement of the sustainability office may reflect city leadership's perspectives on the priority of sustainability relative to the city's other responsibilities, their perspectives on what sustainability topic areas are most critical to address, and their perspectives on the city's approach to sustainability governance generally.

The first factor, the city's vision of the ideal role of the sustainability office, is an important decision point for any city, and it relates to whether the sustainability office is seen primarily as focused on planning and coordination or focused on implementation as well. Rarely do sustainability offices exclusively work on planning and coordination, since some small implementation efforts are taken on by even the smallest sustainability offices, as needs arise. All benchmark city interviewees articulated that their jobs entailed balancing direct implementation of programs, crafting policies, collaborating on sustainability programs across departments, working with the community, and providing expert advice to the City Manager and City Council. Finding the right balance of those efforts is an important part of their role and all benchmark city interviewees stressed that the sustainability office should articulate clear priorities for the office to ensure they have the capacity to accomplish their sustainability objectives. This is particularly important for articulating to internal and external stakeholders the scope of work they are going to accomplish, given the resources and staffing available. Many benchmark city interviewees stressed that having a clear workplan gave them agency over how they spent their time. They could focus on the elements they were certain mattered most to their sustainability program (identified through data analysis and/or community engagement) and articulate that new responsibilities required new resources or came at the expense of the existing workplan that had been decided upon.

The second factor, the degree of desire of certain departments to work more closely with sustainability staff, may be a product of evolving needs and interests in the departments, and the changing responsibilities and personalities of staff leading the departments. These factors were often second order to the leadership's vision of the ideal role of the sustainability office.

While the location and size of sustainability offices varied among the benchmarked cities, there are trends that emerged. Four of the cities positioned their sustainability offices within a high-level executive office (either the City Manager's Office or the Mayor's Office). These cities tended to be the ones where the sustainability office was smaller and focused on planning and coordination, although there are cases where some of these CMO-based offices have been called upon to implement programs in addition to filling their planning and coordination roles. Another four cities situated their sustainability offices in a department that has primary responsibility over major sectors contributing to greenhouse gas emissions, either community planning/development or public works departments, and these cities tended to be on the larger end of the size spectrum, generally aligned with an increased role in implementation of sustainability efforts in functional areas. Three remaining offices were Fort Collins, Palo Alto, and Boulder. Fort Collins has the largest of the sustainability offices among the cities we interviewed, encompassing a triple bottom line sustainability approach, and is its own dedicated service area within city government. Palo Alto, a much smaller office, is currently undergoing a transition after departure of the Chief Sustainability Officer, and while currently on its own, will likely relocate where it sits in the organization. Boulder had been part of the Division of Planning, Housing and Sustainability,

but recently became its own office (Housing also split from Planning and formed an office of Housing and Health Services).

It is common for programs to begin, and for offices with smaller staffs to remain located, in the City Manager or Mayor's Office. As noted above, four of the ten cities currently locate their sustainability offices there. Each of the three cities we interviewed that locate their offices in other departments started their programs in the City Manager's Office, as did the three cities that now have standalone sustainability offices. Only two cities started programs in departments – one in housing and one in public works. The former has moved to the Development Office and the latter into the City Manager's Office. In describing their transitions from one office to another, most benchmark city interviewees whose departments had moved articulated that the moves were often (1) the organic result of staff or programmatic changes occurring at the city, or (2) the result of an election or other leadership changes.[50] The structure of these offices has been fluid and has evolved to meet the needs of the city as the city's needs have evolved.

Three benchmark city interviewees that had worked in various locations offered their perspective on the pros and cons of different locations. Their conclusions are summarized below.

Table 5. Interviewee Perspectives on The Pros and Cons of Various Potential Sustainability Office Locations

Office	Pros	Cons
City Manager/Mayor's Office	• Enhanced ability to advance agenda • Greater flexibility and more responsibilities for strategic systems thinking • Indication that sustainability is a political priority • Engagement in city-wide conversations, priority setting, and access to City Manager and City Council	• Perception of initiatives as heavy-handed/top-down mandate • No longer seen as a peer, but rather part of the hierarchy • Departments less likely to know when to integrate the sustainability office in their planning processes or share an unfinished/draft work product with sustainability staff • Potential for mismatch between low staffing level available and ambitions to implement programs directly out of sustainability office
Standalone Office	• Greater autonomy	• More challenging to get things approved

[50] Two examples of transitions driven by staff changes include Cambridge and Palo Alto. Cambridge moved its sustainability functions to Department of Planning when the director overseeing the sustainability program was promoted to run that office, which in itself is an indication of how connected the functions of planning and sustainability are given Cambridge's growth trajectory. Now that the Palo Alto Chief Sustainability Office has departed, our interviewee in that city indicated that the office will likely move back into the Department of Planning where they had been housed prior to being in the City Manager's Office.

		• Requires more administrative resources
Department	• More collaboration with that department's staff • Integrated in planning discussions from outset	• More challenging to work with departments outside of own • Concern from other departments that sustainability program may favor home department over others when determining priorities, resources, etc.

Staffing and Scope

There is a wide range of staffing levels across the cities, and a wide range of responsibilities that live within the sustainability office. As is described in the writeups of each city shared with City of Mountain View staff as part of this assessment, the scope of these sustainability offices varies significantly. While all of them have central roles in climate action planning, additional responsibilities varied quite a bit and sometimes included economic sustainability and social sustainability, zero waste programs, energy efficiency in municipal buildings, community-wide energy policies and programs, sustainable transportation policies and programs, resilience strategy, community outreach on some or all topics related to sustainability, business engagement, watershed management, water conservation, sustainable procurement, and more. Several of the benchmark cities run municipal utilities, which often also have staff focused on both demand side management and sustainable energy supplies. These municipal utilities staff are not included in the FTE counts below.

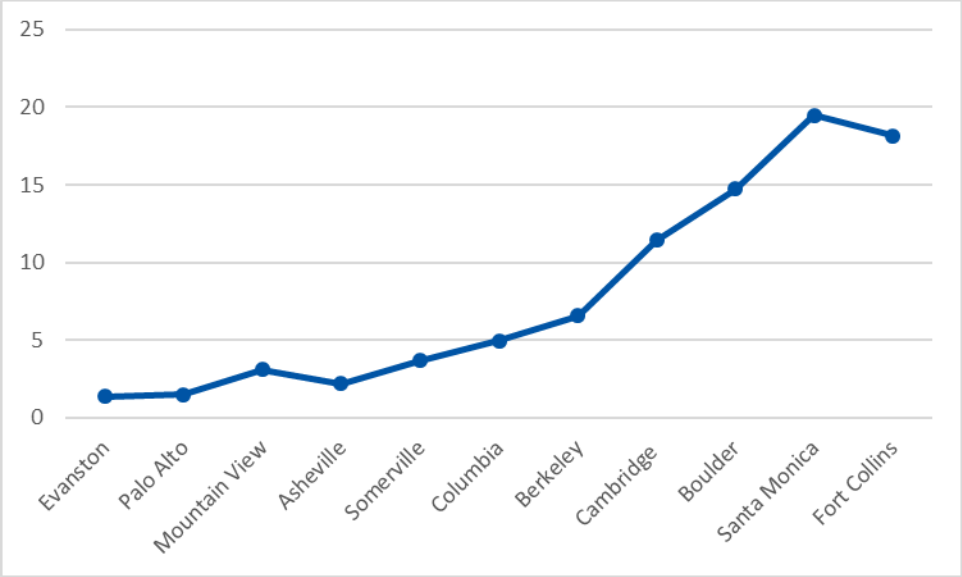
As shown in Table 6, the smallest programs surveyed have one full time employee (FTE), while the largest has 30 FTEs, with 14 of these FTEs focusing specifically on environmental sustainability. As noted above, offices located within the CMO tended to be smaller, ranging from 1 to 6 employees, and tending to have more strategic and coordinating roles as opposed to significant implementation responsibilities. The largest of these CMO offices fund their staff entirely from enterprise utility accounts associated with their municipal electric utility, and therefore are a bit of an outlier. Offices that are in other departments or standalone tend to be larger, ranging from 12 to 30 FTEs. These larger offices tended to have a higher share of implementation responsibilities. However, the degree to which sustainability offices were primarily implementors or strategic planners varies over time in any given city, and is not robustly quantifiable, as these offices adapt to meet current opportunities and needs.

Benchmark city interviewees emphasized that FTE counts are only one component of their overall capacity to carry out their scope of work. Both temporary staff resources and implementation and/or administrative support from other departments enabled them to accomplish more. For instance, many offices utilize AmeriCorps, CivicSpark fellows, interns, and part time and contractual staff as well. They also rely heavily on collaboration with other departments, as well as external partnerships to get things done. Those offices located in CMOs also often have administrative support from CMO staff.

Table 6. Office Staffing (Smallest to Largest) and Location

City	Office Location	Size
Evanston	CMO	1 FTE
Palo Alto	Own Office (at time of interview)	1 FTE
Mountain View	CMO	2.5 FTE
Asheville	CMO	2 FTE
Somerville	Mayor's Office	3 FTE
Columbia	CMO	6 FTE
Berkeley	Development	8 FTE
Cambridge	Development	13 FTE
Boulder	Own Office	18 FTE
Santa Monica	Public Works	18 FTE
Fort Collins	Own Office	30 FTE

Figure 3. Number of Sustainability Staff Per 100,000 Residents



Most benchmark city interviewees, regardless of the size of their offices, noted that their staff and the staff of other city departments remain capacity-constrained. This can naturally be explained by the fact that the staffing approach and the expected scope of work are generally correlated and that due to personal conviction of many sustainability leaders, they often aspire to stretch their scope to the maximum that they can accomplish given their staffing resources. Benchmark city interviewees had varying plans to grow the capacity necessary to move their sustainability initiatives forward. Some focused on hiring more staff directly within the sustainability office, while others focused on providing resources for the agencies with whom they collaborate. Two benchmark city interviewees explicitly enumerated the additional staff they felt they needed in their own context of sustainability planning and implementation.

Table 7. Interviewee Proposals for Increasing Staff Capacity in Their Own Cities

Internal hiring focus	External hiring focus

• Sustainability Director
• Climate Programs Manger
  ○ Adaptation Specialist
  ○ Mitigation Specialist
• Senior Environmental Educator
• Outreach and Engagement Lead
	• 2 sustainability office FTEs (filling centralized quantification and environmental expertise needs)
	• 2-3 sustainability office interns
	• FTEs distributed across departments with input from sustainability office

Funding

Funding for city sustainability programs comes from a range of sources, including city General Funds, city Capital Improvement Plans, utility enterprise accounts, permit and development fees, state and federal funding, grants, and dedicated taxes. Two benchmark city interviewees noted that the development of a strategic sustainability plan made it much easier to make the case for funding that aligns with the plan as opposed to ad hoc budget requests. They noted, however, that it is often unlikely funding will be made available in the first year it is requested. Two benchmark city interviewees noted that the only funding they pursue is for staff and consultant needs and that all other funding is pursued through the departments responsible for implementing programs. For instance, the Somerville interviewee noted that his office sometimes supports the requests of other departments to ensure that they are properly resourced to contribute to sustainability objectives. Additionally, cities referenced key grant sources they have found to be helpful, including the California Energy Commission Electric Program Investment Charge, 100 Resilient Cities, and Urban Sustainability Director Network and Carbon Neutral Cities Alliance Innovation Funds.[51] One small sustainability office mentioned that they routinely pull in more grant money than their operating budget, though they have no grant-funded permanent positions. Boulder is unique in that their community has passed four voter-approves taxes to fund climate work: (1) a sales tax to protect open land; (2) a fee on waste haulers to fund compost, recycling, and circular economy; (3) a climate action plan tax on electricity consumption in the city; and (4) a Utility

[51] A partial list of grant sources for city sustainability programs is included in Appendix C

Occupation tax that will sunset once Boulder's local electric utility is created. The Boulder interviewee stressed that this dedicated, voter-supported funding was incredibly important to their successes, as it ensures continuity of programs, even in the event of budget cuts.

Governance of Sustainability in Benchmark Cities – Departmental Collaboration and Accountability

Structures for Collaboration

All benchmark city interviewees emphasized that it is not possible for a sustainability office to unilaterally implement programs and policies to achieve climate goals. Aligning sustainability goals with ongoing department goals and initiatives is of critical importance. As such, fostering collaboration across agencies is a crucial component of the role of a sustainability office, as is the coordination of strategic planning for plan and program development and the development of methods for tracking progress. Benchmark city interviewees noted the following platforms for collaboration: formal standing meetings, informal communication, and voluntary working groups.

Formal Standing Meetings

Many of the cities included in this benchmarking exercise rely on a formal standing meeting of some kind. Three cities noted that their sustainability group was responsible for reporting directly up to the executive or leadership team meeting in their city. The most notable example of this included mandatory quarterly reports from Sustainability Working Groups directly to the Sustainability Advisory Board, which is a high-level cross section of leadership across municipal departments and includes representation from the City Manager. These processes reinforce the importance of sustainability considerations and ensure that sustainability ideas are not simply understood to be the purview of the sustainability office but that each department was expected to contribute to strategic sustainability thinking. Only two do not have a standing sustainability meeting.

Informal Communication

Several cities also rely on informal communication. The value of an approach that relies on informal and often bilateral communication is that it has helped those sustainability offices identify opportunities to serve as co-equal partners on new initiatives and work as an internal consultant to the departments on efforts that the departments want assistance with. For instance, our Somerville interviewee noted that to the degree that departments exhibit administrative inefficiencies and need process improvements, the sustainability office can help them diagnose underlying issues and weave sustainability considerations into their recommendations for improvement. For one city, a good example was as simple as helping permitting and inspections map out and streamline their time-consuming internal processes for approving solar permits, which earned the sustainability office favor with these departments. One city that does not have a formal structure for continuous collaboration did note that they execute team charters for any cross-departmental collaboration to lay out expectations and roles.

Voluntary Groups

Two cities also mentioned having voluntary working groups, which are akin to the concept of a "Green Team." The voluntary working groups uniquely provided the benefit of being comprised of the most passionate self-nominated individuals regardless of level in the organization. In the case of Santa Monica, this volunteer group was cited as particularly successful in fostering a culture of sustainability by making it fun, social, and engaging for other staff through events and communication. This approach could be applied whether the Green Team focuses on municipal operations or focuses on sustainability opportunities that relate to community-wide impacts that the departments influence.

Because each of these forms of interdepartmental collaboration have different benefits, most of the cities interviewed were employing more than one of these approaches.

Accountability – Metrics

To create a system of accountability, measurable goals must be articulated and have associated metrics, timelines, and clearly delineated roles and responsibilities. This section describes the metrics that are commonly in use among the benchmark cities, all of which are tracking certain metrics related to their sustainability goals.

The most common metric is greenhouse gas reduction through an annual or biannual GHG inventory process. Other metrics discussed by benchmark city interviewees included measurements of transportation efficiency and building energy use. Benchmark city interviewees expressed that it is important to develop metrics that the office has the capacity to manage, with one suggesting that they be based on indicators the departments are already responsible for tracking. While metrics are an important accountability tool, setting up the systems to track and report on them requires time and careful thought. Therefore, the benchmark cities have prioritized a manageable number of metrics that are most relevant to their goals and their degree of influence.

Three benchmark city interviewees mentioned that they are currently in the process of developing indicators and a dashboard to support their climate action plan implementation. One interviewee noted they are working with their Communications office to develop narratives around their metrics to make them more meaningful for the community. Two cities mentioned participating in STAR Communities.

Table 8. Metrics Cited by Benchmark City Interviewees as Important to their Sustainability Activities

Sector	Metric
Transportation	Vehicle Miles Traveled
	Single-occupancy vehicle mode share
	Transit ridership
	Commute-benefit participants
	EV penetration
Buildings	Building Energy Use
	Electrification percentage
Water	Water use
Waste	Recycling percentage

It is important to note that the metrics in Table 8 are only the metrics that were explicitly discussed during interviews, and each of these cities tends to track many more metrics, often in public ways.

Several cities have developed substantial metric tracking plans and dashboards. Evanston, for instance, has split its climate mitigation programs into six goal areas, including Building Efficiency, Renewable Energy, Zero Waste, Mobility and Transportation, Urban Canopy and Green Space, and Outreach, Education, and Behavior Change. Each of these areas has multiple metrics, and in most categories, they have developed metrics that address both level of effort and absolute results. Santa Monica maintains a website with nine sustainability-relevant metric categories, ranging from environmental sustainability to social sustainability and equity to quality of life.

Several cities have implemented extensive sustainability dashboard websites, such as the Fort Collins Climate Action Plan Dashboard (see Figure 2), the Fort Collins Environmental Health dashboard, and Boulder Measures (dashboards for zero waste, community GHG, and city operations GHG). These tools include information on performance, analysis of the performance, the impact of the city as an organization, and information on appropriate benchmarks and relevant goals. Somerville is publishing open data as well, through its SomerStat portal. Whether or not the data is interactive, most of the cities interviewed are reporting out on key metrics with regular frequency through other formats such as infographics, memos, and website updates, an annual GHG inventory being most common among them (see Asheville's recent infographic in Figure 3).

Figure 2. Dashboard Example – Fort Collins

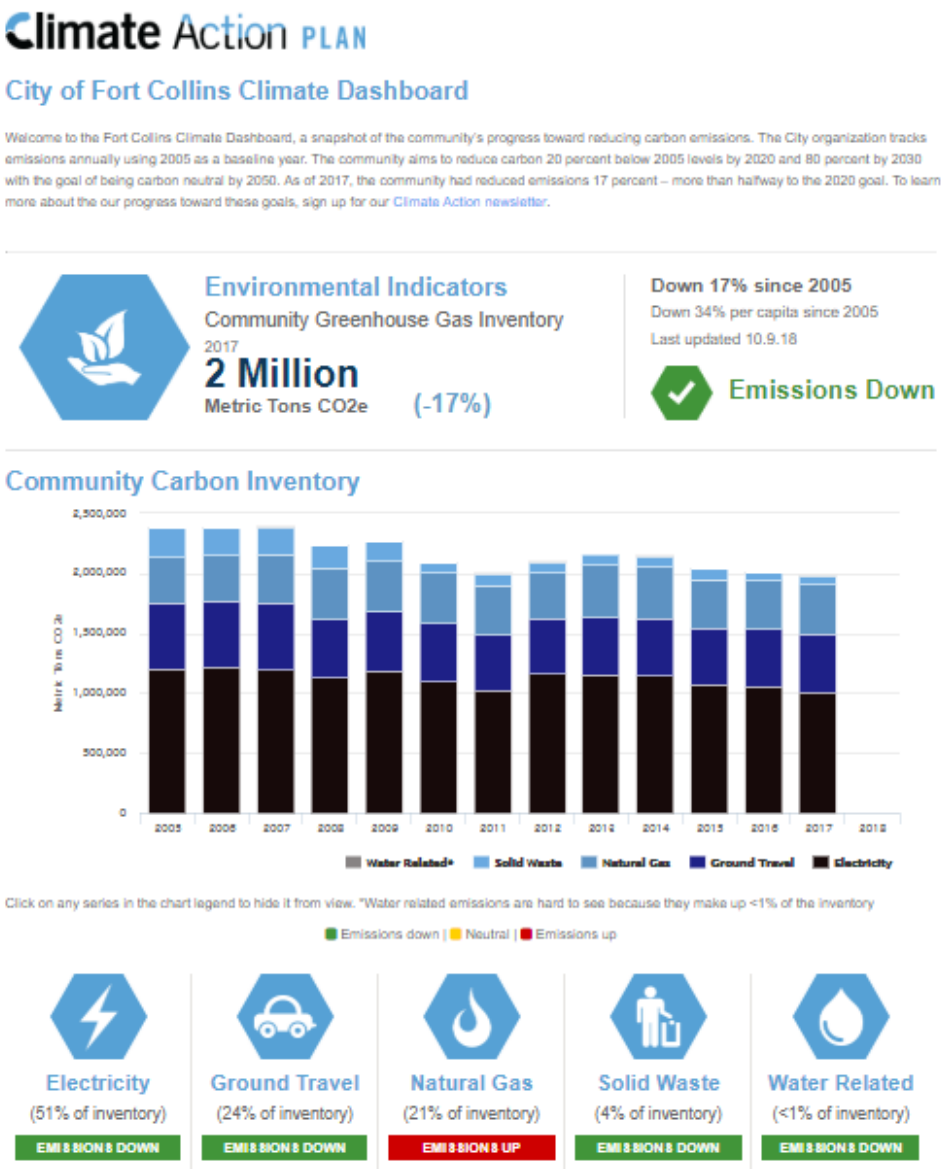
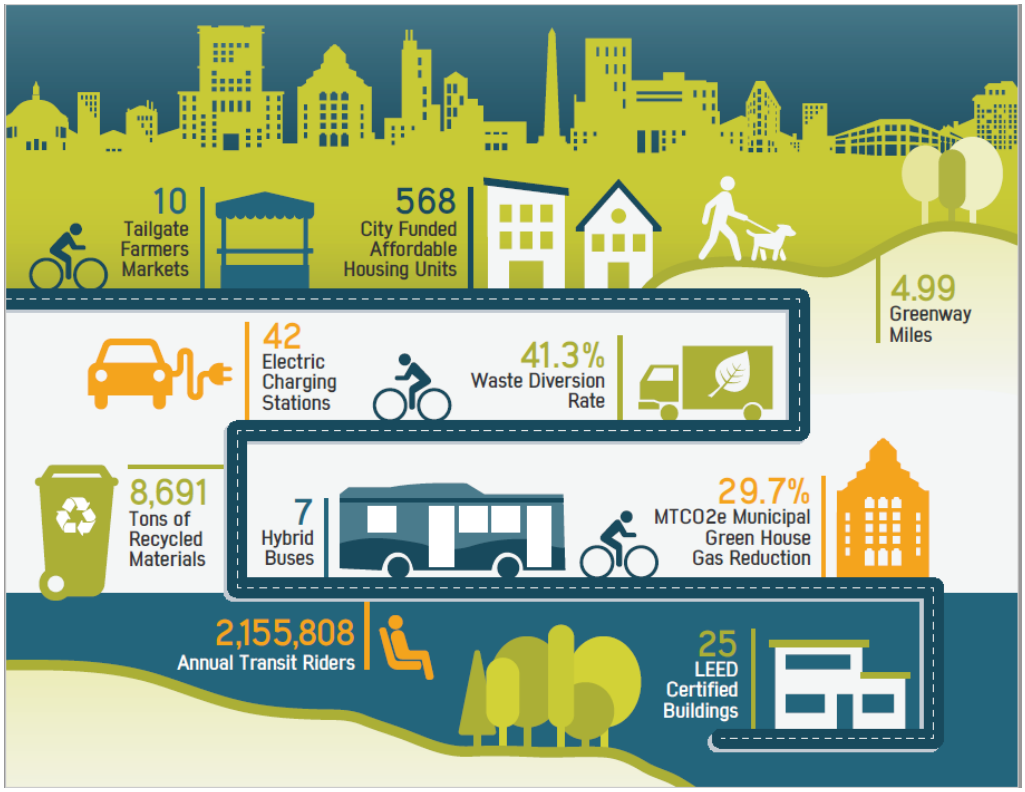


Figure 3. Infographic Example – Asheville



Governance of Sustainability in Benchmark Cities – Community Engagement Processes and Equity Considerations

Community Engagement Processes

In addition to managing internal engagement on sustainability programming, many sustainability offices also have channels for external engagement with community members. Engagement can range from educating residents and businesses to gathering input informally to directly engaging them through formal structures. Five of the ten benchmark cities have permanent advisory bodies comprised of community members. Some of these bodies advise staff while others advise City Council. Benchmark city interviewees noted that even in well-educated and environmentally-aware communities, there is value in raising awareness of environmental issues in the community to build strong constituent support. Another form of education that holds value is educating community members on how city government operates and what opportunities and constraints this places on implementation strategies. One benchmark city has a formal, centralized office of Community Engagement that works with departments on any project requiring stakeholder input to determine the right level of engagement (e.g., inform, consult, collaborate, engage). This interviewee stressed that while stakeholder engagement takes significant time and effort it is essential in ensuring support to pass major sustainability initiatives, like mandatory building retrofits.

Most cities noted community involvement in climate action plan development as a critical phase during which more substantial engagement occurred. Given that many of these communities, like Mountain View, are home to highly educated topical experts on various sustainability topics, it is not uncommon for external stakeholders to volunteer substantial effort to recommend direction for city climate plans. In two cases, sustainability plans or updates to plans were written by external community groups (Evanston's Climate Action and Resilience Plan in 2018, in which the external group wrote the plan along with a departmental co-lead for priority sections, and Santa Monica's update to its Sustainable City Plan in 2001 to 2003, in which a working group was assembled to assess Santa Monica's long term sustainability while updating its plan). One interviewee suggested that this approach was inherently challenging because the participants do not understand city government as well as the staff do and there can be confusion about whether the output is meant to give direction to staff or to City Council. Benchmark city interviewees noted that community input is essential for the goal setting process.

Benchmark city interviewees who work with formally established external community groups that have been given an advisory role noted that these external groups can be beneficial in advancing priorities. External groups can be particularly helpful when their work is aligned with the sustainability's office identified priorities, particularly when they report independently to City Council and are seen as an autonomous voice on key issues. However, this model can require significant staff time and management. This is particularly acute when the group and the office are not aligned on near-term priorities.

Social Equity

All the selected benchmark cities are actively seeking to integrate social equity into their work, and many are questioning whether the formal outreach structures they typically use adequately gather input truly representative of the diverse constituencies that comprise their cities. Benchmark city interviewees articulated that their work in this space is ongoing and that it is of particular importance to their community. Two mentioned they found great value in the work that UDSN is conducting in this area, with one noting specifically that they are working with USDN to develop an equity framework to apply to their program. Another interviewee recommended that any new Climate Action Plan should be oriented around triple bottom line of sustainability, or risk being "ten years behind," while another noted that their office is looking critically at the diversity of their staff to ensure they are living up to their stated values. One office has taken the approach of organizing around a triple bottom line of sustainability – including full social and economic sustainability offices, in addition to environmental sustainability. Another office is part of a city-wide initiative, in partnership with the Government Alliance for Racial Equity, which includes staff training on equity and the development of an equity framework for the city.

Notable Programs

Benchmark cities were asked to share a program that they believe is particularly impactful in achieving sustainability objectives. Highlights that were explicitly mentioned in benchmark city interviews are identified as such below. Please note that given interview time constraints, not all interviewees provided a response to this question, nor is this a comprehensive overview of the cities' achievements.

To supplement this information, a desk review of sustainability programs in each of the cities was conducted and the results were presented to Mountain View. Given the high importance of transportation programs and building electrification for Mountain View, as communicated by City of Mountain View staff, these sections also below provide a high-level summary of additional efforts in this space that have recently been conducted by the benchmark cities.

Transportation

Two benchmark city interviewees responses focused on transportation programs:

The City of Cambridge passed a Vehicle Trip Reduction Ordinance in 1992 that plays an important role in their ongoing sustainability efforts. It created a policy environment in which the City's transportation planning is based around reducing vehicle trips and led to the City's Parking Demand Management Program, which has been in place since 1998 and which requires significant Transportation Demand Management (TDM) investments if any developer or property owner adds parking above their registered number. This program promotes sustainable modes of transportation such as walking, bicycling, and public transportation, and limits the development of non-residential

parking. Because of these efforts, just 28.7 percent of Cambridge residents drive alone to work, with 27.5 percent of residents commuting via public transit and 24.5 percent walking to work.[52]

The City of Palo Alto is seeking to reduce single-occupancy vehicle travel and increase access to alternative transportation modes. Staff is considering how to reduce single-occupancy vehicle trips downtown, improve bike infrastructure, increase first and last mile connectivity, implement parking management strategies, and decrease city fleet fuel consumption and idling. More information can be found in their Sustainability Implementation Plan.

Desk research uncovered a few other transportation programs of relevance to Mountain View's objectives, particularly related to electric vehicles (EVs):

Santa Monica, Fort Collins, and Columbia all recently published well-received EV roadmaps and/or EV policy primers. Fort Collins adopted a goal of one in two new passenger cars being EVs by 2030.[53] Santa Monica has already installed 89 public charging ports with a goal of tripling this amount within three years.[54] Berkeley and Somerville are also currently developing their own EV plans and goals.

Boulder County pioneered the concept of EV group buys with a program that included the City of Boulder as well as neighboring counties and jurisdictions. Their group buy program was so successful at getting more EVs into consumers' hands that they did two initial rounds of it and then followed up with a joint EV/PV (solar photovoltaic) group buy program where they found a substantial number of participants interested in pursuing both simultaneously. Additionally, these EV group buy programs often have a City fleet purchase component, including in some cases extra incentives for fleet purchasers.[55] Implementing a group buy program is among the ESTF-2 recommendations for Mountain View.

Buildings

Two benchmark city interviewees responses focused on programs for efficiency in the building sector:

Cambridge cited their Net Zero Action Plan when asked about their most impactful programs. In 2015, Cambridge City Council adopted a Net Zero Action Plan, developed with the support of a thirteen-member "Getting to Net Zero" Task Force. This twenty-five year strategy creates the policy foundation for Cambridge to reduce building related emissions. Some accomplishments to date

[52] City of Cambridge. https://sustainabilitydashboard.cambridgema.gov/commuting/

[53] https://www.fcgov.com/transportationplanning/files/cofc-ev-readiness-roadmap.pdf

[54] https://www.santamonica.gov/press/2017/11/15/santa-monica-city-council-adopts-electric-vehicle-action-plan

[55] Webinar on Boulder County EV Group Purchase programs, August 15, 2016.

include the launch of the Multi-Family Energy Efficiency Pilot program, and working with a consulting team to assess the design and feasibility of a local carbon offset fund that provides building owners with flexibility in meeting their Net Zero targets by providing credit for investment in greenhouse gas reductions in other locations near Cambridge, among other things.[56]

The City of Boulder interviewee identified that electrifying at least 50 percent of their natural gas load in buildings was essential to achieving necessary greenhouse gas reductions. In April 2018, the City of Boulder, in partnership with Boulder County and Mitsubishi Electric, launched its Comfort365 Renewable Heating and Cooling campaign to provide Boulder residents with the resources necessary to sustainably heat and cool their homes with heat pumps.[57] Additionally, as part of its EnergySmart program, the City of Boulder provides rebates for electrification upgrades such as heat pumps and hot water heaters. As of fall 2018, Boulder saw a four-fold increase in heat pump installations as compared to 2017.[58]

Desk research on building electrification strategies also indicated that the City of Somerville recently implemented its HeatSmart CoolSmart Program, a community group purchasing and outreach program that aims to increase awareness and adoption of air source heat pumps. The program ended in February 2018, and the City plans to expand its HeatSmart and CoolSmart programs to facilitate building electrification and fuel switching to renewable energy sources.

While not yet an existing program, the City of Cambridge recently published its Low Carbon Energy Supply Strategy,[59] which may be of interest to Mountain View because of its scenario related to district energy, and because much of Mountain View's development is higher density infill where district energy could be appropriate.

Energy Supply

The cities of Columbia, Palo Alto, Santa Monica, and Somerville highlighted utilizing municipal aggregation, Community Choice Aggregation (CCA), or municipal utilities to increase the portion of the electrical supply generated from renewable energy, while often lowering the cost of electricity bills as well. One interviewee noted that these efforts had also resulted in the important co-benefit of saving ratepayers $100K. For example, the City of Somerville established Somerville Community Choice, which began operating in July 2017. The default supply contains five percent more

[56] Net Zero Action Plan Newsletter. https://www.cambridgema.gov/CDD/Projects/Climate/~/media/695191E5583D41C395DE3D7A704B9928.ashx

[57] Comfort365. http://wepowr.com/bouldercomfort365/about

[58] Building Electrification Initiative. https://www.beicities.org/cities/boulder/

[59] https://www.cambridgema.gov/CDD/climateandenergy/climatechangeplanning/lowcarbonenergysupplystrategy

renewable energy than the State renewable portfolio standard at a lower rate than the local utility.[60] It is worth noting that Mountain View, with its participation in Silicon Valley Clean Energy, has already benefited tremendously from working with a CCA.

Community Engagement

Palo Alto's CoolBlock Challenge engages households on a residential block to reduce carbon. In the second year of piloting the program, 88 households are engaged and have saved an average of 7.1 tons of carbon per household per year.

Best Practice Advice

When asked what advice benchmark city interviewees would offer to Mountain View's sustainability staff, most interviewees stressed the importance of collaboration with department staff of all levels. One noted that organizational change management is a crucial skillset, expressing that you can write a perfect plan, but if you cannot generate the buy in from agencies to implement it, it will not be successful. Another recommended bringing people into the fold of sustainability by celebrating their successes and their ongoing work related to climate change. Another benchmark city interviewee recommended to prioritize departmental needs in terms of staffing and resources above those of the sustainability office itself – noting that the work of the sustainability office can ebb and flow as plans are developed, if implementation occurs at the departmental level.

Three benchmark city interviewees raised the topic of climate "leadership" but had contrasting opinions. One recommended engaging City Managers in Climate Mayor activities, to build on the "innate competitive spirit of city leadership." Another recommended to critically evaluate whether national or global leadership platforms are the right fit for a city, especially for cities with limited sustainability staffing where the leadership platform may or may not align with the city's strategic sustainability foci. And a third noted that some climate commitments (such as the America's Pledge on Climate Change) can help staff strategically advance priorities. This benchmark city interviewee noted that if a City Manager or City Council publicly commit to such a program, staff may be able to utilize the associated requirements to garner support for activities, like developing an updated climate action plan.

Finally, several benchmark city interviewees raised the importance of developing a clear understanding of the sustainability office's and the city's strengths and limitations that impact their ability to advance climate work. Realistic communication about what the sustainability office can and cannot do, given its frequently large scope and small staff, is important for setting expectations and establishing the appropriate balance of implementation responsibilities. On a related note, benchmark city interviewees emphasized that strategic prioritization was a critical component of their success. They took and recommended different approaches to prioritizing – what has the largest carbon impact, what can get

[60] Based on Eversource's January -June 2019 rates

done in the near and medium term, what generates financial savings. However, these prioritization decisions must also align with the strategic vision for the office's mission.

Key Decision Points and Preliminary Incremental Recommendations

The Environmental Sustainability Assessment is only the first part of the development of a Strategic Sustainability Plan for the City of Mountain View. Efforts to date have focused on (1) identifying strengths, gaps, opportunities, and threats associated with achieving Mountain View's current sustainability goals, and (2) providing context from similar cities across the U.S. regarding how they have developed their sustainability programs. The next step of the process is to convene City leadership to assess potential levels of response to climate change and environmental sustainability and to further explore a shared vision for sustainability in Mountain View.

Providing a full set of recommendations in advance of the deliberation process that will occur in the next phase of this project would be premature. Therefore, this section draws on an initial assessment of Mountain View's sustainability programs to identify preliminary incremental recommendations that could be adopted regardless of the outcomes of the second phase of the project, and to frame key decision points that the City may wish to address prior to developing its strategic plan. A staff workshop will be held in late January to provide more clarity on shared staff visions, and CMO will lead a visioning process following the workshop. These recommendations are therefore not the final recommendations of this project.

Key Decision Points

In developing a path forward for sustainability in Mountain View, City staff will need to develop a common understanding on (1) a desired approach to triple bottom line decision-making, (2) defining sustainability and associated indicators, (3) articulating the appropriate role of a sustainability office, and (4) a framework for establishing an appropriate level of ambition.

Determining how Triple Bottom Line Sustainability Should be Approached

As noted above, the City Council Major Goals for fiscal years 2017-19 strongly emphasize both issues of equity and environmental sustainability. Economic vibrancy contributes to municipal fiscal resources, which can augment the City's ability to pursue both social and environmental sustainability. Therefore, the framework of environment, economy, and social equity is implied in Mountain View's current priorities. Some of our benchmark cities include equity and economic considerations within their sustainability offices, while most of them rely on collaboration between departments and a common understanding of the importance of triple bottom line approaches to ensure that equity is not forgotten in environmental sustainability efforts.

Some questions to consider are:

- Whether to add social equity and economic metrics to consideration of sustainability actions[61]
- What processes to develop to track equity/social sustainability
- How staff from various departments will participate in goal setting, tracking, and implementation of social sustainability and economic sustainability programs

Whether these questions are resolved in the development of the Strategic Plan, they will be important to consider as they will have implications for the work of the environmental sustainability team in Mountain View. Like environmental sustainability, equity and economic sustainability are highly cross-departmental challenges that require extensive collaboration.

Defining Environmental Sustainability

Some Mountain View staff have presented a vision of sustainability that focuses strongly on GHG emissions. Other staff have highlighted additional elements such as closed loop systems for water and waste. At least one other staff member highlighted the protection of ecosystems and habitat.

Other systems that could be considered central to an environmentally sustainable society did not come up explicitly in the interviews with staff. These could include measures of how sustainability practices can contribute to human health and well-being, including impact on air, water, and soil quality. For instance, just as Mountain View's demand for energy has an incremental effect on global GHG emissions, the City's collective demand for food has an incremental effect on farming practices, land use decisions, soil conservation, fertilizer and pesticide usage, and ecosystem quality outside of its boundaries. Similar incremental effects exist for **all other consumption choices** that are made by Mountain View residents and businesses, which are not fully contained in considerations around GHG emissions, zero waste, local water conservation, or local ecosystem protection.

Questions that should be answered include:

- Whether the above-mentioned important elements of sustainability can be considered as co-benefits of a sustainability program that focuses on GHG emissions, or whether these elements should be actively managed and monitored in their own right
- Whether these elements of sustainability should be managed within the sustainability office or through other departments and programs
- How harm associated with cross-boundary (outside of boundary) impacts should be weighted in decision-making (e.g. consumption of certain products leading to environmental degradation elsewhere)
- How to measure such cross-boundary effects, and whether it is practical to measure them as frequently or as thoroughly as Mountain View measures its direct GHG emissions (e.g. whether to move from production-based to consumption-based accounting of GHG and other impacts)

Defining the Types of Roles of the Sustainability Office

[61] Some possible social equity metrics are provided in Table 1 earlier in this document.

One theme that repeatedly emerged from the interviews of benchmark city sustainability leaders was the definition of the right niche for sustainability staff. In particular, what is the right balance of planning, coordination, engagement, and implementation strategies within the sustainability office, and when should activities be assigned to other departments.

Many benchmark city interviewees said they felt the sustainability office's role should focus on convening, enabling, and developing strategic plans and frameworks. Measuring and monitoring progress puts the sustainability office in an awkward role of being an "enforcer" and less of a peer. Burdening the sustainability staff with implementation responsibilities can lead to inefficiencies if the staff's expertise is more oriented around policy and planning than around implementation. On the other hand, some benchmark city interviewees found that having sustainability staff available to lend capacity to departments to implement sustainable projects was important for ensuring that sustainability initiatives did not get buried in the numerous responsibilities that departments have.

Establishing a Framework for Setting an Appropriate Level of Ambition

Climate action and progress can be framed in both absolute and relative terms. When viewing climate action in absolute terms, the central question is what is the City government doing to mitigate its community's impact on climate change and to prepare its constituents for the harms and risks of climate change. On the other hand, when viewing climate action in relative terms, the question becomes how are we performing relative to our peers, and are we demonstrating the leadership that we should be.

During City staff interviews, it became clear that there were mixed views on the desirability of looking at climate action from the perspective of "leadership." The conversation appeared to run the risk of being framed on the one side by the fiscal risk of investing prematurely and inefficiently (e.g. being on the "bleeding edge") versus being framed on the other side as, "We're falling behind the true leaders." During City staff interviews, it was also clear that while there is significant pride in Mountain View's sustainability achievements to date, there was a universal sense that sustainability outcomes fell short of the desires of the interviewees. Therefore, framing sustainability conversations around acting aggressively and strategically in pursuit of improved environmental sustainability outcomes appears to have the potential to unify and motivate staff, regardless of their perspective of whether Mountain View should be a local, regional, or national leader, or simply a solid contributor to sustainability.

Another framing for the appropriate level of ambition is whether to look at absolute or per capita metrics. Given recent and anticipated service population growth in Mountain View, absolute reduction may represent a higher level of ambition and a stronger view of the role of local jurisdictions in addressing GHG. As noted earlier, per capita targets could have the effect of removing accountability to a total emissions or waste "budget," needed to avoid negative climate change impacts. On the other hand, if absolute impacts are successfully managed at a higher jurisdictional level (e.g., region or state), a per capita target can provide more region-wide flexibility in GHG reduction approaches.

The Environmental Sustainability Assessment and benchmarking exercise can be seen as a status check of where progress has been made, what elements may be missing, and what good ideas can be pulled from peer cities. The major question for the City as the Strategic Plan development commences in early 2019 is then, "What do you want to accomplish and what is the best way to do it?"

Preliminary Incremental Recommendations

The following preliminary recommendations arise from interview findings and opinions of the consulting team based on research. Major recommendations will not be made until the strategic plan development process uncovers a clearer shared vision of multiple possible levels of response to climate change and environmental sustainability, when the recommendations can be attached to specific scenarios.

Vision Alignment

1) **Use the stakeholder process of the Sustainability Strategic Plan development to develop a guiding vision for integration of sustainability with community values and needs.** The key decisions described above will be central to the determination of the City of Mountain View's sustainability vision. Interviews indicated that multiple City staff were unsure of the level of priority to assign to sustainability initiatives relative to their other responsibilities and that there wasn't a clear explicit linkage made between environmental sustainability and more expanded views of sustainability.
2) **Increase clarity about ESAP priorities for each department.** The Environmental Sustainability Action Plan contains numerous actions for many departments that have limited bandwidth to implement them. Furthermore, many ESAP actions have shared responsibilities due to their cross-departmental nature. Ensure that CMO and other City leadership are heavily involved in ESAP priority setting so that priority ESAP actions can be worked into department workplans with structured implementation timelines and clearly delineated roles for the multiple departments involved in any specific action.
3) **Align City metric tracking process with City's sustainability vision**. Determine the timeline on which each metric/indicator should be measured and reported on, who should measure it, and who should receive progress updates. Furthermore, invest effort in reconciling potentially conflicting metrics to develop a clear strategy (e.g. addressing the tension between achieving absolute GHG reductions within Mountain View's borders and the development of housing that could improve regional jobs/housing balance and address affordability challenges in the City).

Structure and Process

1) **Explore new funding models and funding streams for sustainability activities in a fiscally responsible manner**. While interviews made it clear that sustainability investments that commit the City to large, long-term increases in obligated funding were unlikely to be a desired path forward, there are several ways in which the City could leverage existing resources. For instance, many cities and organizations have used revolving loan funds to cycle the savings from sustainability programs back into further sustainability investments. Performance contracting can be a way to accelerate deployment of efficiency projects when staff capacity and/or energy efficiency funds are constrained. Funding sustainability activities through enterprise funds is another option worth considering, since it reduces burden on the General Fund. And getting more staff involved in the pursuit of grants could present the opportunity to leverage outside funding toward key policy initiatives and programs.
2) **Keep sustainability located in the City Manager's Office for the immediate future**. City staff interviewees cited the lack of a high-level mandate to expand their sustainability work in the

City, and they stated that capacity constraints made it difficult for them to work on priorities that were not aligned with their ongoing functional responsibilities or key priorities determined by leadership. Interviewees from the benchmark cities cited several benefits associated with sustainability operating out of a CMO, including the elevated priority of sustainability action.

3) **Develop a process for requesting departmental staff input that provides more lead time.** City staff interviewees noted that sometimes they are given short turn-around times for providing information or input to inform sustainability planning. Given that departmental leaders and staff are often overburdened, additional lead time will give them more opportunity to provide thoughtful feedback and incorporate responding to requests into their workflows.
4) **Integrate sustainability discussion into interdepartmental coordination processes**. Several City staff interviewees noted that sustainability should be a standing agenda item at cross-departmental leadership meetings. Others noted that sustainability and/or GHGs should be a lens through which every important decision is assessed, for instance through the CIP prioritization process. Still others noted that coordination is important both at the leadership level and the manager level and serves different purposes. Manager level cross-departmental coordination through a Green Team, or similar, could be a way to surface specific operational improvements, but this team must have a clear mandate, purpose, and scope. Leadership level coordination will ensure strategic resource and prioritization decisions are made in a coordinated manner.
5) **Create a more robust progress reporting and accountability structure for sustainability actions in the ESAP**. The sustainability office is responsible for summarizing numerous actions that are the responsibility of other departments for interim ESAP updates. Consider formats of reporting that would not create excessive administrative burden but would increase the likelihood of continuous progress, such as requesting information on the next step for each action/project every month or every quarter. Consider developing a uniform template for sustainability projects in the ESAP that each department would own, rather than requiring the sustainability office to collect and synthesize all this information.
6) **Explicitly include "Support progress toward the City's sustainability goals" or similar language in new Manager-level or higher hires, as long as it does not limit the City's ability to recruit the most qualified candidate.** While City staff tend to be progressive and interested in environmental sustainability improvements, several of them noted that they have a hard time fitting in additional strategic thinking and initiatives related to environmental sustainability due to high workloads. The inclusion of explicit language of supporting sustainability goals in job descriptions would send a signal about the priority of sustainability, which would not solve the capacity constraint problem, but it may give staff more of a mandate to invest more attention toward sustainability implications of their existing work.
7) **Develop a sustainability communication plan that celebrates successes in a strategic manner.** A few city staff interviewees mentioned that the City is "humble" about its achievements and promoting sustainability successes does not come naturally to the City given its work culture. However, on the other hand, several staff cited benefits of increasing awareness of achievements, including (1) making it easier to put together successful grant applications, if Mountain View has a reputation for delivering excellent sustainability results; (2) recognizing staff achievements within the departments would increase morale and send a signal to other staff that their sustainability process improvements are welcome and may be recognized; (3)

more internal awareness of accomplishments of peer departments may spur ideas for new collaboration; and (4) more external awareness of ongoing sustainability initiatives may result in more meaningful public feedback, and inspire the community to "do their part." This communication approach should also evaluate the degree to which, in certain cases, "self-promotion" could have unwanted effects, although on balance most city staff interviewees cited more potential benefits than drawbacks of strategic communication.

Programmatic

1) **Ensure that future ESAPs have priority items for all major departments**. At least one interviewee indicated that environmental sustainability within the purview of his department was not properly reflected in ESAP-3, and that it was a missed opportunity to set some priority actions for his department. The strong focus on GHGs in the ESTF-2 recommendations risks pushing the City to undervalue sustainability actions in water, waste, open space, environmental health, and adaptation/resilience.
2) **Conduct an equity analysis of significant proposed sustainability actions**. As noted above in the section on "Gaps," Mountain View may benefit from ensuring that sustainability programs not only do not harm residents struggling to afford staying in the city, but also support them in realizing the opportunities presented by energy efficiency and clean energy. Interviews of City staff indicated that current City sustainability programs focus on property owners and car owners. While these populations are important to address, due to their direct impact on sustainability outcomes and the degree of control they have over their property, programs that also address renters and people who do not own cars may provide additional opportunities to spread the benefits of sustainability. These programs could tackle barriers such as the "split incentive" that exists when property owners are not financially motivated to invest money in efficiency upgrades when their tenants would reap the financial savings.
3) **Develop a strategic transportation sustainability master plan to create a unified vision for decarbonizing the sector**. Numerous city staff interviewees pointed to the criticality of transportation emissions reductions to overall sustainability success in Mountain View. The City is currently investing significant effort in this space, but functions are spread between departments. The Comprehensive Modal Plan (under development) addresses many elements of the demand side of transportation, but consideration of advancing cleaner fuels, electrification, and vehicle efficiency should also be studied as part of the City's efforts. There is also significant internal support for investing increased staff effort on policies and programs to address challenging local and regional transportation issues. As part of the development of a master plan, Mountain View should evaluate the pros and cons of a consolidation of transportation functions, since they are currently diffuse, including several subgroups in Public Works and Community Development/Planning.
4) **Leverage the CMO for high-level strategic engagement to drive policy at the state and regional level and develop key external collaboration opportunities**. Several city staff interviewees either indicated that their sustainability work would be more effective if it was better aligned with requirements from the state or the region, or that there are substantial needs for regional collaboration to help solve key challenges. A major example is transportation planning, given that many employees in Mountain View are commuting from locations over which the City has no control. For instance, no matter what Mountain View does to solve first-mile/last-mile

challenges for commuters, if the other end of the commute is not conducive to transit or active transportation, people will commute by personal vehicle. One interviewee in the CMO indicated a strong interest in working with leadership in nearby municipalities on "future oriented transit advocacy."

As noted above, these preliminary recommendations are primarily provided for the purposes of sharing insights that arose from staff interviews and research. They have not been vetted broadly and more comprehensive recommendations that are reflective of a broader stakeholder process will be developed in the next phase of this project. Nonetheless, it is likely that many of these recommendations could be adopted or modified regardless of the level of response to climate change that Mountain View pursues in its forthcoming Strategic Plan.

Next Steps: Sustainability Strategic Plan Development

The next phase of the Mountain View Environmental Sustainability Program Assessment and Strategic Plan will be to work with City stakeholders to develop the Strategic Plan, leveraging information uncovered during the assessment phase and the peer city benchmark research. The process will involve the development of three levels of response to climate change and environmental sustainability (reflecting a low, medium, and high level of effort and investment). These levels of response will be developed in consultation with staff through a collaborative workshop and ongoing discussions. Once these levels of response are established, the strategic and organizational implications of each of them will be explored. Tiered options and recommendations will be presented regarding organizational structure, staffing levels, and funding levels.

Appendix A: Case Studies of the 10 Benchmark Cities

Asheville, NC

City Characteristics

Population	91,0902[62]
Growth Profile	Asheville has grown 10.2% between 2010 and 2017.
Emissions Profile	Asheville has achieved 31% of their 80% emissions reduction goal.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Currently located in City Manager's Office; previously located in Public Works Department, Planning Department, and Finance Office
Staffing	2 FTEs: Sustainability Officer and Energy Programs Coordinator
Structures for inter-agency collaboration	Office hosts regular meetings with the Department of General Services, bringing in additional agencies as necessary to advance discussions
Structures for community engagement	Sustainability Advisory Committee appointed by City Council
Funding sources referenced during interview	Capital Improvement Program submitted and reviewed by City Council annually
Metrics referenced during interview	Not discussed

[62] All population figures and growth profiles included in this document come from the US Census Quickfacts database-https://www.census.gov/quickfacts/fact/table/US/PST045217. Additionally, each of these are based on estimates from the 2017 American Community Survey, and the percent changes are between the 2010 Census count and the 2017 ACS estimate.

- Like many sustainability programs, Asheville's has moved around; it is currently located in the City Manager's Office, which feels like the right fit for their program, given the support they draw from the office and their engagement with the other department directors
- Office both implements programs and advises other agencies – would prefer to be implementing less unilaterally to allow more time for strategic sustainability planning
- Funding in Asheville is limited, so office has been unable to scale size to match the scope of work they have
- Office has strong support from City Manager and from the community
- Office works collaboratively with the Department of General Services and has become an advocate for them to ensure they are able to implement sustainable initiatives
- Ashville's City Council appoints a Sustainability Advisory Committee that worked on a 100% renewable energy by 2030 goal over the past year
- Sustainability Office recommends aligning sustainability objectives with the goals of other departments and prioritizing based on carbon
- Asheville has an Equity Core Team of which the Sustainability Office is a part

Sustainability Programs Summary

Climate Commitments

The City of Asheville has adopted an 80% reduction in municipal emissions goal from 2008 levels. Asheville reports that they have reduced municipal emissions 31%. Asheville is a member of Mayors for 100% Clean Energy and the Mayors National Climate Action Agenda.

Existing Reports

As part of their carbon reduction initiative, the City of Asheville has issued annual reports detailing the specific measures they have taken to reduce their carbon emissions towards this 80% goal and increase resiliency.

- **Asheville Climate Resilience Assessment Report (2018)-**This report, written in collaboration with the National Environmental Modeling and Analysis Center at UNC Asheville, comprehensively assesses Asheville's climate vulnerability across sectors and provides resilience-building options that the city can undertake for each assessed vulnerability.
- **Asheville Sustainability Management Plan (2009)-**This plan, adopted in 2009, guides sustainability planning at every level in the city. It contains six focus areas across sectors, including: buildings, facilities, and street lighting, transportation, water, solid waste, land use, and education and communication. It contains 107 distinct action items for the city from each of these areas.

Current Programs

To support their carbon reduction goals, the City of Asheville is in the process of implementing carbon reduction initiatives. These include programs to reduce fuel use in their city fleet, a new LED Streetlight Program, green building rebates for new construction and the building of new greenways and bike

paths. The City of Asheville has categorized their sustainability planning under Sustainable Energy and Sustainable Economic Development.

Sector	Area	Summary
Transportation	Multimodal	The City of Asheville has expanded its greenway/bikeway infrastructure, with a total of 4.99 greenway miles constructed. Additionally, the City of Asheville is now up to 16.6 miles of bike lanes. More information: Asheville 2017 Sustainability Infographic
	Electric Vehicles	The City of Asheville is expanding its EV charging infrastructure, with two new stations built in FY2017. They are now up to 42 stations in total. Additionally, they are now up to 29 hybrid buses in its public transportation network. More information: Asheville 2017 Sustainability Infographic Asheville Office of Sustainability Annual Report
Buildings	New Construction and Codes	The City of Asheville has a Land Use Incentive Policy to encourage development that is affordable and sustainable. Properties developed in Asheville's Sustainability Map area may qualify for property tax exemptions or fee reductions. Developments earn points for a range of design elements. More information: Asheville Sustainability Infographic Asheville Land Use Incentive Policy
	Existing Buildings and Energy Conservation	The City of Asheville has issued recommendations pertaining to building retrofits as part of its 2009 Sustainability Management Plan. The goal is to modernize Asheville buildings' HVAC systems to be energy efficient and includes the upgrading of boilers and other central systems. Additionally, the City of Asheville has implemented incentives for energy efficiency retrofits in buildings. Finally, the City has adopted a LEED Construction Standard for all city-owned buildings. City-owned buildings greater than 1,000 square feet are now required to be built to LEED Gold certification, and buildings less than 5,000 square feet are required to be built to LEED Silver. More information: City of Asheville Sustainability Management Plan
	Thermal Electrification	No information available upon our review.
	Land Use Policy	The City of Asheville issued numerous recommendations pertaining to land use as part of its 2009 Sustainability Management Plan. These include developing relevant climate change projections to inform future land use decision-making, the consideration of region-level land use planning,

		the creation of a Transfer of Development Rights (TDR) mechanism, and efficient energy use in land use planning (such as expanding urban infill). More information: City of Asheville Sustainability Management Plan
Energy Supply	Resilient Supply	No information available from our review.
	Renewables and low carbon sources	The City of Asheville is scoping renewable energy opportunities through its Energy Innovation Task Force. A key goal of this task force in FY18 is to conduct a Long-Range Energy Alternatives Planning System (LEAP) analysis to further build out the case for renewables. In addition, the City of Asheville is a Solsmart Gold designated city. More information: City of Asheville Office of Sustainability 2017 Annual Report Asheville Earns Solsmart Gold Designation for Advancing Solar Energy Growth
Circular Economy/Waste	Waste Reduction	The City of Asheville has a robust recycling program and has a waste reduction goal of 50% by 2035. They have developed an interactive website where residents can easily determine what is and what is not recyclable, as well as how to reduce waste. More information: City of Asheville Department of Sanitation
	Habitat Protection	Asheville actively considered habitat protection in its goals set out in the 2009 Sustainability Management Plan. They recommended the creation of a non-regulatory map of potential conservation lands and the identification of community conservation priorities, as well as the development of a conservation/natural resources plan. These priorities are outlined in the 2018 Climate Resilience Assessment Report. More information: City of Asheville Sustainability Management Plan City of Asheville Climate Resilience Assessment Report
Climate Resilience		The City of Asheville has partnered with the National Environmental Modeling and Analysis Center to produce a cross-sectoral vulnerability assessment and a summary of options for building resilience and specific options for discrete geographic regions of Asheville. The next phase of the project will be public information sessions in early 2019, which will result in a Climate Resilience Resource Guide for the city. More information: City of Asheville Climate Resilience Assessment Report

Inclusion and Outreach	Equitable Programs	The City of Asheville has a Sustainability Advisory Committee on Energy and the Environment that consists of nine members appointed by the city council. The committee is tasked with developing recommendations for sustainable energy, waste reduction, economic development, and broader land use planning. This consist primarily of community members to ensure equity in sustainability decision-making. The City has also established an Equity Core Team of which the Sustainability Office is a part. More information: City of Asheville Sustainability Advisory Committee on Energy and the Environment

Notable Partnerships (if any)

To help support their efforts, Asheville is engaged in partnerships with Brightfield Transportation Solutions for the expansion of their EV charging infrastructure, as well as Duke Energy for their fuel switching initiatives.

Berkeley, CA

City Characteristics

Population	122,324
Growth Profile	Berkeley has grown 8.7% between 2010 and 2017.
Emissions Profile	Berkeley has reduced emissions 12% between 2000 and 2015.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Office of Energy and Sustainable Development within the Office of Development; previously located in Housing Department
Staffing	8 FTEs, a few part-time Roles include: • Outreach Coordinator • 3 Buildings Staff (municipal and large buildings/energy savings programs/green buildings and reach codes) • 2 staff focused on Climate Action Plan reporting, equity, adaptation
Structures for inter-agency collaboration	Utilizes CAP implantation and annual reports to City Council to guide engagement
Structures for community engagement	City Council Commissions Berkeley Climate Action Coalition
Funding sources referenced during interviews	General fund, grants (EPIC, 100RC), Building Energy Savings Program fees
Metrics referenced during interviews	Greenhouse gas inventory Working on 8 metrics related to CAP goals that will be available through Berkeley's Open Data portal

- Berkeley's sustainability program originated in the housing department as part of the city's weatherization program; was relocated to the Office of development giving them greater insight into green buildings, reach codes and zoning
    - Office currently has eight FTEs, but indicated this was short-staffed for them
- Office both implements programs and leads coordination with other agencies
- Office has strong support from the Mayor, City Council and community
- Office uses Climate Action Plan (CAP) as organizing principle for working with other agencies, which creates a high level of accountability because an update is provided to City Council every year
- Office uses Berkeley's Council Commission structure to engaged public, as well as the Berkeley Climate Action Coalition which they co-convene with a local non-profit, the Ecology Center

- Berkeley is considering how to integrate equity into their work, utilizing USDN's targeted universalism principle
    - They are developing a Community Driven Adaptation Workshop
- Sustainable Development Coordinator recommends supporting internal advocates at other agencies to help advance key priorities

Sustainability Program Summary

Climate Commitments

The City of Berkeley aims to reduce carbon emissions by 80% below 2000 levels by 2050. As part of this goal, they have set a sub-goal of a 33% reduction below 2000 levels by 2020. The City of Berkeley is a member of Mayors for 100% Clean Energy and the Mayors National Climate Action Agenda.

Existing Reports

- **Berkeley Resilience Strategy (2016)-**This document, published in collaboration with 100 Resilient Cities, details Berkeley's resilience-building strategies. It details goals and associated action steps in the areas of community preparedness and connectivity, clean energy transition acceleration, climate change adaptation, advancing racial equity, working together within city government, and building resilience.
- **Berkeley Climate Action Plan (2009)-**This Climate Action Plan sets forth Berkeley's 80% carbon reduction goal and its accompanying initiatives in pursuit of this. The City of Berkeley has released annual progress updates for their goals and initiatives, the most recent of which can be found here.

Current Programs

As part of their carbon reduction efforts, the City of Berkeley has set several goals for a more sustainable Berkeley and are actively tracking them in their annual CAP updates. These goals include zero net energy consumption in buildings, the widespread adoption of sustainable transportation modes, the achievement of zero waste, widespread EV adoption, and equitable sharing of the social and economic benefits of climate protection. Specific initiatives Berkeley is undertaking in pursuit of its carbon reduction goals can be found in the table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its Climate Action Plan the City of Berkeley has set the goal of making public transit, walking, and cycling the primary transportation modes in the city. In pursuit of this goal they have expanded their bike share and car share infrastructure, and plan to publish independent Bike Plan and Pedestrian Plan documents to further increase the use of sustainable transportation in the city. More information: City of Berkeley Climate Action Plan City of Berkeley Climate Action Plan 2017 Annual Update

	Electric Vehicles	As part of its Climate Action Plan, the City of Berkeley has set the goal of expanding electric vehicle usage. In pursuit of this goal, they have expanded their EV charging infrastructure significantly since their adoption of the CAP goals, including the implementation of a Residential Curbside EV Charging Pilot, as well as a community discount for solar & electric vehicles. Additionally, they are currently developing an Electric Vehicle Roadmap led by Cadmus. They also plan on conducting a Municipal Fleet analysis. Additionally, as part of its Resilience Strategy, the City of Berkeley set the goal of continuing to promote EVs as a low-carbon transportation source. More information: Berkeley Resilience Strategy Electric Vehicle Charging City of Berkeley Climate Action Plan 2017 Annual Update-Staff Report
Buildings	New Construction and Codes	As part of its Climate Action Plan, the City of Berkeley has implemented the goal of making green building the standard for new construction. As of the 2017 CAP Update, there are 70 verified Green Buildings, 51 of which are LEED Certified. They are also currently developing an analysis of opportunities to develop energy efficiency reach codes for new and remodeled buildings. More information: City of Berkeley Climate Action Plan City of Berkeley Climate Action Plan 2017 Annual Update
	Existing Buildings and Energy Conservation	As part of its Climate Action Plan, the City of Berkeley has set a Net Zero Energy consumption goal for buildings. As part of this goal they have implemented a building energy saving ordinance that requires all buildings to undergo a comprehensive energy assessment. Additionally, 286 single family homes have been upgraded through Energy Upgrade California and 612 multifamily units have been upgraded through Bay Area Multifamily Building Enhancements Program. In addition to these efforts, The City of Berkeley has formed community partnerships (such as with KyotoUSA, a nonprofit that works on renewable energy installation) to assess further retrofit opportunities. Finally, the City of Berkeley has a PACE financing program for property owners that allows for efficiency upgrades, renewable energy installation, and seismic retrofits, and additionally may be combined with rebates. More information: City of Berkeley Climate Action Plan 2017 Annual Update Property Assessed Clean Energy Financing

	Thermal Electrification	As part of its 2016 Resilience Strategy, the City of Berkeley set the goal of encouraging fuel-switching from natural gas in buildings. More information: Berkeley Resilience Strategy
	Land Use Policy	As part of its Climate Action Plan, the City of Berkeley has adopted the goal of ensuring that new development is coupled with enhancements to green and open space, in addition to urban forestry. In pursuit of this goal, it has sought to increase its urban tree cover, in addition to its expansion of green space. Additionally, as part of its Resilience Strategy, the City of Berkeley set the goal of incorporating climate impacts into long-term land use decisions. They also set the goal of replacing water-intensive landscapes with more drought-tolerant turf varieties throughout the city. More information: Berkeley Resilience Strategy Adapting to a Changing Climate - Tree Gain City of Berkeley Climate Action Plan
Energy Supply	Resilient Supply	As part of its Climate Action Plan, the City of Berkeley has set the goal of developing a local and decentralized renewable energy supply to meet their community energy needs. In pursuit of this goal, they received a $1.5 million grant from the California Energy Commission's Electric Program Investment Charge Program (EPIC) in fall 2016 to conduct a feasibility study for a community microgrid (titled the Berkeley Energy Assurance Transformation, or BEAT, initiative). This was pursuant to its goal of developing a clean micro-grid network that it set out in its Resilience Strategy. More information: Berkeley Resilience Strategy BEAT Microgrid
	Renewables and Low Carbon Sources	As part of its Climate Action Plan, the City of Berkeley has set the goal of developing a local and decentralized renewable energy supply to meet their community energy needs. In pursuit of this goal, they have accomplished over 2,000 solar rooftop projects within the city. They intend to conduct outreach for East Bay Community Energy in pursuit of additional solar expansion. Additionally, as part of its Resilience Strategy, the City of Berkeley set the goal of developing a Solar Action Plan to achieve 50% solar energy by 2030. More information: Berkeley Resilience Strategy

		City of Berkeley Climate Action Plan City of Berkeley Climate Action Plan 2017 Annual Update
Circular Economy/Waste	Waste Reduction	As part of its Climate Action Plan, the City of Berkeley has set the goal of achievement of Zero Waste by 2020. In pursuit of this goal, the city has achieved a 51% increase in curbside compost and an 89% increase in construction and demolition diversion as part of its robust recycling and waste reduction programs and outreach. They intend to publish a Zero Waste Strategic Plan and a Transfer Station Redesign Master Plan, as well as increase diversion at city facilities in the near future. More information: City of Berkeley Climate Action Plan City of Berkeley Climate Action Plan 2017 Annual Update Zero Waste
	Habitat Protection	No information readily available upon our review.
Climate Resilience		In partnership with 100 Resilient Cities, the City of Berkeley released a Resilience Strategy in 2016. It details the goals of building a connected and prepared community, accelerating their clean energy transition, adapting to a changing climate, advancing racial equity, working together within city government, and building regional resilience, with prospective action steps laid out in each area that dovetail with and compliment many of the existing programs laid out here. More information: Berkeley Resilience Strategy
Inclusion and Outreach	Equitable Programs	The City of Berkeley has a robust community outreach program as part of its CAP, which includes the formation of the Berkeley Climate Action Coalition. The coalition, consisting of business, education institutions, public health organizations, and other entity types, is the primary community network for the implementation of the CAP. Additionally, the City of Berkeley set out the goal of advancing racial equity as part of its Resilience Strategy and set the sub-goal of developing a City Racial Equity Action Plan in pursuit of this. More information: Berkeley Resilience Strategy Berkeley Climate Action Coalition Berkeley Resilience Strategy

Notable Partnerships (if any)

The City of Berkeley has partnered with Energy Upgrade California and the Bay Area Multifamily Building Enhancements Program for much of its residential retrofit work. In addition, they are seeking to partner with East Bay Community Energy for implementation of their renewable energy goals. Finally, as part of its Resilience Strategy, the City of Berkeley set the goal of building regional resilience and outlines many prospective partnerships (such as with the other 100RC Network Cities in California) that could be formed in pursuit of this goal.

More information:

City of Berkeley Climate Action Plan 2017 Annual Update

Berkeley Resilience Strategy

Boulder, CO

City Characteristics

Population	107,125
Growth Profile	Boulder grew 9.6% between 2010 and 2017.
Emissions Profile	The City of Boulder has reduced emissions by 13% since 2005.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Own office; started in CMO and was previously part of the Division of Planning, Housing and Sustainability
Staffing	18 FTE • 6 FTE working on Zero Waste, material consumption, food issue • 6 FTE working on climate and energy issues • 6 FTE working on local power
Structures for inter-agency collaboration	Informal collaboration; when setting up a working group, they develop a charter with expectations and roles
Structures for community engagement	City has centralized Community Engagement office that helps determine right level of engagement for projects
Funding sources referenced during interview	Four voter-approved dedicated taxes: • Sales Tax for open space • Trash Tax (fee on waste haulers) to support compost, recycling, and circular economy • Climate Action Plan Tax (tax on every kWh used in city) • Utility occupation Tax ○ Will sunset once municipalization is complete
Metrics referenced during interview	Not discussed

- Location in CMO office was not a good fit for Boulder because it limited collaboration with departments.
- Sustainability staff approaches informal collaboration with agencies by asking how they can help the other departments do the work they are already doing in a more sustainable manner.
- Stakeholder engagement has been an essential part of Boulder's success in passing mandates; while challenging and time consuming, staff considers is critical to progress.
    - Stakeholder engagement is centralized in a Community Engagement office that helps agencies determine the right level of engagement for projects.
        - Spectrum of engagement is: inform, consult, collaborate, engage

- When developing programs, sustainability staff tries to find market gaps that they can most effectively address.
    - For example, they are not offering EV purchase incentives because these are available at the state and federal level; focusing instead on supporting the build out charging infrastructure along transit corridors, on publicly accessible sites, and affordable housing.
- City has engaged Government Alliance on Racial Equity to train staff and assist in development of a city-wide equity framework.

Sustainability Program Summary

Climate Commitments

The City of Boulder has set an 80% carbon reduction goal by the year 2050 from a 2005 baseline. Additionally, the City of Boulder is a member of the Carbon Neutral Cities Alliance.

Existing Reports

- **Resilient Boulder 2017 Progress Report (2017)**-This infographic, produced in partnership with 100 Resilient Cities, gives a brief overview of progress made on goals set out in the Resilient Boulder document, as well as potential next steps.
- **Resilient Boulder (2016)**-This report, written in partnership with 100 Resilient Cities, details its goals for creating a more resilient Boulder. It contains sections on the context for Boulder's resilience challenges, their framework and approach, and strategies in action areas as diverse as hazard mitigation, community action, and ecosystem management and conservation.
- **Boulder's Climate Commitment (2016)**-This report details the actions it is taking towards its 80x50 goal in four actions areas: energy, ecosystems, resources, and community climate action. It puts forth the actions it seeks to undertake, highlights relevant community partners for each action area, and details next steps towards achieving its carbon reduction goals.

Current Programs

As part of this commitment, the City of Boulder has set goals in four distinct action areas: energy, ecosystems, resources, and community climate action. As of its 2016 Greenhouse Gas Inventory, the City of Boulder had achieved a 147,000-metric ton reduction. The varied and ongoing initiatives that have led to this reduction can be found in the table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its climate commitment, the City of Boulder is creating and expanding multiple mobility options. This includes the expansion of transit access, ride share program, and bike lanes, as well as increasing pedestrian efficiency by mobile route mapping. More information: Boulder's Climate Commitment-Energy

	Electric Vehicles	As part of its climate commitment, the City of Boulder is supporting the adoption of electric vehicles. In pursuit of this goal, the City of Boulder seeks to expand its EV charging infrastructure, in addition to developing an employee EV commuting pilot project. Finally, it seeks to promote electrification for the Regional Transit District (RTD) transit fleet. More information: Energy
Buildings	New Construction and Codes	As part of its climate commitment, the City of Boulder has set the priority of having all buildings in Boulder be high performance by 2050. This includes the implementation of net zero energy codes for new and existing buildings. More information: Boulder's Climate Commitment Boulder's Climate Commitment Landing Page
	Existing Buildings and Energy Conservation	As part of its climate commitment, the City of Boulder has prioritized having all buildings in Boulder be high performance by 2050. For existing buildings, this consists of the piloting of net zero energy retrofits and assisting building owners in identifying opportunities for switching from natural gas in buildings. For residential buildings, the City of Boulder seeks to implement time-of-sale efficiency requirements for new housing, increase rental housing compliance with energy efficiency requirements by 2019, and has implemented PACE financing for Boulder property owners. Additionally, the City of Boulder has a robust energy efficiency rebate program, called EnergySmart. This program, in addition to providing a home energy advisory and assessment service, provides rebates for energy efficiency upgrades as well as solar installation on existing buildings. More information: Boulder's Climate Commitment Boulder's Climate Commitment-Energy EnergySmart
	Thermal Electrification	As part of its 100% clean goal (see below), the City of Boulder has stated that it seeks to create fuel switching opportunities from natural gas for buildings. Additionally, as part of its EnergySmart program, the City of Boulder provides rebates for electrification upgrades such as heat pumps and hot water heaters. More information: EnergySmart-Allowed Projects
	Land Use Policy	As part of its climate commitment, the City of Boulder has included land use planning in its clean mobility goals. This includes the integration of mixed used development within

		neighborhoods, the creation of parking districts with enhanced mobility options, and the continuation of currently existing complete streets planning. More information: Boulder's Climate Commitment Boulder's Climate Commitment-Energy
Energy	Resilient Supply	As part of its climate commitment, the City of Boulder has prioritized having all buildings be high performance by 2050. As part of this goal, the City of Boulder seeks to build energy resilience by mapping opportunities for decentralization and energy system upgrades to sustain operations during power grid disruption. More information: Boulder's Climate Commitment-Energy
	Renewables and Low Carbon Sources	As part of its climate commitment, the City of Boulder has set a goal of 100% clean electricity by 2030. Actions in pursuit of this goal include piloting solar procurement programs in partnership with Boulder County, the municipalization of their electric supply so that renewable energy opportunities might be created, and the creation of building and vehicle fuel switching opportunities. Additionally, the EnergySmart program provides rebates for solar installation on new and existing buildings. More information: Resilient Boulder Boulder's Climate Commitment-Energy
Circular Economy/Waste	Waste Reduction	The City of Boulder is implementing a Universal Zero Waste Ordinance, which seeks to generate new materials from 85% of waste by 2025. As part of this, all single-family homeowners must subscribe to waste hauling services, all special events in Boulder are required to have both recycling and composting collection, and all recyclable materials must be directed to the Boulder County Recycling Center. More information: Universal Zero Waste Ordinance
	Habitat Protection	The City of Boulder is implementing robust habitat protection measures as part of their Open Space and Parks Master Plan. This includes the mixed-use development measures outlined in Boulder's Climate Commitment to project greenspace, as well as the expansion of the urban forest and the improvement of invasive species and disease/pest strategies. More information: City of Boulder-Ecosystems Boulder's Climate Commitment-Energy
Climate Resilience		In partnership with 100 Resilient Cities, the City of Boulder has produced the Resilient Boulder document, which details cross-sectoral actions the city plans to take to address its

		resilience challenges. Additionally, it has released a 2017 progress report on actions it has taken. These include community emergency preparedness training, climate data-sharing, community participation in wildlife conservation, and other initiatives for building resilience in Boulder. More information: City of Boulder-Resilience
Inclusion and Outreach	Equitable Programs	Boulder is implementing robust community outreach and inclusion mechanisms for climate action and resilience-building as part of its Resilient Boulder initiative, in partnership with 100 Resilient Cities. This includes community climate data-sharing, and the implementation of the Boulder Measures dashboard so community members can track and comment on a variety of its climate goals. In addition, the City of Boulder has implemented the Resilient Together program, which seeks to train community members in disaster preparedness measures as part of its Resilient Boulder initiative. More information: Resilient Boulder 2017 Progress Report City of Boulder Measures Dashboard

Regional Partnerships (if any)

The City of Boulder is actively attempting to promote the electrification of the Regional Transit District Fleet. It is also partnering with Boulder County on a number of carbon reduction and resilience initiatives.

Cambridge, MA

City Characteristics

Population	113,630
Growth Profile	Cambridge grew by 8% between 2010 and 2017.
Emissions Profile	The City of Cambridge is currently generating an updated inventory. The most recent information available, Cambridge's 2012 Greenhouse Gas Inventory showed a 20.1% decrease in municipal emissions since 2008.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Community Development Department; previously located in City Manager's Office
Staffing	13 FTE, 1 PTE, Master's degree candidate interns
Structures for inter-agency collaboration	Green Communities Interdepartmental Committee
Structures for community engagement	Active engagement, but no formal committee
Funding sources referenced during interview	Submits budget requests based on detailed strategic plans and associated cost estimates
Metrics referenced during interview	Annual GHG inventory, vehicle miles traveled, Building Energy Disclosure Ordinance

- Sustainability team has three main functions: (1) overseeing all climate mitigation and preparedness planning; (2) implementation of building energy policies and programs; and (3) implementation of sustainable transportation policies and programs
- Location in the Community Development Department makes them central to conversations around housing, economic development, and community planning; enables them to collaborate with other agencies in peer-to-peer fashion
- Office chairs monthly meeting of Green Communities Interdepartmental Committee which includes all departments that have environmental responsibilities to set goals and implement programs
- Office completes detailed strategic plans which are used to prioritize, make budget requests, and exercise influence over scope of work
- Director of Environmental and Transportation Planning credits Cambridge's Vehicle Trip Reduction Ordinance and Net Zero Buildings Plan as two of the most important policies/programs advancing sustainability in the community

- Equity is a core value of Cambridge, and the office has found engaging in USDN's equity work to be very valuable
- Director of Environmental and Transportation Planning recommends collaborating from the ginning on goal setting, bringing agencies together to achieve sustainability goals of the city, and working closely with the community, including affordable housing providers

Sustainability Program Summary

Climate Commitments

The City of Cambridge has committed to reducing emissions to 20% below 1990 levels by 2020, and carbon neutrality by 2050. More recently, the City of Cambridge adopted the goal of net zero energy consumption in buildings in pursuit of its carbon neutrality goal. The City of Cambridge is a member of ICLEI and the Mayors National Climate Action Agenda.

Existing Reports

- An updated Climate Action Plan is currently under development.
- **Low Carbon Energy Supply Strategy** (2018)-This report, published to Cambridge's Net Zero Action Plan, details opportunities for the decarbonization of Cambridge's energy supply. It assesses current and future demands and opportunities for renewables generation and develops scenarios for renewable energy delivery systems. Analysis is included on the risks, benefits, and feasibility of each scenario, along with potential implementation pathways for each respective scenario.
- **Climate Change Vulnerability Assessment (2016)**-This cross-sectoral vulnerability assessment examines climate vulnerabilities in the following key areas: critical infrastructure, social vulnerability, and economic impacts. A Climate Change Preparedness and Resilience Plan is currently under development, for release in late 2018/early 2019.
- **Net Zero Action Plan** (2015)-This planning document details its goal of net zero energy consumption in buildings in pursuit of its 2050 carbon neutrality goal. It puts forth action items in the following focus areas: energy efficiency in existing buildings, net zero new construction, energy supply, and investigation of a local carbon fund. It has released annual reports detailing its progress towards this goal. The most recent is linked here.
- **City of Cambridge Climate Protection Plan (2000)**-This Initial Climate Action Plan was completed in 2000 in response to Cambridge signing the Mayor's Climate Protection Agreement. It sets the goal of reducing emissions by 20% below 1990 levels by 2020. It names specific action items under the following focus areas: energy, transportation, land use, waste management, and implementation.

Current Programs

In pursuit of its carbon reduction goals, the City of Cambridge has undertaken initiatives in transportation, energy efficiency, renewables, and green building construction. These include the implementation of an EV discount program, the expansion of their EV charging infrastructure, the adoption and implementation of a Pedestrian Plan to increase the walkability of the city, as well as the adoption of a Net Zero Action Plan and accompanying Low Carbon Energy Supply Strategy and ongoing development of a Zero Waste Master Plan.

Sector	Area	Summary
Transportation	Multimodal	As part of its Climate Protection Plan, the City of Cambridge adopted the goal of reducing transportation-related GHG emissions, and discusses increasing bike rideshare, and public transit infrastructure in this context. To this end, the City of Cambridge has implemented a Pedestrian Plan that seeks to make walking more attractive, provide design standards for pedestrian infrastructure improvements, outline strategies for encouraging walking over automobile use, and provide an action plan for an efficient non-automobile network through Cambridge. This includes the expansion of their multi-use path infrastructure, as well as expansion of public transportation. More information: City of Cambridge Pedestrian Plan City of Cambridge Climate Protection Plan
	Electric Vehicles	As part of its Climate Protection Plan, the City of Cambridge adopted the goal of reducing transportation-related GHG emissions and includes EVs and potential financing strategies for consideration. Currently, the City of Cambridge participates in the Green Energy Consumers Alliance (GECA) Drive Green Electric Vehicle discount program. Through this program GECA provides discounts on specific cars that residents may sign up for, in addition to an assessment of state and federal rebates for which the resident may qualify. Additionally, the City of Cambridge is expanding city-owned EV charging stations (which drivers can locate with an online app). More information: City of Cambridge-Electric Vehicles
Buildings	New Construction and Codes	In 2013, the City of Cambridge adopted the Net Zero Action Plan, which seeks to achieve net zero energy consumption in Cambridge buildings by 2040. The plan outlines several actions the City intends to take for new construction. These include the introduction of a net zero requirement, increasing green building requirements in Cambridge's zoning ordinance, and creating net zero incentives in its zoning code such as height relaxation. The City of Cambridge has also implemented the Massachusetts Stretch energy code, which mandates greater performance requirements than the Commonwealth's mandatory base code. Additionally, it has implemented a new policy that all new municipal buildings must follow

		LEED design standards (all buildings must be LEED certified, buildings over 50,000 square feet must be LEED Silver, and buildings in the Kendall and Central Square area must be LEED Gold). More information: Getting to Net Zero Framework City of Cambridge-Green Buildings City of Cambridge-Stretch Code
	Existing Buildings and Energy Conservation	As part of the Net Zero Action Plan this plan, the City outlines several actions it plans to take for retrofits. These include the introduction of a custom retrofit program and new performance requirements for existing buildings, as well as the implementation of the Stretch energy code, and a new Building Energy Use Disclosure Ordinance for municipal buildings over 50,000 square feet, residential buildings with 50 or more dwelling units, and non-residential properties over 25,000 square feet. Additionally, the City has several ongoing efficiency initiatives for residential properties, including an energy pilot program for multifamily properties and a robust rebate program in pursuit of a 100% LED goal. Finally, the City of Cambridge is piloting a new retrofit advisor service to guide multifamily property owners through the process of obtaining energy efficiency upgrades assessment for the 2018 winter season. More information: City of Cambridge-Green Buildings Getting to Net Zero Framework City of Cambridge-Stretch Code City of Cambridge-Multifamily Energy Pilot City of Cambridge-Building Energy Use Disclosure Ordinance City of Cambridge-Energy Efficiency and Renewable Energy
	Thermal Electrification	As part of its Low Carbon Energy Supply Strategy, the City of Cambridge assessed three different building electrification scenarios, one with district heating and cooling, and one with multiple supply technologies. More information: City of Cambridge Low Carbon Energy Supply Strategy
	Land Use Policy	As part of its 2001 Climate Protection Plan, the City of Cambridge adopted goals pertaining to land use, including the expansion of mixed-use, transit-oriented development and open space. Strategies included the expansion of pedestrian infrastructure, the expansion of multi-use paths, and working towards transit-oriented regional land use planning. More information on specific current initiatives can also be found in the currently active Pedestrian Plan. More information: City of Cambridge Climate Protection Plan City of Cambridge Pedestrian Plan
Energy	Resilient Supply	The City of Cambridge has released a Low Carbon Energy Supply Strategy, in which it assesses energy demand, opportunities for

		renewables generation, develops scenarios for renewable energy delivery systems, and assesses the risks, benefits, and feasibility of each scenario along with potential implementation pathways for each respective scenario. As part of this strategy, it outlines the potential to create district energy networks as well as implement thermal storage to increase energy resilience. More information: City of Cambridge Low Carbon Energy Supply Strategy
	Renewables and Low Carbon Sources	In its 2001 Climate Protection Plan, the City of Cambridge adopted the goal of promoting "cleaner and greener electricity". This goal was carried forward in its 2013 Net Zero Action Plan, in which the City outlined actions it plans to take towards clean, renewable energy. These include the introduction of a rooftop Solar Ready requirement (currently partially implemented for new buildings of three or fewer stories) as well as the development of a citywide Low Carbon Energy Supply Strategy (as noted above). In addition to these actions outlined in the Net Zero Action Plan, the City has ongoing renewables initiatives, including solar installation resources for residential properties as well as resources for fuel switching in residential buildings. More information: Getting to Net Zero Framework City of Cambridge-Energy Efficiency and Renewable Energy City of Cambridge Low Carbon Energy Supply Strategy
Circular Economy/Waste	Waste Reduction	In its 2001 Climate Protection Plan, the City of Cambridge adopted the goal of promoting waste prevention. Strategies included the implementation of a waste prevention program for city government, the increase of recycling, and the promotion of residential waste diversion through education/outreach for consumption reduction and proper waste sorting. These goals were followed through on in 2018, with the city beginning to develop a new Zero Waste Master Plan. Additionally, the city has implemented a curbside compost program for buildings with 1-12 units, with an intent to expand. The City intends to achieve 30% waste diversion by 2020, and 80% waste diversion by 2050. More information: City of Cambridge-Department of Public Works City of Cambridge Climate Protection Plan City of Cambridge Zero Waste Master Plan Feedback Workshop City of Cambridge-Curbside Composting
	Habitat Protection	No information readily available upon our review.
Climate Resilience		The City of Cambridge has completed a cross-sectoral climate vulnerability assessment, focusing on projected climate impacts from temperature, precipitation, and sea-level rise. A Climate Preparedness and Resilience Plan is currently under development, for release in late 2018/early 2019. More information:

		City of Cambridge Climate Change Vulnerability Assessment
Inclusion and Outreach	Equitable Programs	The City of Cambridge has implemented a sustainability dashboard, where citizens can track and comment on its progress on climate and transportation-related goals. More information: City of Cambridge Sustainability Dashboard

Regional Partnerships (if any)

None were noted during interview.

Columbia, MO

City Characteristics

Population	121,717
Growth Profile	Columbia, MO has grown 11.6% between 2010 and 2017.
Emissions Profile	Emissions increased 17% between 2001 and 2015.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	City Manager's Office
Staffing	6 FTEs, plus two additional staff members that do not report to Sustainability Manager
Structures for inter-agency collaboration	Strong informal relationships; partnerships in agencies identified for CAP development
Structures for community engagement	Informal engagement by and with advocates
Funding sources referenced during interview	Enterprise Accounts
Metrics referenced during interview	GHG inventory, Star City Planning to develop common metrics through CAP and developing a dashboard

- Sustainability Manager seeking to restructure office to have a Sustainability Director, Climate Programs Manager, Adaptation Specialist, Mitigation Specialist, Senior Environmental Educator, and Outreach and Engagement Lead
    - In line with existing staff expertise, but would better enable office to execute on scope of work
- Office will release a Climate Action and Adaptation Plan (CAP) in June 2019
- City does not have a formal collaboration process but is looking to create one for implementation of the CAP; considering adapting a structure they utilize in Fort Collins
- Sustainability Manager recommends brining people into the fold of sustainability, determining how to celebrate and acknowledge their work, and identify priority areas to cultivate relationships to get work accomplished

Sustainability Program Summary

Climate Commitments

The City of Columbia has set the goal of reducing community emissions 25% by 2035, 80% by 2050, and 100% by 2060. Additionally, it has set the municipal emissions reduction goals of 50% by 2035 and 100% by 2050. The City of Columbia is a member of the Mayors National Climate Action Agenda.

Existing Reports

- A Climate Action and Adaptation Plan is currently under development, to be released May 2019.
- **Columbia's Vulnerability to Climate Change Impacts (2017)-**This report assesses vulnerability to climate change across sectors. It includes assessments in the following areas: health, safety and well-being, the built environment, water supply and quality, and energy, materials and waste. The end of the report contains next steps for the city, including the development of a Climate Action and Adaptation Plan.

Current Programs

Initiatives Columbia has taken in pursuit of its emissions reduction goals include implementation of demand-side management practices, a renewable energy ordinance for the city's power supply, as well as steps to increase multimodal transit. These and additional notable programs are outlined in the "current programs" table below.

Sector	Area	Summary
Transportation	Multimodal	The City of Columbia is taking steps to increase mass transit usage and access, as well as increased cycling and bike path usage. More information: City of Columbia -Transportation
	Electric Vehicles	No information readily available upon our review.
Buildings	New Construction and Codes	No information readily available upon our review.
	Existing Buildings and Energy Conservation	The City of Columbia is engaging in several energy efficiency programs, including the implementation of demand-side management practices and a new energy efficiency upgrade initiative for rental properties. Additionally, it is conducting robust community outreach in partnership with Columbia Power & Light for the implementation of residential energy efficiency measures. More information: City of Columbia-Energy City of Columbia-Energy Efficiency and Sustainability
	Thermal Electrification	No information readily available upon our review.
	Land Use Policy	No information readily available upon our review.
Energy	Resilient Supply	No information readily available upon our review.
	Renewables and Low Carbon Sources	The City of Columbia has implemented a renewable energy ordinance for the city's power supply portfolio. Currently it has 15.70% of its portfolio is from renewable sources. More information: City of Columbia-Energy

Circular Economy/Waste	Waste Reduction	The City of Columbia has a robust recycling and waste reduction program, including education programs for community education regarding waste reduction. More information: City of Columbia Utilities-Solid Waste
	Habitat Protection	The City of Columbia is implementing several habitat conservation initiatives as a part of its Community Conservation Program. This includes an education program for homeowner backyard management, a restoration program for Rock Quarry Road, and outreach initiatives for invasive species management. More information: City of Columbia-Community Conservation
Climate Resilience		The City of Columbia has completed a cross-sectoral vulnerability assessment and released the summary of results to the public. It intends to develop a Climate Action and Adaptation Plan, to be approved May 2019. More information: City of Columbia-Climate Action
Inclusion and Outreach	Equitable Programs	No information readily available upon our review.

Regional Partnerships (if any)

None were noted during interview.

Evanston, IL

City Characteristics

Population	74,756
Growth Profile	The City of Evanston has grown by .4% between 2010 and 2017.
Emissions Profile	As of 2012, the City of Evanston had reduced its emissions by 7% below 1990 levels, and as of 2017 had reduced emissions by 19% compared to a 2005 baseline.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	City Manager's Office
Staffing	1 FTE and AmeriCorps Fellow
Structures for inter-agency collaboration	Climate Action and Resilience Plan (CARP) requires department co-lead for each action
Structures for community engagement	CARP authored by external advocates
Funding sources referenced during interview	Not discussed
Metrics referenced during interview	Not discussed

- Considers role to be facilitating, coordinating, and providing advice on internal and community policy and programs, as well as providing expert policy advice to Mayor and City Council
- CARP plan adopted December 2018 was developed by external stakeholders and requires a departmental co-lead for all priority areas; sustainability office engaged departments that would be impacted in advance of City Council vote to incorporate feedback
- Strong support from City Manager, City Council, and community
- Sustainability Coordinator advised that sustainability offices do not need large budgets or extensive staffing to be successful; ideal structure could be two staff people, two or three interns, and remaining resources distributed with input across all other departments implementing sustainability work
    - Has sought to expand capacity of other office before his own to ensure work can be carried out effectively

Sustainability Program Summary

Climate Commitments

As part of its Climate Action and Resilience Plan Draft, the City of Evanston's current climate commitment is to achieve carbon neutrality by 2050. In previous climate action plans and reports the City of Evanston had set previous goals to reduce emissions to 7% below 1990 levels by 2012, and to

achieve a 20% total community-wide emissions reduction by 2016, respectively. The City of Evanston is a member of Mayors for 100% Clean Energy and the Mayors National Climate Action Agenda.

Existing Reports

- **Climate Action and Resilience Plan Draft (September 2018)**-This Draft Climate Action and Resiliency Plan sets forth the goal of achieving carbon neutrality for the City of Evanston by 2050, in addition to the goal of building city-level climate resilience. It details actions the City of Evanston plans to take in each of these areas, and contains a separate section on implementation, accountability, and partnerships as well as commitments from large employers in Evanston such as Presbyterian Homes, Rotary International, and Northwestern University to assist in the plan's implementation.
- **Evanston Livability Plan Final Report (2017)**-This report updates and evaluates the Evanston Livability Plan established in 2013. It outlines their overall success as well as how they fell short in hitting their 20% goal while achieving a 19% reduction. Evanston indicates that its success was driven by its Community Choice Aggregation (CCA) program, which supplies 100% green power to participating residents and small businesses. The City also indicated that it fell just short of its 20% reduction goal due to attrition in the program and some accounts being omitted under the first aggregation agreement.
- **Evanston Livability Plan (2013)**-This plan builds upon the City's initial emission reduction accomplishments (pursuant to its 2008 Climate Action Plan) to achieve a 20% reduction in GHG emissions from 2005 levels by 2016. It outlines a five-part strategy for doing so, including residential green power, business green power, building retrofits, transportation change, and "city & other major institutions", and outlines specific strategies in each of these focus areas.
- **Evanston Climate Action Plan (November 2008).** This Climate Action Plan was Evanston's first Climate Action Plan, created in response to their signing of the US Mayors Climate Protection Agreement. This plan sought to reduce their emissions to 7% below 1990 level by 2012, which required a 13% total reduction from 2008 levels. It outlines more than 200 strategies in nine different focus areas (transportation & land use, energy efficiency & buildings, renewable energy resources, waste reduction & recycling, forestry, prairie & carbon offsets, food production and distribution, policy & research, education & engagement, and communications & public relations).
    - The City of Evanston released CAP progress reports for the first year following the plan, as well as in 2011 and 2012

Current Programs

As part of its current climate commitment, the City of Evanston is undertaking a range of transportation and building efficiency measures, including expansion of EV infrastructure, the adoption of zero net energy building codes, and the implementation of a 100% renewable energy goal by 2035. Additionally, they are implementing a 75% waste diversion goal by 2035 and are undertaking measures to restore and expand its greenspace and natural areas. Information on specific initiatives and programs can be found in the table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to reduce vehicle miles traveled by "increasing trips made by walking, bicycling, and transit". To do this, the city seeks to implement its Multimodal Plan, Bicycle Plan, Public Health Plan, and Complete Streets Policy, as well as provide bicycle training to residents. Additionally, it seeks to build out convenient and safe bicycle parking, as well as provide incentives for development projects that include transportation demand-management strategies. Finally, they have a robust public transit system and a shared use mobility center resource that allows residents to access a map of Evanston's shared transport resources. More information: City of Evanston Climate Action and Resiliency Plan Draft
	Electric Vehicles	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to increase the use of electric vehicles. In pursuit of this goal, the City of Evanston is seeking to incentivize EV charging infrastructure, partner with fleet operators and transit providers to work towards a 100% EV goal by 2035. Additionally, they seek to implement community education initiatives for EVs to increase residential usage. More information: City of Evanston Climate Action and Resiliency Plan Draft
Buildings	New Construction and Codes	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to reduce building energy consumption by 35% from 2005 level by 2035. In pursuit of this goal, the city seeks to develop a net-zero transition strategy for building standards and require net-zero building codes for residential and commercial new construction by 2025. More information: City of Evanston Climate Action and Resiliency Plan Draft
	Existing Buildings and Energy Conservation	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to reduce building energy consumption by 35% from 2005 level by 2035. In pursuit of this goal, the city seeks to require net-zero greenhouse gas emissions codes for building retrofits by 2025. Additionally, they seek to adopt policies that "require building retro-commissioning for larger building types." Additionally, the City of Evanston seeks to implement a PACE financing program for residential and non-residential energy efficiency upgrades. In addition, they seek to include energy audits as part of their building permit approval processes for modifications and additions. Additionally, they seek to implement an energy performance transparency program. More information: City of Evanston Climate Action and Resiliency Plan Draft

	Thermal Electrification	No information readily available upon our review.
	Land Use Policy	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to preserve and restore Evanston's "urban canopy, natural areas, native vegetation and green space". In pursuit of this goal, they are seeking to prioritize land protection and green space expansion. More information: City of Evanston Climate Action and Resiliency Plan Draft
Energy	Resilient Supply	No Information available upon our review.
	Renewables and Low Carbon Sources	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to achieve 100% renewable energy for "all properties in Evanston" by 2035. In pursuit of this goal, the City seeks to support CCA and expanding their CCA program reach, support community solar, evaluate energy options for those residents not eligible for aggregation, and create an education program for commercial property owners. In addition, they seek to implement a sustainable business recognition program with renewable energy usage as a focal point. More information: City of Evanston Climate Action and Resiliency Plan Draft
Circular Economy/Waste	Waste Reduction	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to increase their waste diversion rate to 50% by 2020 and 75% by 2035 from 2011 levels. In pursuit of this goal, the City of Evanston seeks to create a Zero Waste Strategic Plan that will outline specific actions. Proposed actions include requiring retailers and restaurants to divert their unsold food as well as designate zero-waste coaches within their staff and eliminate single-use plastics by 2025. Additionally, they seek to require recycling at all properties and provide equal access to waste diversion services, as well as update and revise their Disposable Plastic Shopping Bag Ban. More information: City of Evanston Climate Action and Resiliency Plan Draft
	Habitat Protection	As part of its Climate Action and Resilience Plan Draft, the City of Evanston aims to preserve and restore Evanston's urban canopy, natural areas, native vegetation and green space, and cites habitat protection as a primary motivator for this goal. In pursuit of this goal, the city seeks to prioritize natural area conservation and expansion throughout the city, adopting a tree preservation ordinance, and prioritizing the planting of native plant/tree species. More information: City of Evanston Climate Action and Resiliency Plan Draft
Climate Resilience		The City of Evanston incorporated resiliency measures into its Climate Action and Resiliency Plan in their own section. These included the implementation of green infrastructure as a stormwater management strategy, mitigation of extreme heat

		through the establishment of cooling centers and the planting of shade trees, community education for climate and emergency preparedness, and the protection of vulnerable populations through building retrofits, financial assistance, outreach, and the promotion of alternate transit modes as a fuel price buffer measure, among other related prospective actions. More information: City of Evanston Climate Action and Resiliency Plan Draft
Inclusion and Outreach	Equitable Programs	Evanston's Climate Action and Resilience Plan Draft has an Implementation, Accountability, and Partnerships section. This details partnership in their policy development process, including their Equity and Empowerment Commission, in addition to a wide variety of other boards, committees, and commissions, many of which contain community members. Additionally, the plan cites equity as a guiding principle from the outset and says that its definition of "equity-centered" has been approved by the Office of Equity and Empowerment. More information: City of Evanston Climate Action and Resiliency Plan Draft City of Evanston Equity and Empowerment Commission

Notable Partnerships (if any)

The City of Evanston has secured commitments from large employers in the city such as Presbyterian Homes, Rotary International, and Northwestern University to assist in the implementation of their Climate Action and Resiliency Plan. Additionally, the City is showcasing what these employers have already accomplished towards the City's goals.

Fort Collins, CO

City Characteristics

Population	165,080
Growth Profile	Fort Collins has grown 14.1% between 2010 and 2017.
Emissions Profile	Emissions have been reduced 17% since 2005.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Sustainable Service Area (one of 7 Service Areas in the City)
Staffing	30 FTE, 10 PTE (within Environmental Sustainability Office 14 FTE, 6-10 PTE)
Structures for inter-agency collaboration	Fort Collins has a comprehensive team structure which is utilized to advance Service Area priorities; includes the following, raised during interview: • City Executive Leadership Team (City Manager, Deputy City Manager, Service Area Directors) • Lead Team (Department Directors, communication and financial leads) • Integration Team (voluntary, can bring topics forward for discussion) • Interdepartmental Sustainability Team • Business Engagement Team • Climate Economy Team • Climate Action Plan Implementation Team (10 sub-teams)
Structures for community engagement	Community Advisory Committee
Funding sources referenced during interview	Biannual budget
Metrics referenced during interview	Climate Action dashboard to be launched in January

- Fort Collins takes a triple bottom line approach to their Sustainability Service Area; office includes:
  - Environmental Sustainability
  - Economic Sustainability
  - Social Sustainability
- City has extensive teaming structure; provides ample opportunity to collaborate and offer opportunities to engage, but impacts capacity of staff to carry out work in a sustainable manner
- City Manager and Council are supportive; do hear questions of cost implications and balance with other priorities

- Director of Environmental Services recommended focusing on organizational change management, acknowledging that even the best plan ultimately rests on the ability of staff to implement it
- Highlighted USDN as a resource

Sustainability Program Summary

Climate Commitments

The City of Fort Collins has committed to carbon neutrality by 2050. In pursuit of this goal, they have set the sub-goals of reducing greenhouse gas emissions to 20% below 2005 levels by 2020, and 80% below 2005 levels by 2030. The City of Fort Collins is a member of the Mayors National Climate Action Agenda.

Existing Reports

- **Climate Action Plan 2017 Community Carbon Inventory (2017)-**This report provides a second progress report on meeting its carbon reduction goals. It highlights the areas of emissions in which progress has been made, as well as specific actions taken in a 2-page infographic format.
- **Climate Action Plan-2016 Community Carbon Inventory (2016)-** This report provides a first progress report on meeting its carbon reduction goals. It details the areas of emissions in which progress has been made, as well as highlighted actions in these areas.
- **Climate Action Plan Framework (2015).** This framework for climate action details the City of Fort Collins' carbon reduction goals and associated strategies in the areas of buildings, advanced mobility, energy supply and delivery, and waste reduction/materials regeneration. Additionally, it contains sections on triple bottom line considerations (including increased resiliency and support for city strategic plan objectives), what this plan means for the community, near-term actions, and accountability and associated metrics for achieving the goals set out in the plan.

Current Programs

As part of its carbon reduction goals, the City of Fort Collins outlines specific strategies in the areas of buildings, advanced mobility, energy supply and delivery, and waste reduction and materials generation in its 2015 Climate Action Plan Framework, and report progress on these goals in its 2016 and 2017 Community Carbon Inventories. Specific programs it is implementing in pursuit of its carbon neutrality goal can be found in the table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its Climate Action Plan Framework, the City of Fort Collins has adopted the goal of reducing vehicle miles traveled by 29%. In pursuit of this goal, the city weeks to shift lands use patterns to reduce driving as a primary transportation mode. Its strategies for doing this include the pursuit of a "complete streets" policy, evaluation of their parking requirements, and evaluation of retrofitting, charging for, and reducing on-street parking. Additionally, they seek to expand their mass transit network, offer their public transit data to third-party

		developers for web-based or mobile transit apps, as well as to grow car share and ride share programs. As of their 2017 Community Carbon Inventory, the City of Fort Collins had achieved a 10% reduction in vehicle miles traveled since 2005, and the percentage of trips taken by alternate transportation modes had hit 22%. Additionally, they plan to offer bus service 365 days a year when feasible. More information: City of Fort Collins Climate Action Plan Framework
	Electric Vehicles	As part of its Climate Action Plan Framework, the City of Fort Collins has adopted the goal of having one in two new passenger cars purchased be an electric vehicle by 2030. In pursuit of this goal, the City of Fort Collins seeks to implement community outreach and education on electric vehicles, expand its EV charging infrastructure, offer incentives for would-be owners of EVs, provide time-of-use pricing to incentive EV charging during off-peak hours, and provide a central market to buy and sell used EV batteries. Additionally, they are undertaking a variety of strategies to electrify commercial and municipal fleets, including optimizing EV driving schedules, and the facilitation of access to third-party leasing agents who can provide EV services as well as the alignment of city budgeting under a single point of contact for fleet purchasing/procurement and operational expense decisions. More information: City of Fort Collins Climate Action Plan Framework
Buildings	New Construction and Codes	As part of its Climate Action Plan Framework, the City of Fort Collins has adopted the goal of a 3% annual reduction in building energy use by 2030. In pursuit of this goal, they are seeking to continue to adopt energy codes for residential and commercial buildings in addition to local requirements to exceed these standards. Additionally, they seek to engage local builders and contractors to determine best practices and strategies for meeting and exceeding the codes the city adopts, and reward builders with incentive programs for exceeding their codes. Finally, they want to encourage demand response for new construction by establishing variable energy pricing. More information: City of Fort Collins Climate Action Plan Framework
	Existing Buildings and Energy Conservation	As part of its Climate Action Plan Framework, the City of Fort Collins has adopted the goal of a 3% annual reduction in building energy use by 2030. In pursuit of this goal, they are seeking to improve their efficiency programs, enable homeowners to participate in energy efficiency upgrades through the development of financing options, the promotion of energy efficiency technologies through building and home owner outreach and incentives, and the implementation of

		requirements for the communication of a home's efficiency. Additionally, the City of Fort Collins seeks to collect and publicize data on building energy use. Finally, the City wants to raise standards for Energy Use Intensity in commercial buildings. As of their 2017 Community Carbon Inventory, community electricity use was down by 16% since 2005. More information: City of Fort Collins Climate Action Plan Framework City of Fort Collins 2017 Community Carbon Inventory
	Thermal Electrification	As part of its Climate Action Plan Framework the City of Fort Collins seeks to shift heating loads to biofuels, geothermal, and electrification with solar/wind power sources. In pursuit of this strategy, they seek to develop utility programs that encourage fuel switching for renovation and replacements, as well as the "adoption of standard and/or codes for major renovations to increase use of non-natural gas heating loads." As of their 2017 Community Carbon Inventory, natural gas use had decreased by 15% per capita since 2005. More information: City of Fort Collins Climate Action Plan Framework City of Fort Collins 2017 Community Carbon Inventory
	Land Use Policy	As part of its Zero Waste goal in its Climate Action Plan Framework, the City of Fort Collins outlines a carbon sequestration strategy that includes the preservation and conservation of lands that can serve as carbon sinks. This includes the supporting of initiatives that develop and preserve greenspace and wildlife habitats, wetlands, and watersheds. More information: City of Fort Collins Climate Action Plan Framework
Energy	Resilient Supply	No information readily available upon our review.
	Renewables and Low Carbon Sources	As part of its Climate Action Plan framework, the City of Fort Collins has adopted three goals: that carbon intensity of utility-scale electricity will be 80% lower in 2030 than 2005 level, that 50% of new construction in 2030 will have enough solar PV for net zero energy use, and that 22% of existing homes and 50% of existing businesses will have installed solar. In pursuit of these complementary goals, the City of Fort Collins seeks to drive solar adoption on both residential and commercial scale. It is doing so through the expansion of a Solar Power Purchase Program, expansion of community solar options, and the adoption of commercial PACE for solar PV installation. Additionally, the city seeks to undertake community outreach and education for residential solar PV in addition to the provision of funding and incentives, as well as the consideration of an Integrated Utility Services program in

		which consumers can finance utility-facilitated solar purchases with minimal impacts on their utility bills. As of their 2017 Community Carbon Inventory, the City of Fort Collins had adopted hit 10 MW of solar from over 1000 distinct systems. Additionally, the City aims to install 150 MW of wind energy capacity to boost their renewable energy resources to above 50% of their total portfolio. More information: City of Fort Collins Climate Action Plan Framework City of Fort Collins 2017 Community Carbon Inventory
Circular Economy/Waste	Waste Reduction	As part of its Climate Action Plan framework, the City of Fort Collins has adopted the goal of increasing waste diversion to 75% by 2020, 90% by 2025, and zero waste by 2030. There are a range of actions the City is undertaking in pursuit of this goal, ranging from the completion of a community recycling center, advancing municipal readiness to engage in waste-to-clean-energy activities, seeking funding support for a resource recovery park, coordination with regional land conservation efforts, as well as the supporting of private sector business development in areas such as food scraps composing and glass sorting. Finally, they seek to implement several community outreach and education initiatives pertaining to zero waste, including piloting zero waste strategies through their EcoDistrict and Neighborhood Scale Sustainability program. As of their 2017 Community Carbon Inventory, they had achieved a 70% reduction in Solid Waste, and all major grocers in the city had composting. More information: City of Fort Collins Climate Action Plan Framework City of Fort Collins 2017 Community Carbon Inventory
	Habitat Protection	As part of its Zero Waste goal in its Climate Action Plan Framework, the City of Fort Collins outlines a carbon sequestration strategy that includes the preservation and conservation of lands that can serve as carbon sinks. This includes the supporting of initiatives that develop and preserve greenspace and wildlife habitats, wetlands, and watersheds. More information: City of Fort Collins Climate Action Plan Framework
Climate Resilience		The City of Fort Collins committed to releasing a full municipal adaptation plan by the end of 2018. More information: https://www.fcgov.com/climateadaptation/
Inclusion and Outreach	Equitable Programs	As part of its Climate Action Plan framework, the City of Fort Collins outlines the triple bottom line considerations of its various climate goals which includes community health and well-being. Additionally, the plan itself contains a number of community outreach, education, and involvement strategies in

		each of its focus areas. Finally, its strategies include financing for LMI households, such as PACE. More information: City of Fort Collins Climate Action Plan Framework

Notable Partnerships (if any)

Fort Collins collaborates regionally on electricity distribution and watershed planning.

Palo Alto, CA

City Characteristics

Population	67,108
Growth Profile	The City of Palo Alto has grown 4.97% between 2010 and 2017.
Emissions Profile	The City of Palo Alto had reduced emissions by 36% from 1990 levels in 2016.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Undergoing transition; previously located in City Manager's Office, Department of Public Works, and as standalone office
Staffing	1 FTE
Structures for inter-agency collaboration	Palo Alto uses a three-tiered structure: • Sustainability Advisory Board (includes City Manager) • Sustainability Leadership Team • Sustainability Working Groups ○ Produces quarterly report on KPIs for presentation to Sustainability Advisory Board
Structures for community engagement	Community Environmental Action Partnership (former engagement) CoolBlock Challenge
Funding sources referenced during interview	State funding Most funding allocated to departments, not office itself
Metrics referenced during interview	Electrification percentage, single-occupancy vehicle mode share, transit ridership, commute benefit participants, PCA water use, recycling, EV penetration

- Palo Alto's Chief Sustainability Officer recently left, and it is not anticipated that the position will be backfilled; city is in the process of determining the best location for the remaining staff member
- Office has been located in a range of offices and departments and expressed that there are tradeoffs of each that should be considered
- City has a three-tiered sustainability structure through which they create strong accountability; progress is reporting quarterly to the City Manager
  - Sustainability staff does not need attend all of the meetings; they operate successfully independently
- Palo Alto's CoolBlock Challenge engages households on a residential block to reduce carbon
  - In the second year of piloting the program, 88 households are engaged and have saved an average of 7.1 tons of carbon per household per year
- The city has achieved carbon neutral electricity and natural gas through purchasing offsets

    - See this as a bridge solution
- Palo Alto is looking at ways to address transportation emissions, which are 72 percent of their remaining emissions
    - Considering how to reduce single occupancy vehicle trips downtown, improving bike infrastructure, increasing first and last mile connectivity, implementing parking management strategies, and decreasing city fleet fuel consumption and idling
- Strong support comes from the City Manager, City Council, and community

Sustainability Program Summary

Climate Commitments

The City of Palo Alto has committed to an 80% reduction in greenhouse gas emissions from 1990 levels by 2030. Palo Alto is a member of Mayors for 100% Clean Energy and the Mayors National Climate Action Agenda.

Existing Reports

- **2018-2020 Sustainability Implementation Plan (2018)-**This follow-up to the City's initial Sustainability and Climate Action Plan provides implementation roadmaps for CO2 emissions reduction in four key action areas: Energy, Mobility, Electric Vehicles, and Water.
- **Sustainability and Climate Action Plan Framework (2017)-**This planning document is the City's initial framework for achieving its "80x30" goal. It outlines specific action items in the areas of mobility, building energy efficiency and electrification, zero waste and the circular economy, water management, sea level rise response, municipal operations, natural environment protection, utilities, community behavior, information systems, and financing strategies.

Current Programs

In pursuit of its carbon reduction goal the City of Palo Alto has outlined a number of initiatives it plans to undertake in its climate action plan and sustainability implementation plan documents. These initiatives include the expansion of its EV charging infrastructure, the shifting of land use to reduce vehicle miles traveled (VMT), the requirement of net zero buildings, and the implementation of a Zero Waste goal, among many other complimentary programs. Information on specific planned initiatives is outlined in the table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its 2018-2020 Sustainability Implementation Plan, the City of Palo Alto seeks to reduce single-occupancy vehicle (SOV) travel as well as increase the convenience of alternate transit modes. It plans to fund their Transportation Management Administration to reduce SOV trips downtown by 30%, increase bicycle boulevard mileage by 13.1 miles, explore parking management strategies, evaluate the use of city vehicles as rideshares, explore transit-oriented

		development, and explore “re-establishing and expanding” their citywide bike share problem. Palo Alto plans to evaluate this through SOV commute mode share, transit ridership, and commute benefits participation. More information: City of Palo Alto 2018-2020 Sustainability Implementation Plan
	Electric Vehicles	As part of its 2018-2020 Sustainability Implementation Plan, the City of Palo Alto seeks to “accelerate EV penetration” and make electric vehicles cost-effective in the city. In support of these goals, it plans to “evaluate incentives, outreach, policies, and financing options to stimulate charging infrastructure and EV ownership/use”. Additionally, Palo Alto plans to develop a plan for expanding EV charging infrastructure, expand EV deployment in the municipal fleet, and expand EV community outreach, among many other potential measures. More information: City of Palo Alto 2018-2020 Sustainability Implementation Plan
Buildings	New Construction and Codes	As part of its 2016 Sustainability and Climate Action Plan Framework, the city of Palo Alto has adopted the goal of reducing emissions and energy consumption “through energy efficiency and design”. For new construction, they plan to require efficiency standard that exceed state minimums, require Net Zero buildings “in advance of State standards”, and participate in the formation of Net Zero Energy Districts. More information: City of Palo Alto 2016 Sustainability and Climate Action Plan Framework
	Existing Buildings and Energy Conservation	As part of its 2016 Sustainability and Climate Action Plan Framework, the city of Palo Alto has adopted the goal of reducing emissions and energy consumption “through energy efficiency and design”. The City plans to achieve savings of 2-5% by 2020. The City plans to “examine the life-cycle of buildings and determine appropriate triggers in the permitting process to mandate deeper efficiency retrofits for existing buildings”. Additionally, as part of its 2018-2020 Sustainability Implementation Plan, Palo Alto seeks to develop building benchmarking requirements, and establish commissioning and retro-commissioning programs. The City plans to evaluate these initiatives through measuring building energy efficiency. More information: City of Palo Alto 2018-2020 Sustainability Implementation Plan

		City of Palo Alto 2016 Sustainability and Climate Action Plan Framework
	Thermal Electrification	No information readily available upon our review.
	Land Use Policy	As part of its 2016 Sustainability and Climate Action Plan framework, the city of Palo Alto discusses the adoption of land use policies that support its mobility goals. This involves increasing housing densities, increasing "areas under existing maximum zoning rules," regulating employment densities, and implementing commercial downzoning. More information: City of Palo Alto 2016 Sustainability and Climate Action Plan Framework
Energy	Resilient Supply	No information available upon our review.
	Renewables and Low Carbon Sources	As part of its 2018-2020 Sustainability Implementation Plan, the City of Palo Alto plans to encourage voluntary and mandated electrification of natural gas appliances and evaluate this through electrification percentage. More information: City of Palo Alto 2018-2020 Sustainability Implementation Plan
Circular Economy/Waste	Waste Reduction	As part of its 2016 Sustainability and Climate Action Plan framework, the City of Palo Alto has adopted the goal of 95% waste diversion by 2030 with the goal of achieving Zero Waste. In pursuit of this goal the city of Palo Alto plans to establish new programs for waste reduction, improving existing ones, and increase Extended Producer Responsibility for Waste. Additionally, the city seeks to "minimize energy use and pollutant formation from waste collection, transportation, and processing." In pursuit of this goal the city plans to lower the carbon intensity of their waste collection fleet, as well as increase the efficiency of their processing facilities. More information: City of Palo Alto 2016 Sustainability and Climate Action Plan Framework
	Habitat Protection	As part of its 2016 Sustainability and Climate Action Plan framework, the City of Palo Alto has adopted the complimentary goals of restoring the resiliency of their natural environment and maximizing carbon sequestration and storage in the natural environment. In pursuit of these goals, Palo Alto plans to deploy green infrastructure, adapt public lands to changing climatic regimes, and manage public lands and their many tree species and soils to maximize their ecosystem services. More information:

		City of Palo Alto 2016 Sustainability and Climate Action Plan Framework
Water Use	Water Use Reduction	As part of its 2018-2020 Sustainability Implementation plan, the City of Palo Alto seeks to: reduce inefficient water consumption, ensure adequate water supply, and protect the canopy, creek, groundwater, and the bay. In pursuit of these goals, the city plans to explore conducting a cost-benefit analysis for non-potable water sources as a supplement to potable sources in addition to a high-level water balance chart, into a single planning document. Additionally, the City of Palo Alto seeks to develop programs and ordinances to maximize water efficiency and facilitate the use of non-traditional water sources. Finally, Palo Alto seeks to develop a Green Storm Water Infrastructure Plan and reduce the salinity of Palo Alto's recycled water to increase desirability of use. More information: City of Palo Alto 2018-2020 Sustainability Implementation Plan
	Climate Resilience	The City of Palo Alto has a Climate Adaptation and Resilience Working Group that will work on an implementation plan in this area for a future iteration of the Sustainability Implementation Plan. It is not a key focus area currently. More information: City of Palo Alto Sustainability and Climate Action Plan Landing Page
Inclusion and Outreach	Equitable Programs	As part of its 2016 Sustainability and Climate Action Plan framework, the City of Palo Alto has adopted the improvement of social equity as a guiding principle. Additionally, the plan itself incorporates strong community outreach, engagement, and involvement in its varying initiatives. More information: City of Palo Alto 2016 Sustainability and Climate Action Plan Framework

Notable Partnerships (if any)

None were noted during interview.

Santa Monica, CA

City Characteristics

Population	92,306
Growth Profile	Santa Monica grew 2.9% between 2010 and 2017
Emissions Profile	Emissions as of 2016 had dropped 20% below 1990 levels.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Department of Public Works; previously in CMO
Staffing	18 FTE
Structures for inter-agency collaboration	Leadership Team Sustainability Advisory Team (self-nominated) Capital Improvement Plan budget applications Workplans tied to Sustainable City Plan
Structures for community engagement	Seven-member Task Force advises City Council Sustainable Quality Awards
Funding sources referenced during interview	Not discussed
Metrics referenced during interview	Publicly available data at data.sustainablesm.org

- Key factor in success if cultivating community, having a plan, clear delineation of goals, targets, and indicators
    - Considers vision for 2020, 2030, 2050 the most important policy advancing sustainability
- Noted tradeoffs between locations in different offices and remarked that, while it might work for some, an embedded and decentralized system unlikely to work in Santa Monica because departmental staff is capacity constrained
- Department workplans are tied to outcomes in the sustainable city, which are reported on to city leadership team. There is a strong focus on tracking success via key metrics, which are published online.
- Sustainability has strong support from City Council and community
- Triple bottom line approach to sustainability is growing, any new sustainable city plans must be oriented in this manner. The interviewee noted that any new policy initiative should be motivated by one of the three bottom lines, and in the execution of that initiative, the city should be sure to adequately address the other two bottom lines.
- Deputy Sustainability Officer recommended organizing peer to peer conversations for city leadership, noting there is often competitive spirit, as well as focusing on achievable wins

Sustainability Program Summary

Climate Commitments

The City of Santa Monica had previously committed to a 15% reduction in carbon emissions below 1990 levels by 2015. An updated Climate Action and Adaptation Plan is presently under development that will include an updated climate commitment and associated strategies. The City of Santa Monica is a member of the Mayors National Climate Action Agenda.

Existing Reports

- An updated Climate Action and Adaptation Plan is currently under development.
- **15x15 Climate Action Plan (2013)**-This Initial Climate Action Plan, written by the City of Santa Monica, details 15 actions that it took to reduce emissions by 15% below 1990 levels. It has action items in the following focus areas: energy use and generation, waste reduction and recycling, transportation and mobility, open space and land use, water conservation and efficiency, local food and agriculture, municipal operations, and climate mitigation and adaptation.
- **Sustainable City Plan (2009)**-This plan, written by the City of Santa Monica, guides sustainability planning in Santa Monica. It contains nine distinct goal areas (Resource Conservation, Environmental and Public Health, Transportation, Sustainable Local Economy, Open Space and Land Use, Housing, Community Education and Civic Participation, Human Dignity, and Arts and Culture) with specific goals and action items under each.

Current Programs

As part of their previous carbon reduction goal, the City undertook specific actions in several areas including expanding their EV charging infrastructure, reducing building energy use by 1 million kWh annually, diversion of 80% of waste from landfills, and increasing its solar capacity by 500 kWh annually. Additionally, the City of Santa Monica has ongoing work in these areas as part of its Sustainable City Plan. An updated Climate Action and Adaptation Plan is presently under development that will include an updated climate commitment and associated strategies. Specific programs the City of Santa Monica has and is currently undertaking in pursuit of carbon reduction are outlined in the "current programs" table below.

Sector	Area	Summary
Transportation	Multi-modal	The City of Santa Monica is currently implementing incentives to use public transportation. These include free passes for Santa Monica College Students and Staff. Additionally, Santa Monica has implemented a bikeshare initiative. As part of its 15x15 Climate Action Plan, the City sought to increase its biking and walking mode share to 15% and reduce VMT by 3,000. Additionally, as part of its Sustainable City Plan, the City of Santa Monica has set the goal of creating a multi-modal transportation system and reducing VMT by facilitating a reduction in automobile dependency. It

		plans to evaluate these goals by: modal split, VMT, percentage of residents that intentionally do not drive, percent of households within More information: City of Santa Monica-Transportation Department City of Santa Monica 15x15 Climate Action Plan
	Electric Vehicles	The City of Santa Monica is implementing a plan to triple EV charging infrastructure by 2020. Additionally, they have adopted an EV Action Plan with the goal of reaching 15% EV usage in Santa Monica. This plan includes expansion of charging infrastructure for multi-unit dwellings and workplaces, updating parking policies to accommodate chargers, and the development of community outreach and education for residents and businesses. As part of its 15x15 climate action plan, the City sought to install 220 additional EV chargers throughout the city. More information: City of Santa Monica-Transportation Department City of Santa Monica Electric Vehicle Action Plan
Buildings	New Construction and Codes	The City of Santa Monica is implementing a new energy reach code to ensure that all new low-rise residential building will use 15% less energy than the allowed California Energy Code energy budget. Additionally, there are more than a dozen structures in the city that have achieved LEED certification. Finally, as part of its Sustainable City Plan, the City of Santa Monica has set the 2020 targets of having 100% of new municipal buildings achieve LEED GOLD Certification. More information: City of Santa Monica-Build Green City of Santa Monica Sustainable City Plan City of Santa Monica 15x15 Climate Action Plan
	Existing Buildings and Energy Conservation	As part of its Sustainable City Plan, The City of Santa Monica has adopted energy reduction targets of 10% for municipal and citywide energy use by 2020. The City of Santa Monica is implementing a number of rebate programs for energy efficient products in partnership with Southern California Edison and Santa Monica Water. It intends to evaluate these in terms of total use as well as overall efficiency. Additionally, as part of its 15x15 Climate Action Plan, the City sought to reduce energy use in existing buildings by 1 million kWh annually. More information: City of Santa Monica-Rebates City of Santa Monica Sustainable City Plan City of Santa Monica 15x15 Climate Action Plan
	Thermal Electrification	No information readily available upon our review.
	Land Use Policy	As part of its Sustainable City Plan, the City of Santa Monica has adopted the goal of implementing “land use and transportation planning and policies to create compact mixed-use projects” for encouragement of

		multi-modal transit. This involves expanding the percent of residential developments that are within ¼ mile of transit, as well as expanding the number of acres of open space. More information: https://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Sustainability/Sustainable-City-Plan.pdf https://www.smgov.net/uploadedFiles/Departments/OSE/Home_Page_Item_with_Image/CAP_Final.pdf
Energy	Resilient Supply	As part of its Sustainable City Plan, the City of Santa Monica is incorporating distributed generation as a metric for evaluating its solar goals (outlined below). https://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Sustainability/Sustainable-City-Plan.pdf
	Renewables and Low Carbon Sources	As part of its Sustainable City Plan, the City of Santa Monica has set a 2020 target of 50% renewable energy for the city. Additionally, it has set the goals of 7.5 MW of solar installed as well as 1 MW of solar on city-operated facilities. It intends to evaluate these goals in terms of total use, and total use from clean distributed generation. Additionally, as part of its 15x15 Climate Action Plan, the City sought to increase its solar capacity by 500 kW annually. More information: City of Santa Monica Sustainable City Plan City of Santa Monica 15x15 Climate Action Plan
Circular Economy/ Waste	Waste Reduction	As part of its Sustainable City Plan, the City of Santa Monica has adopted the 2020 target of an 85% waste diversion rate, and a goal to reduce per capita waste generation in the city by 2.4 lbs per person per day. The city intends to evaluate these targets in terms of amount generated, amount landfilled, and amount diverted. Additionally, as part of its 15x15 Climate Action Plan, the City sought to divert 80% of waste from landfills by 2015. More information: https://www.smgov.net/uploadedFiles/Departments/OSE/Categories/Sustainability/Sustainable-City-Plan.pdf
	Habitat Protection	As part of its Sustainable City Plan, the City of Santa Monica has adopted a number of land use related goals for habitat protection purposes in addition to other related co-benefits (such as carbon sequestration). These include expanding the number of acres of open space, as well as regenerating and maintaining the urban forest and landscape with regionally appropriate species. The goal of regenerating the urban forest was reiterated in the 15x15 Climate Action Plan. More information: City of Santa Monica Sustainable City Plan City of Santa Monica 15x15 Climate Action Plan

Water Conservation		As part of its 15 x 15 Climate Action Plan, the City of Santa Monica set the goal of reducing water demand by 200,000 gallons per day. Actions in pursuit of this goal included a robust community outreach and education initiative, in addition to rebates on water efficient fixtures. More information: City of Santa Monica 15x15 Climate Action Plan
Climate Resilience		The City of Santa Monica is present working on a comprehensive Climate Action and Adaptation Plan that will include resilience measures across sectors. More information: Santa Monica Climate Action and Adaptation Plan
Inclusion and Outreach	Equitable Programs	As part of its Sustainable City Plan, the City of Santa Monica has adopted the guiding principle that "environmental quality, economic health, and social equity are mutually interdependent". Additionally, the Sustainable City Plan has a section titled "Community Education and Civic Participation" with an outreach and education agenda for equitable participation in the city's sustainability programs, including participation in Community Sustainability Programs. More information: City of Santa Monica Sustainable City Plan

Notable Partnerships (if any)

None were noted during interview.

Somerville, MA

City Characteristics

Population	81,360
Growth Profile	The City of Somerville has grown 7.46% between 2010 and 2017.
Emissions Profile	The City of Somerville reduced its emissions by 5% between 2014 and 2016.

Key Takeaways from Benchmarking Interview

Sustainability Office Summary

Office Location	Mayor's Office
Staffing	3 FTE
Structures for inter-agency collaboration	Somerstat Informal collaboration Over half of all initiatives are implemented with partner
Structures for community engagement	Commission on Energy Use and Climate Change
Funding sources referenced during interview	General fund for staff Most funding is allocated to departments for implementation
Metrics referenced during interview	GHG and energy use

- Estimates the offer splits its time roughly 30 percent on municipal operations and 70 percent on community sustainability programs
- Role includes ongoing service delivery (e.g. monitoring recycling), long-range planning, and special programs that are time-limited and not intended to be long term (e.g. EV installation)
- Collaborates with agencies in three main ways:
    - Work as an internal consultant for departments who are implementing a new program or policy (i.e. EV fleet purchasing)
    - Identifying opportunities for other departments to pursue and advocating for the opportunity
    - Serving as coequal partners on an initiative
- Strong support across government and from community, but organizational change management remains challenging – dealing with bureaucratic impediments
- Has built momentum for funding increases
- Team does an annual strategy session to assess actions taken against mission and goals, as well as plan for the next year
- Office is working with USDN to create and equity framework
- Director of Office of Sustainability and Environment posed that it's important to evaluate if you are a city that can benefit from putting yourself on a bigger stage (such as the Global Covenant)

or if you want to focus on internal work that may not look immediately like sustainability or climate change work; also important to prioritize when you have a small staff

Sustainability Program Summary

Climate Commitments

The City of Somerville in 2014 set the goal of achieving carbon neutrality by 2050. As a part of this goal, the city released the Somerville Climate Forward Plan in November 2018. The city of Somerville is a member of the Mayors National Climate Action Agenda.

Existing Reports

- **Somerville Climate Forward** (2018)-This initial Climate Action and Resilience Plan details specific actions that the City of Somerville seeks to undertake towards its carbon neutrality goal as well as climate resilience for the city (building on the findings of its Climate Change Vulnerability Assessment). It outlines climate action and resilience actions, implementation steps, and associated funding mechanisms in the areas of buildings, mobility, environment, community, and leadership (covered in the "current programs" section below) and provides an overall implementation timeline for the plan.
- **Carbon Neutrality Pathway Assessment Whitepaper** (2017)-This white paper, published in collaboration with AECOM, assesses actions that the City of Somerville might take in pursuit of achieving carbon neutrality by 2050 in the areas of building energy, transportation, and waste. It outlines specific goals in each of these areas, covered in the "current programs" section below.
- **Climate Change Vulnerability Assessment (**2017)-This report, published by the City Somerville, assesses vulnerability to climate change across sectors based on temperature, precipitation, flooding, and sea level rise projections. It identifies vulnerabilities to critical infrastructure and the natural environment, as well as social vulnerabilities such as public health. It identifies key priorities for the city and identifies rough options that the city might pursue for building resilience in these key priority areas.

Current Programs

In pursuit of its carbon neutrality and climate resilience goals, the City of Somerville has implemented the Sustainaville Initiative, which is the hub for its climate and sustainability planning. This initiative includes transportation, land use, waste reduction, energy efficiency, renewable energy, and climate resilience work. The City of Somerville released a whitepaper that assesses potential pathways towards its carbon neutrality goal. The white paper outlines a number of opportunities to reduce carbon emissions in the following: building energy, transportation, and waste. Specific programs it is undertaking in pursuit of its carbon neutrality goal and the various near and long-term carbon reduction opportunities assessed in the whitepaper are outlined in the "current programs" table below.

Sector	Area	Summary
Transportation	Multimodal	As part of its Somerville Climate Forward Plan, the City of Somerville set the goal of achieving "equitable low-carbon mobility". As part of this they have the goals of improving bus reliability and trip times, improving and expanding bicycles infrastructure, and assessing their

		parking policy and parking supply "to meet low-carbon mobility needs". Specific actions it seeks to undertake include piloting bus-only lanes on Somerville routes, implementing a protected bike lane project, expanding the BlueBikes bikeshare, piloting removal of on-street parking to create dedicated bike and bus space, and reduction or elimination of minimum off-street parking requirements. Additionally, the City of Somerville assessed opportunities for a transit mode shift in favor of walking and bicycling as part of its 2017 Carbon Neutrality Assessment Whitepaper. They assessed the opportunity having 100% of new development taking place in transit-oriented developments by 2020 as well as 25% of VMT taking place in these developments. They calculated an associated GHG reduction potential of 3000 MT by 2020, with progressing reductions through 2050. Finally, the city of Somerville has ongoing planning initiatives relating to bicycles and pedestrians, including the expansion of its bicycle/pedestrian path network. More information: Somerville Climate Forward Sustainaville-Sustainable Transportation City of Somerville-Transportation and Infrastructure Planning for Bicycles City of Somerville Carbon Neutrality Pathway Assessment Whitepaper
	Electric Vehicles	As part of its Somerville Climate Forward Plan, the City of Somerville set the goal of developing a comprehensive EV charging infrastructure strategy. This will include permitting Level 1 and 2 EV charging stations by right, establishing minimum parking requirements for EV charging spaces, and developing a curbside EV charging pilot program in addition to exploring the feasibility of street light/utility pole EV charging stations as well as off-street parking utilization for overnight residential EV charging. Additionally, the City of Somerville assessed the opportunity for a transportation fuel switch to EVs as part of its 2017 Carbon Neutrality Assessment Whitepaper. It assessed the potential for 10% conversion by 2020, with future potentials of 40% by 2030 and 100% by 2050. Finally, the city is working to transition its fleet to electric/hybrid vehicles. More information: Somerville Climate Forward Sustainaville-Sustainable Transportation City of Somerville Carbon Neutrality Pathway Assessment Whitepaper
Buildings	New Construction and Codes	As part of its Somerville Climate Forward Plan, the City of Somerville aims to explore the feasibility of a net-zero energy or net-zero

		emissions performance standard for new development. Specific actions it seeks to undertake include incentivizing net-zero building construction, the provision of technical support to developers and builders, developing a database of local net-zero case studies, the convening of a Net Zero Building Task Force to build a consensus for more stringent building standards, and determining the phasing of new standards that would lead to net-zero buildings. Additionally, they seek to set progressive net-zero building standards for new municipal buildings. Each of these prospective actions result from opportunities assessed in its 2017 Carbon Neutrality Pathway Assessment Whitepaper. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper
	Existing Buildings and Energy Conservation	As part of its Somerville Climate Forward plan, the City of Somerville aims to significantly improve energy performance in existing buildings. In pursuit of this goal, in addition to its ongoing initiatives, the City aims to enable a rental energy disclosure requirement through a rental licensing program. Specific actions it seeks to take in these areas include the convening of a stakeholder group for a rental licensing program, identifying an interface for rental energy use disclosure, and coordinating with utilities to automate disclosure. Additionally, they seek to set progressive net-zero building standards for municipal buildings undergoing major renovations. Additionally, in its 2017 Carbon Neutrality Pathway Assessment Whitepaper, the City of Somerville assessed opportunities pertaining to retrofits, including the implementation of point-of-sale energy efficiency improvements, and fuel-switching to electric/ground source heat pumps. Finally, The City of Somerville has a program called SEEN (Somerville Energy Efficiency Now!) that encourages residents to take advantage of state-level incentives through the MassSave program, such as they no-cost Home Energy Assessments. In addition, they provide resources for the Mass Save Small Business Program. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper Sustainaville-Clean Energy and Energy Efficiency
	Thermal Electrification	As part of its Somerville Climate Forward Plan, the City of Somerville plans to expand its HeatSmart and CoolSmart programs in the city of facilitate building electrification and fuel switching to renewable energy sources. Specific actions it seeks to undertake for expanding HeatSmart and CoolSmart include identification of uptake barriers,

		developing promotional materials, and identification groups of building types for targeted outreach. Additionally, in its 2017 Carbon Neutral Pathway Assessment Whitepaper, the City of Somerville assessed fuel switching opportunities to electric/ground source heat pumps in buildings. The proposed implementation mechanisms included a mandatory heat pump policy, zero-net energy building requirements, and point-of-sale energy efficiency requirements. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper
	Land Use Policy	As part of its Somerville Climate Forward Plan, the City of Somerville aims to expand its city tree canopy as part of its Stormwater Management strategy. Specific actions it aims to undertake include developing and implementing an urban forestry management plan, as well as community education for stewardship of trees. Additionally, The City of Somerville has a number of ongoing land use initiatives in pursuit of its carbon neutrality goal. This includes the implementation of green infrastructure for carbon sequestration and stormwater management purposes, the expansion of Somerville's urban forest, as well as a robust education and outreach initiative to encourage urban agriculture and gardening. More information: Somerville Climate Forward Sustainaville-Green Space and Natural Environment
Energy Supply	Resilient Supply	As part of its Somerville Climate Forward Plan, the City of Somerville aims to assess the feasibility of carbon-neutral District Energy Systems throughout the city. This results from an opportunity assessed in its 2017 Carbon Neutrality Pathway Assessment Whitepaper as part of its renewables assessment. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper
	Renewables and Low Carbon Sources	As part of its Somerville Climate Forward plan, the City of Somerville seeks to establish a pathway towards 100% renewable energy in the city. Specific actions it seeks to undertake in pursuit of these goals include extending their existing Community Choice Aggregation Program and researching an appropriate energy mix for the program to increase the share of renewables in electricity provision. Additionally, the City of Somerville ran a Solarize Somerville campaign for residential solar installation in 2017, increasing its capacity by 500

		kW. The City of Somerville is a SolSmart Gold designated city for its work on solar installation and market development. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper Sustainaville-Clean Energy and Energy Efficiency
Circular Economy/Waste	Waste Reduction	As part of its Somerville Climate Forward Plan, the City of Somerville aims to reduce resource consumption and waste. In pursuit of this goal, the City aims to develop a consumption-based inventory for the city that analyzes life cycle emissions of goods and services in the city, establish goals based on the inventory results, develop an outreach campaign to share these results, and establish recycling ordinance participation goals and an associated tracking program. Additionally, in its Carbon Neutrality Pathway Assessment Whitepaper, the City of Somerville assessed waste reduction strategies. These include potentially applying the mandatory recycling program to large multi-unit buildings, as well as implementing anaerobic digestion for food scraps to create biofuels. Finally, The City of Somerville has policies and ongoing initiatives pertaining to waste reduction, including a plastic bag ordinance banning single-use plastic bag provision, a foam container ordinance banning Polystyrene containers, and a composting program that provides discounted bins for residential use. More information: Somerville Climate Forward City of Somerville Carbon Neutrality Pathway Assessment Whitepaper Sustainaville-Greener Disposal
	Habitat Protection	The City of Somerville has ongoing land use initiatives in pursuit of its carbon neutrality goal that involve habitat protection either as a goal or (more commonly) as a co-benefit. These include the implementation of green infrastructure for carbon sequestration and stormwater management purposes, the expansion of Somerville's urban forest, as well as a robust education and outreach initiative to encourage urban agriculture and gardening. More information: Sustainaville-Green Space and Natural Environment
Climate Resilience		As part of its Somerville Climate Forward Plan, the City outlines resilience goals across its key action areas. Notable goals in this area include adopting an extreme heat and flood resilience standard for new construction, the investigation of a Stormwater Enterprise Fund to improve stormwater management, the establishment of a

		preparedness education program and emergency alert system for flooding and extreme heat, the increase of public participation in climate preparedness programs, and the promotion of regional collaboration for coastal resilience. Previously, the City of Somerville completed a cross-sectoral climate change vulnerability assessment that assesses sensitivity, exposure, and adaptive capacity based on temperature, precipitation, flooding, and sea level rise projections. It assesses potential impacts to critical infrastructure as well as social vulnerability and impacts to the natural environment (including parks and open space). Finally, it names top priorities for the city and identifies rough options that the city can exercise in addressing its vulnerability in these key areas. Many of these are addressed in the Somerville Climate Forward Plan. More information: Somerville Climate Forward City of Somerville Climate Change Vulnerability Assessment
Inclusion and Outreach	Equitable Programs	The City of Somerville outlines equity considerations for each of its core action areas in the Somerville Climate Forward plan. Additionally, many of the actions it aims to undertake in this document are equity-focused. For example, they aim to continue to offer discounted bikeshare memberships to low-income residents and provide an EV car-share program with incentives for low-income residents. More information: Somerville Climate Forward

Notable Partnerships (if any)

As part of its Somerville Climate Forward Plan, the City of Somerville aims to form a Mystic River Regional Coalition to develop a cohesive flood resilience strategy and advocate for state action. This prospective coalition would include neighboring municipalities, the Mystic River Watershed Association, relevant state agencies, and interested large property owners.

More information:

Somerville Climate Forward

Appendix B. Example ideas for collaboration with Mountain View's private sector

This appendix focuses on collaborations that could be formed on transportation sustainability, since transportation is emerging as a top priority for reducing GHG emissions and for maintaining quality of life for the traveling public in Mountain View (e.g., reducing time lost to congestion, reducing travel-related stress, providing opportunities for active lifestyles and active transportation). The benefits of sustainable transportation will be salient to many employers in Mountain View, whose employee productivity and satisfaction may benefit from creative solutions to improve their commutes. Given that developing collaborations requires City staff time and energy, it is advisable to limit the number of initiatives to a manageable number and focus on topics that have direct benefits to the potential collaborators.

Connected and Autonomous Vehicles

Given that Google's self-driving car technology company, Waymo, intends to begin operating driverless cars with passengers in Mountain View and surrounding cities, the City could identify transportation needs that it feels are high priority and ask Waymo to prioritize these use cases as it moves forward with its early testing and deployment. This could include providing **shared first and last mile service to transit** or to other key destinations. Since Waymo is local and since it has already partnered with the City of Phoenix to provide free rides to public transit stations this would be a promising collaboration. Any testing without passengers could be minimized from peak travel times and/or could be designed to serve trips that are already occurring (e.g., deliveries from local eateries, courier services, parcel deliveries). Prior to direct conversations with Waymo it is not clear which of these ideas will be feasible, but selecting suggestions that also benefit Waymo operationally or from a public relations perspective will increase the odds of negotiating an impactful pilot project.

A cross disciplinary team from City of Mountain View that includes Public Works, Sustainability, and Community Development should engage with Waymo for this effort, to give Waymo a chance to suggest improvements (e.g., lane markings, signage, active transportation infrastructure) that would improve safety and operations. In the more distant future, the concept of transit signal priority could be extended to also apply to pooled shared mobility vehicles, provided that they have a sufficient passenger load to warrant it. The City could also make special requests to Waymo, such as prioritizing the deployment of Waymo's new electric vehicles (currently Jaguar I-PACE) for trips inside Mountain View, to take advantage of SVCE's 100% carbon-free offering. Furthermore, the City could incorporate Waymo input into the development of public EV charging infrastructure to enable this request.

EV Charging

In the early stages of EV deployment, projecting the exact optimal amount of charging stations and technologies is still difficult. Furthermore, providing Electric Vehicle Charging Stations (EVCS) can reduce the total number of spots available for parking (due to the accessibility requirements in the California

Building Code and due to the fact that not all vehicles can park in spots equipped with an EVCS, as California's AB 1452 authorizes municipalities to designate parking spots for "the exclusive purpose of charging and parking a vehicle that is connected for electric charging purposes"). Therefore, overestimating how many EVCS are needed can not only be expensive but also inefficient.

However, there are local companies that provide charging as a service. The City could implement an initiative to **aggregate demand among local technology companies for services such as "concierge charging"** for electric vehicle charging. The "concierge charging" service, offered by Freewire Technologies, which is based in San Leandro, CA, delivers EV charging via a mobile unit that can top off many EVs in a single day, no matter what parking spot they are parked in. The City's role might be to broker a relationship between a company such as Freewire Technologies and a coalition of interested local firms – who could pursue a volume discount in exchange for amassing a critical mass of users.

The City could also review its portfolio of solar arrays to determine whether there are any that are generating more than needed, or it could evaluate new parking lot solar or other installations with the intention of partnering with a company such as Freewire to store daytime generation and deliver "concierge charging" to multi-family housing developments or other locations that have not invested in their own Level 2 charging for overnight charging needs. Collaborations could also be explored with EV Safe Charge, which also provides a portable EV charging product. VW is also developing a product and service similar to "concierge charging."

Multi-modal Mobility Information Sharing

Another potential partnership is **with Coord, a spinoff of Google's Sidewalk Labs, to integrate multiple mobility options into one platform** so that users can view all the options available to them in a single interface. This platform would present users with optimal mode and route options as well as consolidate the payment process for users (e.g. payments to rideshare and public transit.) One mobility app, Transit, has moved in this direction and partnered with Kansas City, Boston, Detroit, Nashville, Columbus, and Cleveland to develop Transit+, a system that has integrated multiple ride hailing apps with public transit to compare routes using one or both of the modes and compare pricing options. A potential barrier to uptake of an integrated platform like this is user resistance to a complex or ever-changing commute route, even though the route may be "optimal".

"Zero-emission Commute" Competition

To reach a broad spectrum of local organizations not limited to companies that are actively developing transportation solutions, the City could work with the local transportation management association (TMA), MVGo, to facilitate a **"Zero-emission Commute" competition**, either between interested employers or within companies, amongst their employees. This competition would be hosted on a web platform or mobile app and feed in data on individual employees' commute choices. The data could be used to recognize companies, or individual departments within companies, whose employees commute most sustainably. The competition might spur behavioral changes among commuters if the initiative gains traction, from a desire to outperform others or even their prior personal benchmarks. The

initiative would benefit from partnerships with local technology companies who could help refine the app and make it robust to issues such as verifiability and data privacy.

Miscellaneous Additional Ideas

City staff are currently grappling with how to respond to the arrival of a wide variety of personal electric scooters, wheels, skateboards, dockless bikeshare bikes, and other small devices, often referred to as **shared micromobility** services. The City could partner with a private company to provide an organized and more actively managed way for these services to be offered, for instance by working with Swiftmile, based in San Mateo, which provides **dedicated locations and solar-powered charging stations for "light-electric vehicles" (LEVs)** such as electric scooters and electric bikes.

As noted by the volunteers who developed ESTF-2, the Mountain View Community Shuttle would be more effective if geographic coverage were greatly expanded, frequency were increased, and hours were extended (described as MV Shuttle 2.0), and costs of service could be decreased when autonomous shuttles become available (described as MV Shuttle 3.0). In collaboration with the TMA, the City could conduct outreach to a mix of large local companies and residential multifamily developers to **create a pooled funding source for expansions of the shuttle system.** This would reduce dependence on a single funding source, as well as potentially raise the profile of the service.

Appendix C. Table of Sustainability Funding Sources: Grants and Fellowship Programs

The following list of funding sources is based on a review of online information conducted in January to February 2019. It includes grants and programs (1) that Mountain View may qualify for as the primary applicant, (2) that Mountain View could collaborate to apply for, and (3) that Mountain View could educate its stakeholders about so that they could apply. It is not an exhaustive list of all funding available to municipal jurisdictions in California, but it highlights a few particularly relevant sources. Grants were included in the list even if the application for the current cycle is closed, with the expectation that many of these grants will be renewed for the following year.

Several websites catalogue currently available state and regional grants, including:

1) California Air Resources Board Funding Wizard
2) California Energy Commission – Grants and solicitations list
3) Bay Area Air Quality Management District – Funding for public agencies

Granting Agency	Grant Name	Application Status	Max Grant Size
100 Resilient Cities	100 Resilient Cities Challenge	Ongoing - 100 Resilient Cities will consider adding new member cities to our global network that are sponsored by local funders.	Grant must be sponsored by a local funder. "The value of core offerings will likely exceed $1 million for each city." (including Chief Resilience Officer salary and technical support)
Bay Area Air Quality Management District	Shuttle/Feeder Bus & Regional Ridesharing Services Grant Program	Currently closed	$1.5 million per year (match required)
Bay Area Air Quality Management District	Carl Moyer Program	Open/not identified	Over $60 million available for projects. Applications evaluated on a first-come first-served basis until all funds are spent.
Bay Area Air Quality Management District	Clean Fleets Program	Deadline: April 30, 2019	Total of $5 million is available
Bay Area Air Quality Management District	School Bus Upgrade Grant	Ongoing until 2020 MAY 31, or until funding runs out	*Not identified*
Bay Area Air Quality Management District	Charge! Program	Due 2019 June 30	-An initial allocation of $5 milion is available -Maximum funding is 75% of eligible costs incurred by the Project Sponsor and $500,000 in FYE 2019

Granting Agency	Grant Name	Application Status	Max Grant Size
Bay Area Air Quality Management District	Pilot Trip Reduction Grant Program	Microtransit Project Applications: 2019 MAR 4 Other trip reduction projects: 2019 FEB 26	Up to $7 million total
California Energy Commission	EV-Ready Communities Challenge Phase II	Expected Release Q2 2019	TBD
California Energy Commission	Electric Program Investment Charge (EPIC) Program - Cost Share for Federal Funding Opportunities for Energy Resesarch, Development, and Demonstration	Questions Due: 2019 JAN 28 Submission Due: 2019 MAR 13	$250,000 - $3,000,000
California Energy Commission	EPIC - Next Generation Clean Energy Technology Manufacturing in California	*Anticipated release: 2019 JAN-MAR*	*Estimated $12,000,000*
California Energy Commission	EPIC - Developing Lessons Learned, Best Practices, Training Materials and Guidebooks for Customer Side of the Meter Energy Storage	*Anticipated release: 2019 JAN-MAR*	*Estimated $1,000,000*
California Local Government Commission	CivicSpark Fellowship Program	First priority deadline to submit project applications: 2019 MAR 15 Second priority deadline to submit project applications: 2019 MAY 3	N/A - the City pays for the fellow, but receives additional benefit including support and content expertise from LGC staff and training for the fellows.
California State Coastal Conservancy	Coastal Conservancy Grants	Ongoing	*Not identified*
California Strategic Growth Council	Affordable Housing and Sustainable Communities Program	Due 2019 FEB 11	Loans and grants of $500k to $20M. More details in note provided in this cell.
Caltrans	Adaptation Planning Grants	Closed (November 30, 2018)	$1 million (cost share required)
Caltrans	Sustainable Communities Grants	Closed (November 30, 2018)	$1 million (cost share required)

Granting Agency	Grant Name	Application Status	Max Grant Size
Carbon Neutral Cities Alliance	CNCA Innovation Fund	*Not identified;* Letter of Interest likely due late June; Proposal likely due late October	No stated limit[63]
Electrify America	ZEV Investments Input	Ongoing	N/A
Environmental Defense Fund	Climate Corps Fellowship Program	Due 2019 FEB 1	N/A
National Fish and Wildlife Foundation (NFWF) and other funders	Five Star and Urban Waters Restoration Grants	Due 2019 JAN 31	$20-50k
Strategic Energy Innovations	Climate Corps Fellowship Program	Partner position descriptions priority deadline FEB 28; standard deadline APR 30	Varies
U.S. Department of Agriculture (USDA)	Farm to School Grant Program	Currently closed	Implementation Awards: $50-100k Planning Awards: $20-50k Training Awards: $20-50k
Urban Sustainability Directors Network	USDN Innovation Fund; Cross-Departmental Collaboration Opportunity	*Not identified;* Letter of Interest likely due end of March; Proposal likely due early May	In 2018, $100,000 to fund 2-4 projects (approximately $25-50,000 per project) $75,000 to fund 1-2 projects (approximately $37,500-$70,000 per project)

[63] The Innovation Committee puts no limitation on project budget amount, but instead requires that requested funds be clearly justified in the proposal. Depending on the strength of proposals received, the Innovation Committee may elect to set aside some funds for commissioned work later in the year or route well-suited, larger projects to the Game Changer Committee for evaluation. In 2018, $330,000 for network investment in innovation development: up to $300,000 for awards and up to $30,000 for mini-grants that fund idea and proposal development

Appendix D. Program Measurement Tools and Benchmarking Programs

Cadmus has evaluated the following tools and benchmarking programs that the City of Mountain View could use in its effort to track and monitor GHG emissions and other environmental sustainability progress. This summary is divided into descriptions of tools primarily focused on greenhouse gas (GHG) tracking, sector-specific tools and metrics, frameworks for climate adaptation, broad sustainability tracking tools and indices, and tools and initiatives for the community (i.e. for large organizations within Mountain View).

Tools Primarily Focused on GHG Tracking

ClearPath

The International Council for Local Environmental Initiatives (ICLEI) developed ClearPath as an online software for local governments to use to measure, monitor, and forecast GHG emissions.

ClearPath has four modules:

- *Inventory Module*: Communities can develop baseline GHG inventories at a community-scale account and/or a government-operations account. The emissions reporting standards used in this module have been developed by ICLEI, the State of California, The Climate Registry, and others. Emissions factors that are unique to Mountain View, such as local electric or natural gas utility emissions factors, can also be used within this tool. By applying emissions factors that are unique to Mountain View, the city is better able to quantify its emissions rather than using emissions factors that were calculated at the state-level or national-level.
- *Forecasting Module*: Using GHG emissions inventories, the Forecasting Module creates business as usual (BAU) emissions forecasts based on specific growth indicators at the city scale. Cities can also develop multiple emissions forecasts to represent different scenarios to determine where and how growth will impact emissions.. Informative charts and reports produced by the forecasting module can be used to inform city-level emissions reduction plans.
- *Planning Module*: This module helps determine the emissions reductions potential from Climate Action Plan measures and allows planners to visualize emissions forecasts in real time. There are four main steps to the Planning Module: 1) set a reduction goal, 2) create reduction strategies (ClearPath provides a dropdown menu of potential strategies), 3) create the scenario where you want the reduction strategy applied, and 4) apply the reduction strategy to the scenario. The data required depends on the reduction strategies selected. ClearPath offers a Reference Sheet to determine the energy impact of the reduction strategy.
- *Monitoring Module*: This module allows cities to monitor and track implementation measures created in the Planning Module to understand their impact on emissions. This module uses Monitoring Records, entered by the city, to record information on the city's emissions reduction actions and align the records with the programmed inventories and planning scenarios to reveal what progress has been made.

Due to ICLEI's collaboration with the Statewide Energy Efficiency Collaborative (SEEC), a statewide alliance to meet local government needs to reduce emissions and advance climate action , the ClearPath

tool is free for all local government in California. Also through SEEC, California local governments have access to a suite of online training models, users guides, and bi-weekly "office hours" with ICLEI staff.

Contribution Analysis

ICLEI's Contribution Analysis program was developed U.S. Department of Energy's Cities Leading through Energy Analysis and Planning (Cities-LEAP) Program and is designed to track progress on GHG mitigation. Cities use this tool to perform their own contribution analysis to identify the biggest drivers influencing GHG performance. A contribution analysis identifies what sources are contributing to the increases or decreases in the city's emissions inventories over time; sources include hotter summers, colder winters, population growth, increased fuel economy, and energy use per commercial square foot. This data can be gathered at a city level to identify the greatest contributors to GHG emissions. On-Demand Training is included from an "Contribution Analysis Overview" to "Working with Charts." The prepared toolkit includes the following:

- GHG Contribution Analysis Excel Tool
- Guidance Document
- Quick Start Guide
- Data Collection Checklist
- Data Request Templates

To advance progress through innovative collaboration, ICLEI developed The ICLEI Community as a networking platform for local governments to share best-practices in real time.

Energy Policy Solutions Tool

Developed by Energy Innovation, the Energy Policy Solutions Tool can be used by cities to identify, compare, and implement cost-effective energy efficiency policies. The tool helps estimate the economic, environmental, and social impacts of climate and energy policies by comparing emissions reduction initiatives against a business as usual scenario. The output graph within the tool is live, meaning any change made to the "New Scenario" will automatically be compared against a "Business as Usual" scenario from 2017 – 2050. The tool can also graph the human health and social benefits associated with a new policy, including avoided deaths and climate benefits ($ billions/year). Additionally, for each of the policy scenarios, the tool offers resources to customize the implementation schedule and ensure effective policy design by recommending policies that have been successfully implemented in the past. For those who are interested in understanding the logic behind the modeling, the tool also offers resources explaining how the tool handles the selected policy.

Climate Action for Urban Sustainability

Climate Action for Urban Sustainability (CURB) was developed by the World Bank, C40 Cities Climate Leadership Group, Global Covenant of Mayors, and AECOM Consulting. CURB is a free, Excel-based tool focused on helping cities identify their key drivers of emissions and energy demand and modeling how those drivers will change over time. A unique feature in this tool is the ability to compare your city with other cities across a range of key performance indicators.

Within this tool cities also have the option to set future reduction performance targets against which progress can be measured. Targets can be set in certain sectors where a city can take action and where there is potential for maximum impact. Scenarios can be customized and bundled from different inventories to develop a comprehensive plan and enable cost and impact assessments. It is

recommended that cities set a base year as well as interim years to identify progress against short- and medium-term targets.

A template of the tool can be found here.

Long-range Energy Alternatives Planning System (LEAP)

LEAP was developed by the Stockholm Environment Institute as an energy and climate mitigation modeling tool. Over thirty countries used LEAP to help develop their Nationally Determined Contributions (NDCs) submitted to the Paris United Nations Climate Change Conference in 2015, and local governments can also utilize this tool.[64] It is dependent on current and historical data provided by the city to complete medium- to long-term climate models.

Beyond scenario-based modeling, LEAP can be used to analyze local and regional air pollutants and short-lived climate pollutants. As a result, LEAP can also be used to study the co-benefits of air pollution reduction.

CDP Cities

CDP, formerly known as the Carbon Disclosure Project, is a climate reporting platform that collects and analyzes climate data from the private and public sectors. Over 120 state and regional governments disclose to CDP from 32 countries, representing over 672 million people, 21% of the global economy and over 5 $GtCO_2e$.[65] They have compiled city-level datasets for the following topics: emissions, renewable energy, mitigation actions, climate hazards, opportunities, governance, water, and adaptation actions. According to CDP's "InFocus: Five cities driving climate action" report published in June 2018, five cities demonstrating excellence in climate disclosure are Cleveland, Durban, Mexico City, Paris, and Sydney. These cities were highlighted due to their building efficiency, renewable energy investments, improved water and air quality, and supporting the transition to a sustainable economy.

Figure 1 shows Bay Area participation in CDP as shown by submitting community-wide emissions reduction actions to their database in 2017.

[64] "LEAP: Introduction." LEAP. Web: https://www.energycommunity.org/default.asp?action=introduction

[65] "Global States and Regions Annual Disclosure: 2018 Update." CDP and The Climate Group. November 2018. Web: https://www.theclimategroup.org/sites/default/files/global_states_and_regions_annual_disclosure_report_final_web.pdf

Figure 4. Cities that reported actions to the CDP database in 2017

Sector-Specific Tools and Metrics

This section includes tools to evaluate progress in transportation, renewable energy, building electrification, and reach code adoption.

Transportation-Focused Tools

Motor Vehicle Emission Simulator (MOVES)

MOVES was developed by the Environmental Protection Agency (EPA) as an emission, air pollutant, and air toxin modeling system for mobile sources at the national, county, and project levels. The most recent version of MOVES was released in December 2018 and is called MOVES2014b. This version of MOVES is EPA's best available tool for estimating the emissions for all major mobile source air toxics for both on-road and nonroad sources. According to MOVES' User Guide, this tool uses a Graphical User Interface that requires creating a Run Specification (AKA RunSpec), which is an XML file that describes the choices for the model a city is running.

Trip Reduction Impacts of Mobility Management Strategies (TRIMMS)

TRIMMS was developed by the National Center for Transit Research and the Center for Urban Transportation Research at the University of South Florida. This tool estimates the impacts of transportation demand initiatives and provide program cost effectiveness assessment, such as net program benefit and benefit-to-cost ratio analysis.

This tool has been used with MOVES (see below) to estimate the potential emissions reductions from different forms of travel. More information on using TRIMMS and MOVES in conjunction can be found in the EPA's "Estimating Emission Reductions from Travel Efficiency Strategies: Three Sketch Modeling Case Studies" (EPA 2014).

Walk Friendly Communities

Supported by the USDOT Pedestrian and Bicycle Information Center, Walk Friendly Communities is a national recognition program to inspire cities to establish high priorities for safer walking environments. Cities apply to the Walk Friendly Community program to receive recognition for their walkability and receive resources on ways to increase the walkability of cities. Mountain View is a Bronze level community. Mountain View could review Arcata, CA's Pedestrian and Bicycle Master Plan which includes a city goal to reduce trips by motorized vehicles 50% by 2020.

Several other self-assessment tools are available for cities to determine their walkability. The Pedestrians First: Tools for a Walkable City was developed by the Institute for Transportation and Development Policy and can be used to assess the walkability of urban areas and neighborhoods. Within this report is a citywide walkability comparison which describes the urban planning characteristics that facilitate high levels of walking across various demographic and geographic areas. Cities can use the indicators outlined in this report to determine where they stand regarding walkability.

The League of American Bicyclists

Founded in 1880, The League of American Bicyclists advocates for bike-friendly cities through its Bicycle Friendly America program. Mountain View earned a Silver for its commitments to bicycle networks within the city. Each city within the program is given a report card and scored against the engineering, education, encouragement, enforcement, and evaluation and planning of its bicycle-friendly infrastructure. The highest award given is Platinum, two above Mountain View's current standing. The only city similar in size to Mountain View who has received a Platinum award is Davis, CA. Examining Mountain View's report card, "Key Steps to Gold" include reallocating road space on state-controlled roads for walking and biking mobility, hosting targeted bicycle education programs, and increasing bicycle parking.

California's Clean Vehicle Rebate Program (CVRP) – Market Penetration Benchmarking

To track electric vehicle market penetration, Mountain View can use California's Clean Vehicle Rebate Program (CVRP) data or DMV data. CVRP tracks purchased or leased zero-emission vehicles eligible for the state rebate, which includes electric, plug-in hybrids, and fuel cell vehicles. Eligible recipients can receive up to $7,000 in rebates, however, it is important to note that only approximately 75% of eligible recipients receive the rebates. CVRP maps the number of EV rebates by consumer type and by rebate type, including the number of enhanced rebates for low and moderate income participants. Mountain View can use CVRP's Map and Rebate Statistics tool to download the entire dataset, which would give the City the ability to look only at CVRP data from within City boundaries and look at how many enhanced rebates have been awarded in the City.

While CVRP provides a convenient way to quickly obtain the *most recent data on EVs that received rebates*, municipalities can also obtain data from the California DMV upon request. This DMV data is the *most accurate picture of the EVs that are currently being used in the city* because records in the CVRP database only track where the vehicle was originally registered, and as noted above, only a certain percentage of EV purchasers actually receive rebates. If the vehicle owner sold the vehicle or moved, or if an EV owner moved to Mountain View and re-registered their car, it would not show up in the CVRP data, but would show up in the DMV registrations data. Typically, DMV updates the data that it shares with municipalities approximately once per year, and the process will involve some sort of non-disclosure agreement.

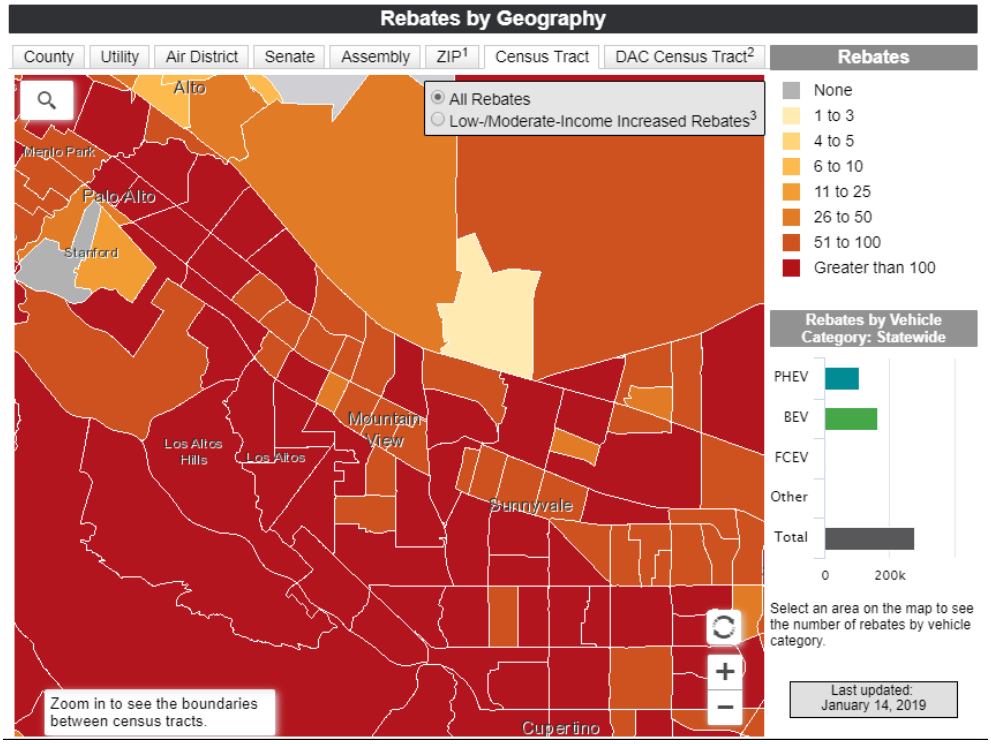


Figure 5. CVRP rebates received in Mountain View and surrounding census tracts.

Energy-Focused Tools

SolSmart

SolSmart aims to make the transition to solar easier and more affordable for cities, by providing a designation system that enables communities to track their progress and by providing technical assistance. Cities can earn SolSmart Bronze, Silver, or Gold for their actions to make it faster, easier, and more affordable to go solar.

Bay Area SolSmart designees include Berkeley, Contra Costa County, Fremont, Marin County, Oakland, Redwood City, San Carlos, Santa Rosa, and Sonoma County. Additional municipalities in the area are working toward their designation.

Reach Code Adoption Cost-Effectiveness Resources

The California investor owned utilities maintain a website, http://localenergycodes.com/, that contains a toolkit for municipalities considering adopting ordinances that go beyond California Title 24, including both performance-based ordinances (which require a certain energy performance without prescribing how that performance is achieved) and prescriptive ordinances (which require specific actions that have been shown to be cost-effective). Mountain View could use this resource as it considers code updates related to EV charging, all-electric design, energy efficiency, solar, cool roofs, zero net energy, and more. According to the Berkeley Office of Energy and Sustainable Development, the following cities and counties in California have energy efficiency and/or solar reach codes locally*:

City	Code Type	Detail
Healdsburg	Energy Efficiency	15.04.080 California Green Building Standards Code (CGBC) amendments. Appendix Chapter A-4 Appendix Chapter A-5
Mill Valley	Energy Efficiency	(see Berkeley Office resource)
Novato	Energy Efficiency	(see Berkeley Office resource)
Brisbane & San Mateo	Solar	(see Berkeley Office resource)
San Francisco	Solar	SF Department of Environment New construction in San Francisco must meet all applicable California codes, provide install solar electric, thermal, or green roof for all new buildings 10 floors in height or less; provide on-site facilities for recycling and composting; and meet city green building requirements tied to the LEED and GreenPoint Rated green building rating systems
Sebastopol	Solar	(see Berkeley Office resource)
Davis	Energy Efficiency and Solar	(see Berkeley Office resource)
Fremont	Solar	(see Berkeley Office resource)
Palo Alto	Energy Efficiency and/or Solar	City of Palo Alto Green Buildings Residential Compliance Non-Residential Compliance
Santa Monica	Energy Efficiency, Solar, and Zero Net Energy (ZNE)	(see Berkeley Office resource)
Oakland	Electric Vehicle - ZNE	(see Berkeley Office resource)

*the adoption of codes is largely driven by the 2016 CALGreen Code (effective January 1, 2017). All newly constructed buildings on new or existing sites shall comply with the CALGreen Code.

For a list of California cities that have adopted codes that exceed the 2016 Building Energy Efficiency Standards, please visit: https://www.energy.ca.gov/title24/2016standards/ordinances/

Electrification and Decarbonization City Networks

There are two leading organizations that are challenging cities to increase electrification and decarbonize their buildings: the Building Electrification Initiative (BEI) and the Building Decarbonization Coalition (BDC).

BEI builds upon the work of leading cities to pilot strategies to scale up electrification within heating and cooling systems. This project was originally called the "Thermal Decarbonization Initiative for Cities." Although there are four pioneering cities, 50 North American cities and a dozen manufacturers are interested in this effort. BEI was named one of seven "transformational opportunities for cities" in the

Carbon Neutral Cities Alliance's Game Changers Report. Pioneering cities include Boulder, CO, Burlington, VT, New York City, NY, and Washington, D.C.

BDC was founded as a forum for various California stakeholders (workers, builders, environmental groups, realtors, utilities, manufacturers, financiers and governments) to discuss and develop solutions to decarbonize the state's building sector.

BEI Members (Cities)	BDC Members (Cities, Municipal Utilities, and Other Organizations)
	Sacramento Municipal Utility District
Burlington, VT	Los Angeles Department of Water and Power
Washington, D.C.	City of Palo Alto Utilities
Boulder, CO	City of Los Angeles
New York City, NY	San Francisco Environmental Department
Berkeley, CA	City of Fremont
Salt Lake City, UT	City of San Luis Obispo
	City of San Jose Environmental Services
	San Jose Clean Energy
	City of Oakland
	Association of Monterey Bay Area Governments

Energy Performance and Technology Market Penetration Benchmarks

There are data sources available from the federal government, the state, and utilities that can be used to provide a benchmark for the City of Mountain View as it evaluates progress in deploying clean technologies.

Energy Performance Benchmarks – Disclosure Ordinances

Several cities around the country have developed ordinances that require buildings above a certain size threshold to report energy consumption and/or take action to reduce energy consumption if they are performing below a certain threshold. In many cases, these cities rely on EPA's ENERGY STAR Portfolio Manager to standardize the data collection and reporting process. Portfolio Manager can be used for both individual buildings and portfolios of buildings.[66] A few example ordinances are described below:

[66] The City of Mountain View could also use this tool for its *own* buildings.

	Does the ordinance require reporting?		What triggers the need for disclosure?	Does the ordinance require follow up action after disclosure?
	Energy	Water		
Berkeley Building Energy Saving Ordinance	Yes	Not explicitly	Sale of property and every 5 or 10 years (depending on building size)	No
Boston Building Energy Reporting and Disclosure Ordinance	Yes	Yes	Every year (for large buildings)	Complete a major energy savings action or energy assessment every five years
Cambridge Building Energy Use Disclosure Ordinance	Yes	Yes	Every year (for large buildings)	No[67]

Mountain View could develop a similar ordinance to ensure that certain categories of medium and large buildings are tracking and reporting their energy and water consumption. Benefits could include motivating building owners to take action on cost-effective improvements, potentially increasing transparency on energy usage and associated costs for prospective tenants, and enabling the City to require follow up actions that would improve the energy and water performance of buildings that did not meet the City's thresholds for efficiency. The development of such an ordinance would require substantial stakeholder engagement and careful discussions of program design. The development of thresholds is particularly challenging if substantial follow up requirements are to be instituted for poorer performing buildings because robustly determining which buildings are poorer performers is complex given the sparseness of benchmark data for certain high energy intensity building types (e.g. different types of research labs). Nonetheless, significant value can be obtained from a disclosure ordinance, whether or not follow up action is required from property owners.

Energy Performance Benchmarks – Datasets

Two major benchmark datasets related to building fuel usage are the U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey (CBECS) and Residential Energy Consumption Survey (RECS). The CBECS data represents energy consumption from a national sample of U.S. commercial buildings from 2012, the trends from which can be used to determine how Mountain View compares to other locations with similar climate conditions.[68] Mountain View is defined within the "Marine" climate zone in CBECS, and a comparison with median building energy intensities in a similar climate would be appropriate. Mountain View could also set commercial building energy reduction goals

[67] Staff recently worked with Cadmus to evaluate the possibility of requiring retrocommissioning, energy audits, or other follow up actions depending on whether buildings met specific performance thresholds. No action has been taken to implement any such requirement yet.

[68] Both CBECS and RECS are updated on irregular frequencies ranging from every three to nine years.

by selecting a percentile to exceed. This could be tied to a building energy use disclosure ordinance as described above. Similarly, RECS can be used as a benchmark for residential energy consumption.

Building Sector Market Penetration Benchmarks

Several sources could shed light on the penetration of specific energy efficient technologies that the City of Mountain View may want to encourage in the community. Such technologies may include air source and ground source heat pumps, heat pump water heaters, rooftop solar photovoltaic systems, and solar water heating. Mountain View could consider setting targets for market penetration of these technologies in its residential buildings and commercial buildings, which would require tracking data more robustly than is currently in place. Sources could include:

- City of Mountain View's permitting system, if data collection is aligned with reporting needs
- Solar permit records from Mountain View and from around the state (e.g., using Hot4Solar or another data source)
- Data from a potential energy disclosure ordinance that Mountain View could pass[69]
- Rebate records (e.g., through PG&E's required reporting to CPUC)[70]

Determining how Mountain View compares with other cities in terms of market penetration for these technologies would require a different method for each technology, depending on what benchmark data is available. For instance, the U.S. EIA RECS database provides information on space heating in U.S. homes (Table HC6.1), which could provide context on electrification of space heating. Deployment of other technologies in Mountain View could be benchmarked against rebate records through the data available through California Public Utilities Commission (CPUC) for other cities in California.[71]

Frameworks for Climate Adaptation and Development

Tracking adaptation and measuring development (TAMD) framework

In March of 2018 the UNEP DTU (a partnership between the United Nations Environment Programme and the Technical University of Denmark) published a report titled "Adaptation metrics: Perspectives on measuring, aggregating and comparing adaptation results" which discusses potential adaptation metrics for local governments and community planning. Within this report, TAMD is used as a conceptual framework to evaluate the policies, programs or projects related to adaptation at the local level. Within TAMD's operational framework there are two "tracks," 1) evaluating how well climate risks are managed and 2) evaluating how successful adaptation interventions are in reducing climate risks. Together, the

[69] As part of the reporting process, the City could require that each building submit information on technologies in the building such as air source heat pumps, ground source heat pumps, heat pump water heaters and/or solar and solar hot water installations.

[70] Because PG&E and other utilities are required to report rebate program statistics, information on the amount of rebates distributed in Mountain View and other municipalities in California is available through the California Energy Efficiency Statistics website, which contains multiple data sources such as the California Energy Data and Reporting System and Energy Efficiency Stats. However, tracking by measure type may not align with all the technologies Mountain View may wish to track.

[71] Ibid.

two tracks can be used by cities to identify if the management systems in place are capable of executing climate action effectively, and, alternatively, if the climate action being implemented is impactful.

Broad Sustainability Indices and Indicators

Additional benchmarking can be done by using indices that assess how sustainable a city is based on a wide variety of indicators. The indicators used in these indices can be used by Mountain View to assess how closely the city's actions and progress align with the cities that score highest.

The Green City Index

The Green City Index (2012) was developed by the Economist Intelligence Unit (EIU) and evaluates 120 global cities on environmental performance. This report can be used to benchmark a city's performance against other leading cities and identify best-practices from cities who successfully practice sustainability. The EIU uses 30 indicators across eight or nine categories (depending on the city's region) including: CO_2 emissions, energy, buildings, land use, transport, water and sanitation, waste management, air quality and environmental governance. About half of the indicators in are quantitative – usually data from official public sources, for example, CO_2 emissions per capita, water consumption per capita, recycling rates, and air pollutant concentrations. The remainder are qualitative assessments of the city's environmental policies – such as the city's commitment to sourcing more renewable energy, traffic-congestion-reduction policies, and air quality codes. By using qualitative and quantitative data, the index assesses current performance as well as intentions for improved sustainability.

The results of this city found Copenhagen the greenest city in the world, followed by Stockholm, Oslo, Vienna, and Amsterdam. Within the US and Canada, San Francisco was named the greenest city, followed by Vancouver, New York City, Seattle, and Denver.

North American Green City Index

The US and Canada Green City Index (2011) was also developed by the EIU and evaluates 27 major US and Canadian cities on environmental performance. Although the cities assessed in this report are the most populous metropolises, Mountain View can use the "Exemplar Projects" within the report as a reference point for best practices and new innovative policies. For the US and Canada Green City Index, the EIU uses 31 indicators, 16 of which are quantitative and the remaining 15 are qualitative. The results of this report rank each city by score, highest to lowest, in ten categories: overall, CO_2, energy, land use, buildings, transport, water, waste, air, and environmental governance. Overall, San Francisco scored highest as the greenest city in the US and Canada.

Urban Sustainability Indicators

Although the Urban Sustainability Indicators report was published in 1998, it can still be used as a framework for cities to consider when developing sustainability performance indicators. City-level indicators include: global climate change (CO_2, CH_4, N_2O, CFCs), air quality, acidification, ecosystem toxification, urban mobility/clean transportation, waste management, energy consumption, water consumption, nuisance (noise, odor, visual pollution), social justice, housing quality, urban safety, economic urban sustainability, green, public space and heritage, and citizen participation.

Sustainable Cities Index

The Sustainable Cities Index 2015 evaluates cities on three sub-indices, People, Planet, and Profit. Cities can use this report to identify what actions other cities have taken and which of them may be replicable

in their own cities to become more sustainable. The "People" sub-index includes metrics such as transport infrastructure, health, education, income inequality, work-life balance, the dependency ratio, and green spaces within cities. Rotterdam leads the People sub-index. The "Planet" sub-index includes city energy consumption and renewable energy share, recycling rates, greenhouse gas emissions, natural catastrophe risk, drinking water, sanitation, and air pollution. Frankfurt leads the Planet sub-index. And the "Profit" sub-index includes transport infrastructure (rail, air, other public transport and commuting time), ease of doing business, the city's importance in global economic networks, property and living costs, GDP per capita, and energy efficiency. Again, Frankfurt leads the Profit sub-index.

Sustainability Urban Development Indicators

The Sustainability Urban Development Indicators report does not compare cities, but rather it compiles a comprehensive list of environmental, social, and economic indicators used for sustainable development. Appendix C of the report contains a comprehensive table of indicators and their source.

STAR Communities

STAR Communities, now part of the LEED for Cities & Communities Team at the U.S. Green Building Council, is working to combine the STAR Community Rating System and the LEED for Cities performance metrics into global performance standards and actionable strategies.

The STAR Community Rating System uses 21 indicators to report on sustainability metrics, related to drinking water, wastewater, transportation, climate adaptation, greenhouse gases, energy supply, solid waste, environmental justice, food, green infrastructure, and a number of social equity and economic metrics.

Tools and Initiatives for the Community

Mountain View can develop its own sustainability metrics associated with the commitments and progress of large organizations in the community. One set of potential metrics could be tracking the number and size of entities operating in Mountain View that have committed to various sustainability programs and activities. Some of the large companies with operations in Mountain View include:

- Google
- Alphabet
- Quora
- Y Combinator
- 500 Startups
- Coursera
- 23andMe
- LinkedIn
- Microsoft
- Intuit
- Symantec

These companies and other companies and organizations in the City could commit to the following frameworks and their associated tools. The City could educate these organizations about the benefits of these commitments.

- **Science Based Targets initiative (SBTi).** The SBTi is a commitment to set a GHG emissions reductions target in line with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures. In recent years, both Intuit and Symantec have committed to SBTi.
- **Architecture 2030's Zero Tool and 2030 Challenge.** This program is focused on architecture firms and construction firms, as well as planners. The Zero Tool is provided to calculate energy reduction baselines and targets for existing buildings and building designs. This tool also allows you to compare your building's performance to similar buildings and visualize how your building achieves its current energy performance. The 2030 Challenge grew out of the recognition that buildings account for 39% of global emissions annually and that renovating the built environment was a necessity to accomplishing the emissions reductions outlined by the Paris Agreement. "Seventy-three percent (73%) of the 20 largest Architecture / Engineering (A/E) firms, responsible for over $100 billion in construction annually, have now adopted and are implementing the 2030 Challenge. According to a recent poll of design industry leaders by the Design Futures Council, approximately forty percent (40%) of all U.S. architecture firms have adopted the Challenge" (Architecture 2030 FAQ). This challenge includes the adoption of the following targets:
    - All new buildings, developments and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 70% below the regional (or country) average/median for that building type.
    - At a minimum, an equal amount of existing building area shall be renovated annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 70% of the regional (or country) average/median for that building type.
    - The fossil fuel reduction standard for all new buildings and major renovations shall increase to:
        - 80% in 2020
        - 90% in 2025
        - Carbon-neutral in 2030 (using no fossil fuel GHG emitting energy to operate).
- **American Institute of Architects' 2030 Commitment.** This is broader program related to the Architecture 2030 Challenge, and gives architects an opportunity to publicly demonstrate dedication to and track progress toward a carbon-neutral society, as well as sustainable water practices, healthy indoor air quality, green procurement and waste reduction, and other areas. Participation in this program also enables architects to access the Design Data Exchange tool, which identifies best practices and provides benchmarks.