

Proven and Promising Climate Measures From U.S. Communities for Possible Application in Sonoma County

Prepared as part of Climate Action 2020, a program of the
Sonoma County Regional Climate Protection Authority and the County of Sonoma

By Stacey Meinzen and Ann Hancock
Climate Protection Campaign
www.climateprotection.org



August 2014

Executive Summary

The purpose of this report is to present proven and promising measures to support Climate Action 2020, a collaboration of communities within Sonoma County and the Regional Climate Protection Authority (RCPA). Climate Action 2020's goal is to identify specific, implementable actions that Sonoma County jurisdictions can take to ensure their communities remain vibrant and resilient in an ever-changing climate.

In fall 2013, under the auspices of Climate Action 2020, the Climate Protection Campaign conducted a nationwide online and phone survey of communities that have succeeded in reducing greenhouse gas emissions. Additional web-based research including academic sources was conducted to supplement the findings. Information from this survey was compiled, supplemented with online research, and placed in the Sonoma County context. This was done to take a fresh look at successful actions being implemented by other U.S. communities to reduce greenhouse gas emissions, and to determine if any of these actions might be applicable in Sonoma County. The survey and online research not only identified many promising measures, but also revealed that Sonoma County is indeed a leader in climate protection efforts in the United States. Below are the top findings of the study pertaining to key sectors for greenhouse gas reductions.

Renewable Energy: By far the most powerful measure under local control for significantly reducing greenhouse gas emissions is switching from fossil to renewable fuel sources for electricity generation.

Washington D.C., Marin County, Palo Alto, Oberlin, New York City, Snohomish County, and Minneapolis all had sizable emissions reductions from such fuel switches. Sonoma Clean Power (SCP), a new local program that started serving customers in May 2014, now offers Sonoma County businesses and residents much cleaner power than was previously available. With SCP, this community now has a means to work toward a goal of 100 percent renewable power. The County can also support local renewable energy development by considering a reduction in solar permitting fees, using online permitting, and requiring that all new developments are solar-ready. Local energy leaders can create synergies by integrating local renewable energy development, energy efficiency, demand response, intelligent grid management, and financing, and by promoting successful existing local programs.

Energy Efficiency: Because more than 30 percent of Sonoma County greenhouse gas emissions are associated with energy use in buildings, measures to increase building energy efficiency remain an important, cost-effective strategy. This report describes top proven and promising programs in green building ordinances, energy efficiency programs, energy use disclosure laws, retro-commissioning programs, and public-private partnerships. Further research of best practices is needed to identify effective programs to make buildings far more efficient than they are today.

Transportation and Land Use: Local solutions for reducing greenhouse gas in this sector remain elusive not only in Sonoma County where more than 50 percent of greenhouse gas is produced, but also throughout the country. Communities with transit-oriented development have lower per capita emissions from transportation. Such measures hold promise for Sonoma County for the long term. For the near term, solutions for Sonoma County to pursue include supporting the switch to electric vehicles, bicycle use, car-sharing, carpooling, linking bus and train systems, and increasing other transportation demand management programs.

Solid Waste: Sonoma County has laid a foundation in the solid waste sector for emission reductions that was triggered by its decision to retain ownership of its solid waste system. The County must continue to aggressively maximize composting and recycling of organic material such as food waste and construction and demolition debris. Additionally, Sonoma County should prepare to capitalize on emerging opportunities to convert waste into energy.

Carbon Sequestration: Sonoma County can maximize carbon sequestration by preserving and managing its forests, agricultural and wild lands, and setting a bold goal for planting more urban and suburban trees.

Financing: Financing is a critical though often unacknowledged part of solutions in all sectors discussed above. Because economic incentives remain the most politically palatable and potentially powerful strategy for reducing emissions, Sonoma County must continue to focus on financing strategies for reducing emissions.

Tracking Progress and Building Awareness and Support: To ensure accountability for producing targeted emission reductions and to build community awareness and support for climate protection, Sonoma County needs a systematic approach to tracking and reporting its climate protection progress, and for publicly recognizing successful efforts.

Recommendations

1.0 Renewable Energy

- 1.1 Optimize Sonoma Clean Power to significantly and rapidly reduce GHG emissions*
- 1.2 Support local renewable energy development by considering a reduction in solar permitting fees, using online permitting, and requiring that all new developments install solar*
- 1.3 Integrate local renewable energy development, energy efficiency, demand response, intelligent grid management, and financing*

2.0 Energy Efficiency

- 2.1 Identify and implement best practices for aggressively increasing the energy efficiency of buildings*
- 2.2 Expand and strengthen energy use disclosure requirements*
- 2.3 Develop a commercial commissioning / retro-commissioning program*
- 2.4 Use public-private partnerships such as performance contracts for municipal buildings*

3.0 Transportation and Land Use

- 3.1 Accelerate the electrification of the transportation sector*
- 3.2 Expand transportation demand management programs*
- 3.3 Require that growth in new and existing developments be zero-carbon, i.e., energy efficient and renewable energy generating, city-centered, walkable, bikable, transit-oriented, and mixed-use*
- 3.4 Prioritize funding for active (non-motorized) modes of transportation*

4.0 Solid Waste

- 4.1 Work toward zero waste by maximizing recycling, composting, and diversion of organic material from the landfill*
- 4.2 Capitalize on emerging opportunities to convert waste into energy*

5.0 Agriculture and Forestry

- 5.1 Support agricultural practices that increase carbon sequestration*
- 5.2 Support forestry practices that increase carbon sequestration*

6.0 Financing and Fees

- 6.1 Use proven and develop new financing mechanisms to accelerate implementation of recommended measures*

7.0 Tracking progress and building awareness and support

- 7.1 Measure and report Sonoma County's progress toward its climate protection goals*
- 7.2 Build Sonoma County's awareness and support for climate protection*

Research Approach and Challenges

In fall 2013 top-performing U.S. climate protection communities were identified with help from ICLEI representatives and other experts. These communities were surveyed online and by phone to identify their best practices. Additional web-based research including academic sources was conducted to supplement the findings.

This report describes and, to a limited extent, analyzes the results of the survey and online research. Criteria for assessing community measures included the greenhouse gas (GHG) emissions reduced, the cost and time to produce the reductions, and the degree of political effort required, if any.

Most U.S. communities currently do not aspire to reduce their greenhouse gas emissions and therefore do not track them. Of the few communities that do aspire to reduce emissions and track progress, only a few are actually achieving significant emission reductions. Of these communities, a handful knows with certainty the causes of their reductions. As noted in the phrase common to researchers, correlation is not causation. For example, measuring the proportion of emissions reduced by the economic downturn versus other factors requires rigorous analysis.

Another challenge for this research was the lack of information from communities surveyed including a lack of program detail to ascertain possible application to Sonoma County and a lack of metrics-based evidence for claims of success. Moreover the scope of this report precluded comprehensive research that may have shed light on key evidence for such claims. Therefore, several recommendations in this report call for further research.

Leading U.S. Communities and their GHG Emissions Reductions

The table below highlights leading U.S. communities and their achievements, ranked by highest to lowest GHG reduction achievements. All communities below were surveyed except Gainesville, New York, and Portland.

The most powerful measure for emissions reductions in the communities studied was switching the electricity fuel source from fossil to renewable. Next, improvements in energy efficiency and solid waste management appear to be the causes for significant emissions reductions. Community-scale measures that reduce emissions in the transportation sector generally remain elusive across the U.S.

Recommendations based on research for this report are presented in the section that follows. Greater detail and background for the recommendations, information about the survey, names of the communities surveyed, and additional suggestions are shown in this report's appendices.

Leading U.S. communities and their GHG emission reductions

Community	GHG reduction, time span	Population	Comments
Oberlin, Ohio	50% 2007-2015	8,300	Reductions primarily from switching from coal to renewable energy - mostly landfill gas and hydropower (90% carbon-free) ¹
New York City, New York	16% 2005-2011	8,336,697	Reductions included 7 M tons from greener electricity, 5.9 M tons from electricity resource mix, 1.5 M tons energy efficiency ²
San Francisco, California	14.5% 1990-2010	837,442	GHG emission reductions produced in a variety of sectors; one of the first U.S. cities to take climate action and to issue a local-level climate action plan (2005) ³
Minneapolis, Minnesota	14% 2006-2012	392,880	Reductions from greener electricity, decreased natural gas consumption, and fewer emissions from the airport ⁴
Snohomish Co., Washington	13.4% 2000-2005	745,913	Reductions mostly from greener electricity ⁵
Washington, D.C.	12% 2006-2011	646,449	Reductions from greener electricity and energy efficiency ⁶
Berkeley, California	8% 2000-2012	115,403	Reductions primarily from residential energy efficiency and waste diversion. Berkeley's total GHG emissions from building energy use decreased approximately 13 percent between 2000 and 2011. Solid waste disposal decreased by approximately 43 percent from 2000 to 2011 – a reduction of approximately 48,000 tons of landfill waste. ⁷
Gainesville, Florida	7% 1990-2013	126,047	Reductions primarily from greener electricity (source mostly biomass/forestry waste), also from energy efficiency ⁸
Portland, Oregon	6% 1990-2010	603,106	Overall per capita emissions down 26% since 1990. Energy used per capita down 17% since 1990. ⁹ More than 1,000 homes have been weatherized, more than 1,400 homes and businesses have installed solar panels, food scraps for compost are collected from nearly 150,000 households, and the number of bicyclists has climbed by 14%. ¹⁰

1 Page 16 of CAP: <http://www.cityofoberlin.com/images/omlps/2013%20cap%20online%20pdf.pdf> and ICLEI. Oberlin contrast starkly with Sonoma County in two important ways: Its previous electricity source was coal, and its total population size – approximately 8,000 – is much smaller.

2 J.R. Killigrew, ICLEI, Greener, Greater Buildings Plan: <http://www.nyc.gov/html/gbee/html/plan/plan.shtml>

3 SF Environment: <http://www.sfenvironment.org/article/community-climate-action/citywide-actions>

4 City of Minneapolis: <http://www.minneapolismn.gov/sustainability/indicators/WCMSIP-087163>

5 Page 12 of Snohomish inventory and forecast:

http://www.co.snohomish.wa.us/documents/County_Services/Climate_Energy/InventoryReport42808.pdf

6 Survey (“Survey” in this and subsequent footnotes signifies that the source of the referenced information is the survey conducted as the first stage of the Climate Protection Campaign’s research for this paper.)

7 City of Berkeley: <http://www.cityofberkeley.info/ContentDisplay.aspx?id=71002>

8 Gainesville Regional Utilities: <https://www.gru.com/TabID/3832/Default.aspx>

9 Page 5 of Portland’s CAP update: <http://www.portlandoregon.gov/bps/article/268612>

10 Page 4 of Portland’s CAP update: <http://www.portlandoregon.gov/bps/article/393345>

Most Proven and Promising Measures for Sonoma County

Sonoma County is already implementing many proven measures. For Sonoma County to achieve its GHG emission reduction goals, far more transformative change is needed. The next leg of Sonoma County's climate protection journey may entail more aggressive implementation of proven measures as well as more forays into uncharted, albeit promising, territory. This may entail more experimentation with and incubation of promising measures coupled with an accelerator phase for projects that pass the incubator phase. Thus, this paper features both the most proven and most promising measures for Sonoma County to consider.

The measures below are arranged by sector. Selection of measures was guided by the criteria listed above as well as by researchers' judgment. Further analysis is needed to determine with greater certainty the applicability and availability of financing for the measures described in this paper.¹¹ Consideration should be given to policy mechanisms for effectively implementing the measures below. One promising approach is to begin with voluntary measures that progress to mandatory if targets are not met by specified deadlines.

Financing is shown separately below as the sixth sector to emphasize its importance. Financing cuts across all sectors and can fuel the engine to transform our fossil fuel-based economy. Because economic incentives remain the most politically palatable and potentially powerful strategy for reducing GHG emissions, financing strategies deserve special attention.

1.0 Renewable Energy

Introduction: Sonoma Clean Power (SCP) promises to be a powerful, game-changing innovation platform that provides significant opportunity for rapid GHG emissions reductions. Because only one other similar entity exists in California, SCP must look to Marin Clean Energy for directly applicable model programs or it must invent its own. Therefore, the following recommendations for taking advantage of SCP require further analysis before implementation. Please note that the Climate Protection Campaign, in a parallel endeavor to this research paper, is analyzing possible programs to optimize SCP.¹²

Recommendation 1.1 Optimize Sonoma Clean Power to significantly and rapidly reduce GHG emissions

Discussion: Because Sonoma Clean Power (SCP) has decision-making authority over sources of electric power generation, it can purchase 100 percent renewable power. However, to maintain its customer base, SCP must compete with PG&E. Given the early success of SCP to negotiate competitive rates, and given the rapid drop in the cost of solar energy, a goal of 100 percent renewable electric power may soon be attainable through SCP. Other communities such as Palo Alto and Washington, D.C., which are now moving toward 100 percent renewable power, provide inspiration for this.

SCP also has an opportunity to create energy efficiency, demand management, and financing programs for its

¹¹ For the 2008 Sonoma County Community Climate Action Plan, a carbon model was developed to analyze candidate measures. The package of measures to achieve Sonoma County's 25% GHG emission reduction goal described in the plan was based on the analysis using the carbon model.

¹² "Planning Concepts for Sonoma Clean Power's Local Energy Resources Development," <http://climateprotection.org/wp-content/uploads/2010/08/SCP-Local-Resource-Planning-Concepts-Jan-17.pdf>

customers to further leverage its ability to reduce emissions. The optimization of SCP will also create competition among power generators, allow local control over the stationary power supply, help to control rates over the long term, and stimulate local job growth as more local renewable energy generators come online.

Examples:

- PaloAltoGreen has 100 percent California-produced solar energy, which has reduced emissions dramatically.¹³
- Washington, D.C. has a 100 percent renewable energy mix, largely from a regional wind farm.¹⁴
- The City of Houston purchased over 140 megawatts of renewable power, the largest purchase of solar energy in the nation to date. This purchase is projected to account for half of Houston's annual electricity demand. Houston also purchased \$2 million of renewable energy credits.¹⁵

Recommendation 1.2 Support local renewable energy development by considering a reduction in solar permitting fees, using online permitting, and requiring that all new developments install solar

Discussion: In Sonoma County, solar and energy efficiency professionals, local government building inspectors, and fire safety officials have created a groundbreaking solar permitting process. Solar companies can now use the same permit application for residential solar projects anywhere in the county, and building officials all over the county follow the same standardized solar permitting guidelines.¹⁶ However, Solar Sonoma County (SSC) recommends taking these revisions even further by moving to online permitting. SSC estimates that online permitting would save approximately \$800,000 annually.¹⁷ Sonoma County can also consider charging solar permit fees based on cost recovery or eliminating fees altogether. The savings from moving permitting online could be applied toward the losses from reduced permitting fees. Sonoma County jurisdictions can go further by following the City of Sebastopol's example and requiring new development to install solar.¹⁸

Recommendation 1.3 Integrate local renewable energy development, energy efficiency, demand response, intelligent grid management, and financing

Discussion: Sonoma County should move toward using smart and micro grid technologies for demand response and energy efficiency in combination with renewable energy power generation at optimal locations to minimize fossil fuel use and its associated costs, both fiscal and ecological. Findings from the Renewable Energy Secure Sonoma County (RESOCO) project support this recommendation. The RESOCO project assessed Sonoma County's energy needs and available renewable energy supply, evaluated approaches to integrate demand and supply, and developed a model for a local, cost-effective renewable energy portfolio that would help Sonoma County meet its GHG reduction goals.¹⁹

13 <http://www.cityofpaloalto.org/gov/depts/uti/residents/sustainablehome/paloaltogreen/default.asp>

14 Survey

15 <http://www.houstontx.gov/mayor/press/20130620.html>

16 <http://www.solarsonomacounty.org/Resources/Solar-Permits.aspx>

17 Ibid

18 <http://www.pressdemocrat.com/csp/mediapool/sites/PressDemocrat/News/story.csp?cid=2224191&sid=555&fid=181>

19 <http://www.sonomaresco.org/>

Examples:

- “FortZED” is an effort to transform the downtown area of Fort Collins, Colorado, into a net-zero energy district through energy conservation, energy efficiency, renewable energy, and other smart grid technologies.²⁰ Phase I of the project was research-oriented. Phase II of the project aimed to demonstrate the operation of a micro-grid and the use of advanced cyber security safeguards to protect the micro-grid.²¹
- A field test in 2009 of a smart grid demonstration project involving five buildings at the Marin County Civic Center successfully coordinated and optimized large-scale renewables on the electric grid.²²
- Joint Venture's "Smart Energy Enterprise Development Zone" (SEEDZ) initiative aims to build the smart energy network of the future by uniting local energy customers, solution providers, municipalities, institutions and utility interests. The initiative aspires to high power reliability, quality, affordability and sustainability. The SEEDZ zone spans north Sunnysvale, north Mountain View, and Moffett Field. Between now and 2020, SEEDZ collaborators envision building out the country's highest performance two-way power network, supporting and rewarding active energy management and clean distributed generation on a sustainable economic scale.²³

2.0 Energy Efficiency

Introduction: More than 30 percent of Sonoma County GHG emissions are associated with energy use in buildings. Consequently, Sonoma County must include measures to increase building energy efficiency as part of its climate protection efforts. According to the U.S. Environmental Protection Agency, “Energy efficiency should be a cornerstone of energy and/or climate policies at all levels of government, based on its proven status as a cost-effective option for reducing carbon dioxide emissions and reducing the cost of climate policies.”²⁴

Recommendation 2.1 Identify and implement best practices for aggressively increasing the energy efficiency of buildings

Discussion: Even the most highly regarded energy efficiency programs are not producing results to the degree needed. Therefore, further research of energy efficiency best practices is recommended.²⁵ Research is a relatively low-cost upstream investment compared with the investment ultimately made on energy efficiency programs. Given that substantial energy efficiency funding is expected to come through Sonoma Clean Power, comprehensive and pro-active research can provide data-backed confidence that funds will be well spent.

Recommendation 2.2 Expand and strengthen energy use disclosure requirements

20 http://www.rmi.org/summer_2013_esj_whats_old_is_new_main

21 <http://fortzed.com/what-is-fortzed/energy-technology>

22 http://www.smartgridnews.com/artman/publish/Delivery_Microgrids_News/Marin-County-Microgrid-Demonstration-Kicks-Off-1346.html
Pacific Control Systems acquired Infotility in 2012.

23 http://www.jointventure.org/index.php?option=com_content&view=article&id=809&Itemid=622

24 Page 14 of EPA 2009 Study, “Energy Efficiency as a Low-Cost Resource for Achieving Carbon Emissions Reductions”

http://www.epa.gov/cleanenergy/documents/suca/ee_and_carbon.pdf

25 This recommendation is directed toward learning from others' research of energy efficiency best practices and not toward original research.

Discussion: California law now requires energy use disclosure prior to sale, lease, or financing of a nonresidential building.²⁶ This requirement can be expanded to the residential sector. Water use disclosure should be included in any energy use disclosure requirement given the embodied energy in water use. With knowledge about the energy performance of a building, buyers will know the operating costs of any buildings they are considering for purchase. Such information should make energy efficient buildings more valuable, thereby creating more demand for such buildings and prompting owners to make energy efficiency upgrades to their buildings.²⁷ Disclosure requires assessment of building performance, and according to a recent finding by the U.S. Environmental Protection Agency, assessment of buildings leads to energy efficiency improvements.²⁸

The most important aspects of energy use disclosure laws include:

1. Enforcement approach
2. Definition of the amount of square footage of buildings affected (e.g., >50k sq. ft.)
3. Frequency of disclosure (e.g., annually/every 5 years/only at time of sale?) and the level of disclosure (e.g., just a benchmark or a full audit?)
4. Deadlines for the various requirements; if they are too distant they are meaningless
5. Whether or not to include water usage
6. Whether or not to require mandatory rating

Examples:

- Austin’s Energy Conservation Audit & Disclosure Ordinance provides efficiency information to home buyers, apartment renters, and building owners to reinforce the value of energy efficiency. The ordinance affects properties located in the Austin city limits that receive electricity from Austin Energy.²⁹
- Austin’s third-party testing requirement has improved compliance with residential energy codes. The city used private sector technical expertise to design the testing.³⁰
- The City of Berkeley, which has had a Residential and Commercial Energy Conservation Ordinance (RECO/CECO) for years, is now switching to an energy use disclosure ordinance for single-family, multi-family, and commercial properties. The ordinance will be modeled after pieces of ordinances from Boston, New York City, Chicago, and Seattle, and is expected to yield greater energy savings. Berkeley opted for this change because the required measures under their RECO/CECO are out of date and the energy code requirements exceed those measures. In addition, the City won’t have to update the ordinance continually to keep up with technology and state policy changes. The new ordinance aims to be more nuanced than the RECO/CECO was, and it will not trigger permit requirements, which vexed building owners and realtors.³¹
- The City of Boston’s Building Energy Reporting and Disclosure Ordinance (BERDO) requires Boston’s large- and medium-sized buildings to report their annual energy and water use to the City of Boston after which the City makes the information publicly available. In addition, every five years building owners need to complete an energy assessment or energy action. Exemptions are provided for buildings that are already efficient or are making significant progress on energy efficiency.³²

26 http://www.energy.ca.gov/ab1103/rulemaking/documents/2013-06-13_AB_1103_FAQ.pdf

27 EPA Analysis Shows Big Benchmarking Savings, Oct 11, 2012: <http://www.imt.org/news/the-current/epa-analysis-shows-big-benchmarking-savings>

28 EPA Analysis Shows Big Benchmarking Savings, Oct 11, 2012: <http://www.imt.org/news/the-current/epa-analysis-shows-big-benchmarking-savings>

29 <http://www.aceee.org/sector/local-policy/case-studies/austin-energy-con>

30 page 87 of ACEEE’s 2013 City Energy Efficiency Scorecard: <http://www.aceee.org/research-report/e13g>

31 Phone call with Timothy Burroughs at the City of Berkeley on May 20, 2014.

32 <http://www.cityofboston.gov/eos/reporting/>

- The City of San Francisco has a Benchmark and Audit Ordinance whereby non-residential buildings must benchmark energy use every year and get an energy audit every five years. This allows decision-makers to compare performance to other buildings.³³

Recommendation 2.3 Develop a commercial commissioning / retro-commissioning program

Discussion: Commissioning is a process that ensures that a new building operates as efficiently as the designer intended and that building staff operate its systems and equipment properly. It is an intensive quality assurance process for buildings that begins during design and continues through construction, occupancy, and operations. Retro-commissioning mirrors a similar process for existing buildings. Retro-commissioning can resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life.³⁴

According to a report by Lawrence Berkeley Lab, commissioning and retro-commissioning of commercial buildings are potentially the most cost-effective strategies for reducing energy, costs, and GHG emissions in buildings today.³⁵ Retro-commissioning a few large buildings (likely commercial) is more cost effective than retro-commissioning many small ones (likely homes). Furthermore, commercial building owners are more apt than home owners to view energy efficiency retrofits as a business decision and thus implement cost-saving measures.

Some places are better suited for mandatory commercial energy efficiency ordinances, for example, Manhattan where the location is so desirable that businesses are highly motivated to stay despite extra energy efficiency requirements. In contrast, if Sonoma County adopted tough energy efficiency mandates it might drive businesses away, thus causing “leakage” of emissions to other communities. Such leakage merely moves emissions elsewhere rather than reducing them. The key may be to create commercial hubs that are so unique and attractive to businesses that mandated upgrades become an accepted up-front cost for businesses and a welcome long-term savings. Voluntary financing programs that feature no up-front cost for energy upgrades and guarantees for savings may succeed where mandatory programs would not.

Examples:

- New York City’s Energy Audit & Retro-commissioning Ordinance mandates that buildings over 50,000 gross square feet undergo periodic energy audit and retro-commissioning measures as part of the Greener, Greater Buildings Plan.³⁶
- In January 2010 the City of Seattle passed the Energy Disclosure Ordinance. It requires large commercial and multi-family property owners in Seattle to annually benchmark energy use and provide the City with ratings to allow comparison across different buildings. Building owners are also required to share energy usage and ratings with prospective buyers, tenants and lenders upon sale, lease or financing of properties.³⁷
- Southern California Edison’s commercial retro-commissioning program called RCx offers financial incentives to SCE customers for their retro-commissioning projects. SCE asserts that RCx typically saves

33 <http://www.sfenvironment.org/energy/energy-efficiency/commercial-and-multifamily-properties/existing-commercial-buildings-energy-performance-ordinances>

34 <http://cx.lbl.gov/definition.html>

35 Commissioning Report by Lawrence Berkeley Lab: <http://cx.lbl.gov/cost-benefit.html>

36 <http://www.nyc.gov/html/gbee/html/plan/1187.shtml>

37 <http://www.icleiusa.org/news/seattle-approves-energy-disclosure-ordinance>

owners up to 15 percent of annual energy costs and has a low simple payback from energy savings, averaging two years or less.³⁸

Recommendation 2.4 Use public-private partnerships such as performance contracts for municipal buildings

Discussion: Municipalities control buildings and infrastructure that consume significant amounts of energy. Municipalities often lack the upfront capital to conduct energy audits and invest in needed energy efficiency upgrades. By utilizing public-private partnerships such as performance contracts, the municipality can make upgrades, save money, avoid upfront costs, and lead by example.³⁹

Examples:

- Massachusetts, Connecticut, and New York City implemented Open Market ESCO, a \$9 million pilot program that will finance energy-efficient retrofits for an estimated 1,200 units of low-income housing and allow property owners to pay for the upgrades through reduced energy costs. The Open Market ESCO program is establishing a network of qualified subcontractors and professionals to conduct all work.⁴⁰
- New York City used \$37 million of its ARRA funding to establish a new financing agency called the NYC Energy Efficiency Corporation (NYCEEC), an independent, non-profit financial corporation whose goal is catalyzing the development of a market-driven energy efficiency retrofit industry.⁴¹
- The City of Houston awarded Siemens Industry, Inc., a multi-phase performance contract for 5.5 million sq. ft. of buildings. Upgrades included a solar thermal collector system, lighting upgrades, ballpark and outdoor field lighting, and HVAC efficiency improvements. Anticipated annual savings include more than 8,800,000 kWh electricity, 960 MMBtu natural gas, 57,440 kgal water, 9,267,208 pounds GHG, operational savings of \$907,665, and an excess of \$30 million over the 13-year contract.⁴²

3.0 Transportation and Land Use

Introduction: Transportation produces more than 50 percent of Sonoma County's GHG emissions and therefore plays a critical role in Sonoma County's portfolio of GHG reduction strategies. However no easy, effective local solutions exist for tackling emissions in this sector. Nonetheless, there are measures that Sonoma County can pursue, even if challenging.

38 <http://www.sce-rx.com/>

39 Government Code 4217 allows a public entity to enter into and deliver a public energy efficiency project by permitting the award of public contracts going through formal public bidding, thus saving the costs of that process which often exceed \$100,000. <https://www.acia.com/ACIA-News/Inspector-Magazine/Energy-Drives-our-Society.html>

40 <http://www.nyceec.com/wp-content/pdf/OpenMarket%20ESCO%20Press%20Release.pdf>

41 www.nyceec.com

42 Page 2 of <http://w3.usa.siemens.com/topics/us/en/sustainable-cities/Documents/houston-building-efficiency.pdf>

Recommendation 3.1 Accelerate the electrification of the transportation sector

Discussion: Sonoma County already has momentum toward this recommendation having been recognized as the “Most EV-Ready Community in 2011” by the Bay Area Climate Collaborative.⁴³ The County’s efforts to support electric vehicles (EVs) resulted in an estimated 130 chargers for fleet and public use throughout the County by the end of 2012.⁴⁴

Sonoma Clean Power, because of its unique access to customers and its rate-making authority, is poised to accelerate the proliferation of both low-carbon electricity use and the vehicles that can use that clean electricity. It could offer information about electric vehicles in customer bills and offer rebates for charging stations. EV manufacturers could share the cost of this printed collateral as part of their marketing budget. Sonoma Clean Power is currently evaluating these and other prospective programs to advance EV adoption.

Example:

- Austin Energy offers residential customers and EV owners a rebate of 50 percent of the cost of the purchase and installation of a Level 2 Charging Station up to a maximum of \$1,500.⁴⁵

Recommendation 3.2 Expand Transportation Demand Management programs

Discussion: Not only does transportation produce the majority of Sonoma County’s GHG emissions, it also consumes 24 percent of a typical Sonoma County family’s income,⁴⁶ the highest of any Bay Area county. Transportation Demand Management (TDM) offers the ability to save money and time for many Sonoma County commuters while meeting goals such as reducing GHG emissions and keeping growth of vehicle miles traveled in check. According to experts, comprehensive TDM programs that include a variety of individual strategies can make a major contribution to solving transportation problems. “TDM is limited by its institutional and political acceptance, not by its technical feasibility or cost effectiveness.”⁴⁷

Examples:

- Boulder, Colorado, has held vehicle miles traveled (VMT) at 1994 levels for many years and recently began reducing VMT below 1994 levels.⁴⁸ Such reductions were achieved while population increased 18 percent between 1990 and 2010.⁴⁹ Likely causes for this are Boulder’s measures to control sprawl⁵⁰ coupled with its incentives and support for travel by bus and bike.⁵¹
- Santa Barbara, California, is similar to Sonoma County in population size and a Highway 101 north-south corridor. In 1991 Santa Barbara County started Traffic Solutions, a program that offers a number of TDM programs. Overall Santa Barbara’s share of single occupancy vehicles is nearly nine percent below Sonoma County’s.⁵²

43 <http://www.baclimate.org/bay-area-climate-collaborative-blog/sonoma-county-recipient-of-most-ev-ready-community-award.html>

44 Page 8 of EV Guidelines doc: http://www.sonoma-county.org/prmd/docs/misc/ev_prog_guidelines.pdf

45 <http://www.austinenergy.com/about%20us/Environmental%20Initiatives/Plug-In%20Partners/drivers.htm>

46 <http://htaindex.cnt.org/map/>

47 “Why Manage Transportation Demand?” VTPI: <http://www.vtpi.org/tdm/tdm51.htm>

48 goboulder.tumblr.com/

49 Page 2 of Boulder’s Demographic Profile, 2011: <https://www-static.bouldercolorado.gov/docs/boulder-demographic-profile-december-2011-1-201305151232.pdf>

50 http://www.lincolnst.edu/pubs/435_Controlling-Sprawl-in-Boulder---Benefits-and-Pitfalls

51 <https://www-static.bouldercolorado.gov/docs/2010-2011-community-guide-to-boulders-climate-action-plan-1-201305081156.pdf>

52 <http://www.trafficsolutions.info>

Recommendation 3.3 Require that growth in new and existing developments be zero-carbon, i.e., energy efficient and renewable energy generating, city-centered, walkable, bikable, transit-oriented, and mixed-use

Discussion: Compared with all other California counties, Sonoma has more roads per capita and is also the most parcelized. These two conditions perpetuate sprawl and fight against transit-oriented development. Working in its favor, Sonoma County will soon have SMART, the Sonoma Marin Area Rail Transit, a new train around which mixed-use compact development can occur. Furthermore, all the cities of Sonoma County have Urban Growth Boundaries. To reduce transportation-related GHG emissions over the long term, Sonoma County must implement land use policies that facilitate lifestyles with very low annual vehicle miles travelled per capita. These policies include implementing transit-oriented development, rezoning areas for mixed-use redevelopment, planning for healthy neighborhoods, exploring transportation access plan agreements, and investigating a transfer of development rights program.

Examples:

- The City of Chicago passed an ordinance to accelerate denser, less car-dependent development near transit stations. For commercial and mixed-use properties located near transit, the ordinance eliminates minimum parking requirements and offers density bonuses, allowing for smaller dwelling units and taller buildings. Studies have shown real estate sales prices in Chicago near transit outperformed the region by 30 percent.⁵³
- The County of Montgomery, Maryland, has one of the most successful transfer of development rights (TDR) programs; they've protected 52,000 acres with TDRs, despite severe development pressure.⁵⁴
- King County, Washington, plans to preserve one million acres, despite doubling its population. Local governments may not use redevelopment funds unless they have a TDR program.⁵⁵
- The City of Portland, Oregon, used the concept of complete neighborhoods in its chief planning document. Goals, guiding policies, actions, and performance measures promote business vitality, access to housing, vibrant neighborhood hubs, developing neighborhood greenways, and coordinating planning and investments among public and private entities.⁵⁶
- The City of Boston has a complete streets program which aims to put pedestrians, bicyclists, and transit users on equal ground with drivers, and promotes a vision of streets that are safe, attractive, and conducive to healthy, active transportation.⁵⁷ In addition, the City of Boston has a long-term transportation plan that includes off-street maximum parking ratios, transportation demand management requirements for new developments, the foundation of a bicycle-lane network, and a slate of public transportation projects.⁵⁸
- St. Lucie, Florida, amended its comprehensive plan to preserve the rural character of its agricultural area while providing for future growth. Using principles of traditional neighborhood design, the strategy for new development requires a mix of uses, building types, and income levels as well as a pedestrian-friendly block and street network.⁵⁹

53 Aaron Joseph LEED AP, Deputy Sustainability Officer, Office of the Mayor, City of Chicago

54 Conversation with Rick Pruetz of Smart Preservation, September 3, 2013

55 Conversation with Jeremy Criss, County of Montgomery, October 4, 2013

56 Page 12 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/268612>

57 Page 27-28 of Boston's CAP update: http://www.cityofboston.gov/images_documents/A%20Climate%20of%20Progress%20-%20CAP%20Update%202011_tcm3-25020.pdf

58 Ibid

59 <http://www.stlucieco.gov/planning/tvc.htm>

Recommendation 3.4 Prioritize funding for active (non-motorized) modes of transportation

Discussion: To reduce emissions, improve air quality, and enhance public health, Sonoma County must change its spending priorities by moving funding away from projects that increase GHG emissions and toward those that reduce emissions, especially projects that support walking and cycling. By doing so, Sonoma County could, for example, implement more of its Bicycle and Pedestrian Plan, which now lacks sufficient funding.⁶⁰

Examples:

- Minneapolis, Minnesota, is known as the best bike city in the U.S. Its Midtown Greenway is a 5.5-mile bicycle highway through the center of town which follows a sunken rail corridor with no major breaks in traffic and almost entirely separate from pedestrian traffic. The Greenway is plowed in the winter, lit at night, equipped with emergency call boxes, police patrols, and its own suspension bridge.⁶¹
- More than 500 cities around the world have started public bike shares.⁶² Montreal, Canada, has a self-service bike rental program, the largest in North America with 5,000 bikes, 400 docking stations, and 3.3 million trips in 2010. The program has expanded to Toronto.⁶³ The City of Chicago's bike sharing program called Divvy has 4,000 bikes and 400 stations. Chicago's Department of Transportation owns all bikes, stations, and vehicles. Chicago's Streets for Cycling 2020 plan calls for a 645-mile bikeways network by 2020.⁶⁴

4.0 Solid Waste

Introduction: GHG emissions produced from the solid waste sector account for less than two percent of Sonoma County's total GHG emissions.⁶⁵ Methane from the decomposing organic portion of solid waste is the largest producer of emissions in this sector. As organic material buried in the landfill decomposes it turns into methane, a greenhouse gas approximately 25 times more potent than carbon dioxide. Sonoma County residents and businesses generate a significant amount of solid waste for which they pay a considerable amount for disposal, suggesting that there is ample room for reducing emissions and saving money in this sector.^{66, 67}

For many years Sonoma County has curbed the amount of solid waste it landfills. This effort has resulted in the diversion of more than 60 percent of the county's solid waste to composting and recycling markets through "blue can" and "green can" source separation.⁶⁸ Although Sonoma County is known for its success in diverting solid waste from the landfill, it can do better, as other communities are demonstrating.

60 http://www.bikesonoma.org/sites/default/files/2010 Bicycle and Pedestrian Plan_0.pdf

61 <http://www.usatoday.com/story/travel/destinations/2013/07/23/best-urban-bike-paths-across-the-usa/2576801/>

62 <http://vancouver.ca/streets-transportation/public-bike-share-system.aspx>

63 <https://montreal.bixi.com/>

64 <http://www.cityofchicago.org/content/dam/city/depts/cdot/bike/general/ChicagoStreetsforCycling2020.pdf>

65 2010 GHG Status Report http://climateprotection.org/pdf/Status_Report_Card_May_2010.pdf

66 About 358,000 tons per year, of which 270,000 tons is processed by County facilities.

67 Estimated from Santa Rosa franchise fee, and total tipping fees. January 4, 2010, Press Democrat <http://www.pressdemocrat.com/article/20100104/ARTICLES/100109824?p=2&tc=pg>

68 CalRecycle <http://www.calrecycle.ca.gov/Profiles/County/>

Recommendation 4.1 Work toward zero waste by maximizing recycling, composting, and diversion of organic material from the landfill

Discussion: Zero waste is the ultimate goal for reducing emissions and saving money in the solid waste sector. Many communities are now working toward this goal. With zero waste, all organic materials that would typically be buried and produce methane are instead harvested for their highest and best use – as compost or as an energy source. Non-organic materials are recycled, reducing the need to continually mine and refine virgin resources for product production, and thus, reducing energy use and emissions. As part of this, construction and demolition debris is recycled, spurred by a Construction and Demolition (“C&D”) ordinance that uses a deposit system in conjunction with certified facilities.

Examples:

- San Francisco is committed to zero waste by 2020.⁶⁹ Total emissions from waste have decreased 33.4 percent since 1990 as more materials have been recycled and composted. The city’s current landfill diversion rate is 80 percent.
- The City of Vancouver in Canada also has a goal to achieve zero waste.⁷⁰
- The Oakland City Council adopted a zero waste goal in 2006, calling for a 90 percent reduction in waste sent to landfill by 2020.⁷¹
- In San Diego, on July 1, 2008, the Construction and Demolition (C&D) Debris Deposit Ordinance took effect, requiring that the majority of construction, demolition, and remodeling projects pay a refundable C&D Debris Recycling Deposit and divert at least 50 percent of their debris by recycling, reusing or donating usable materials.⁷²

Recommendation 4.2 Capitalize on emerging opportunities to convert waste into energy

Discussion: Sonoma County’s Central Landfill uses a methane capture system. Because these systems do not capture all the methane being emitted, some goes into the atmosphere. To further reduce emissions from solid waste, organic material now being landfilled could instead be processed in an anaerobic digester to make biogas. This management system would provide carbon-free energy that can displace fossil fuel.⁷³

Examples:

- The City of San José has recently started processing all of the City’s commercial organic waste using the first commercial scale dry fermentation anaerobic digestion and in-vessel composting facility in the U.S.⁷⁴
- Junction City outside Portland, Oregon, is building a \$4 million biogas facility. It will compost organic waste such as food scraps, straw, and manure to generate methane that will be collected and burned to power a turbine and produce electricity.

69 Email from Calla Ostrander on 11/1/13, SF Environment. See also <http://www.sfenvironment.org/zero-waste>.

70 Page 424 of the CAP update: <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2012-2013-implementation-update.pdf>

71 Scott Wentworth, City of Oakland (survey response)

72 <http://www.sandiego.gov/environmental-services/recycling/cd/index.shtml>

73 Email from Dave Erickson, California Public Utility Commission, August 28, 2013

74 <http://www.sanjoseca.gov/index.aspx?NID=1555>

5.0 Agriculture and Forestry

Introduction: Sonoma County's forestry and agricultural sectors provide opportunities to sequester carbon. Preserving and expanding forests and agricultural lands protect Sonoma County's iconic beauty as well as the climate. Sonoma County voters created and continue to support the Agriculture Preservation and Open Space District that has protected over 106,000 acres from development resulting in carbon sequestration, avoided emissions from habitat removal, and from avoided vehicle miles traveled. Additional lands have been protected by Sonoma County Parks, Sonoma Land Trust, and other non-profit organizations. Programs that encourage farmers and ranchers to follow sustainable practices help sequester carbon in soils and plants as well as reduce methane emitted by livestock and manure.⁷⁵ Research currently underway, notably that of the Sonoma County Agriculture Preservation and Open Space District's Climate Action through Conservation project, are likely to identify actions that will have a big impact on the reduction of GHG emissions in this sector.

Recommendation 5.1 Support agricultural practices that increase carbon sequestration

Discussion: Sustainable agricultural practices increase the ability of the land to sequester carbon while enhancing other ecosystem services such as improved fertility, and improved soil and water quality. A big recent boost for action came from the Sonoma County Winegrape Commission which announced Sonoma County's commitment to becoming the nation's first 100 percent sustainable wine region.⁷⁶ This commitment will inspire others in the agriculture sector to follow suit. Sonoma County could tap its academic institutions, Sonoma State University and Santa Rosa Junior College, as well as the many innovative local farmers and ranchers for assistance in promoting sustainable farming and ranching practices.

Examples:

- The Marin Carbon Project seeks to demonstrate the capability of local rangelands to sequester carbon. The project is a collaboration of UC Berkeley, UC Davis, UC Cooperative Extension, Marin Organic, Marin Agricultural Land Trust, Marin Resource Conservation District, the USDA Natural Resources Conservation Service, and Nicasio Native Grass Ranch. Preliminary results of levels of carbon in test rangeland soils are very promising. The Marin Carbon Project intends to help ranchers and rangeland managers maximize financial compensation as a result of sequestering carbon.⁷⁷
- Washington State University Extension provides technical assistance to Snohomish County farmers to teach farmers practices that reduce fuel consumption. WSU is also developing a "Sustainable Lands Strategy" that balances the preservation of farmlands with habitat restoration objectives.⁷⁸

⁷⁵ According to Sonoma County's 2011 GHG inventory, emissions from agricultural comprise one-tenth of the County's total emissions.

⁷⁶ <http://climateprotection.org/wp-content/uploads/2012/12/2011-GHG-Report-for-Sonoma-County-Nov-12-2012.pdf>

⁷⁷ <http://www.sonomawine.com/blog/sonoma-county-become-nations-first-100-sustainable-wine-region>

⁷⁸ <http://www.marincarbonproject.org/>

⁷⁸ Page 21 of Snohomish's Sustainability Report, 2011:

http://www.co.snohomish.wa.us/documents/County_Services/Climate_Energy/SustainReport030811.pdf

Recommendation 5.2 Support forestry practices that increase carbon sequestration

Discussion: Many of Sonoma County's forests and orchards have been cut to make way for vineyards and suburban development. A reversal of this trend will be imperative to maximize carbon sequestration while creating co-benefits such as restoring wildlife habitat, reducing urban heat island effects, and improving local air and water quality. Sonoma County has experience preserving lands for carbon sequestration. Buckeye Forest, formerly known as Preservation Ranch, is part of The Conservation Fund's North Coast Forest Conservation Initiative. Threatened by development and vineyard conversion, the Conservation Fund purchased the nearly 20,000-acre property so that the land could be managed sustainably for timber, carbon sequestration, and restoration of coho salmon habitat.⁷⁹

In addition to preserving wild lands, planting new trees, especially in suburban settings, will also sequester carbon and offer co-benefits, including providing shade to reduce the need for air conditioning, improving air and water quality, and mitigating the urban heat island effect.

- The Arcata Community Forest, established in 1955, is comprised of 2,350 acres of second growth redwood forest in Humboldt County. The forest generates money through its carbon offset program in partnership with Terrapass.⁸⁰
- New York City has a goal of planting one million trees, which will increase its urban forest by 20 percent. The City will plant 70 percent of the trees in parks and other public spaces. The other 30 percent will come from private organizations, homeowners, and community organizations.⁸¹
- The City of Philadelphia aims to increase tree coverage to 30 percent in all neighborhoods by 2025.⁸²
- The City of Portland has a goal to expand the urban forest canopy to cover one-third of Portland, and at least 50 percent of total stream and river length in the city meet urban water temperature goals as an indicator of watershed health.⁸³ Over 7,000 trees were planted in Portland in 2011 through a variety of programs, including partnerships with Friends of Trees and the Youth Conservation Crew. The City's Neighborhood Tree Stewards Program (a volunteer training course) provided participants tools and knowledge to lead urban forestry projects.⁸⁴
- Sacramento's Greenwise Action Plan has a goal of planting 5 million trees by 2025. To reach that goal, 3 million trees will need to take root by 2020. Progress will be reported using a counter on the Sacramento Tree Foundation website.⁸⁵

6.0 Financing and Fees

Introduction: The aforementioned energy efficiency and renewable energy projects will not happen without powerful financial tools to support them. Financing and fees are pivotal to the success of Sonoma County's GHG reduction measures.

79 <http://www.conservationfund.org/projects/buckeye-forest/>

80 <http://www.cityofarcata.org/departments/environmental-services/city-forests>

81 <http://www.milliontreesnyc.org/html/about/about.shtml>

82 Page 21 of Philadelphia's 2013 Progress report: http://www.phila.gov/green/PDFs/Greenworks2013ProgressReport_Web.pdf

83 Page 11 of Portland's CAP: <http://www.portlandonline.com/shared/cfm/image.cfm?id=25050>

84 Page 16 of Portland's CAP update: <http://www.portlandoregon.gov/bps/article/393345>

85 Page 31 of the Greenwise Sacramento Regional Plan: <http://uptownstudios.net/greenwise/>

Recommendation 6.1 Use proven and develop new financing mechanisms to accelerate implementation of recommended measures.

Discussion: Three financing solutions were highlighted in Sonoma County’s Community Climate Action Plan issued in 2008: AB 811 – Property-Assessed Clean Energy (Sonoma County Energy Independence Program), Pay As You Save® (an on-bill repayment program), and Community Choice Aggregation (Sonoma Clean Power). All three are being implemented in Sonoma County. In addition, Sonoma County is currently in the beginning stages of implementing the Sonoma County Efficiency Fund, another innovative financing solution for buildings.

Crowd-funding is an emerging financing mechanism for aggregating many small investments via an online platform. Companies like Mosaic are using this approach to finance renewable energy projects. Sonoma Clean Power may be able to use crowd-funding to support local energy development. Collaborating with firms that aggregate capital for renewable energy projects may be an avenue for Sonoma County to attract new businesses and jobs.

Carbon taxes and fees, although less common – particularly at the local level – may have a place in reducing GHG emissions. These can have the dual benefit of creating an ongoing revenue source for climate protection while creating a disincentive to engage in carbon-intensive behaviors. The County of Sonoma has explored the concept of a mitigation fund to accept fees from developers unable to meet CEQA requirements for GHG emissions. Another means for taxing carbon would be for Sonoma County jurisdictions to tax excessive energy use.

Examples:

- In Boulder, Colorado, citizens voted to tax themselves based on the amount of electricity consumed, and use the revenue to fund climate protection efforts. In 2010 the tax generated approximately \$1.8 million.⁸⁶
- The City of Arcata, California, passed a measure in November 2012 to levy a tax on excessive electricity use in residential households – primarily from indoor marijuana grow operations. The goal of the tax is to help meet its GHG emission reduction goals, align with emerging California energy policy, and create a disincentive for excessive energy use.⁸⁷

7.0 Tracking progress and building awareness and support

Introduction: Achieving a goal usually entails accountability based on measuring progress, especially for a large scale endeavor such as climate protection. Policymakers, community stakeholders, and implementers must know the goals, the current status, the way forward, and the responsible parties in meeting those goals. This ensures the support required to reduce emissions at the speed and scale commensurate with solving the climate crisis.

Recommendation 7.1 Measure and report Sonoma County’s progress toward its climate protection goals

Discussion: To ensure accountability for producing targeted emission reductions and to build community awareness and support for climate protection, Sonoma County could consider development of a systematic approach for tracking and recognition of performance. Tracking might also include a consumption-based inventory, which has

⁸⁶ Survey. More information on the tax: <https://www-static.bouldercolorado.gov/docs/community-takes-charge-boulders-carbon-tax-1-201305081136.pdf> . See also <https://bouldercolorado.gov/pages/climate>

⁸⁷ <http://www.cityofarcata.org/node/1645>

been done by the State of Oregon and the greater metropolitan area of Portland. The Climate Protection Campaign has measured and reported Sonoma County's annual progress toward its 25 percent GHG reduction goal for most of the past decade; one year the RCPA did as well. Examples of inspiring progress reports produced by other communities could inspire similar reports in Sonoma County.

Examples:

- Vancouver reports progress using a matrix by sector including goal, target, indicator, baseline, current year, percent change improved over baseline, highest priority actions, and percent complete.⁸⁸
- New York City provides a progress report that includes very specific actions with measurable results and the status of each milestone arranged by sector.⁸⁹
- Portland has an update with a color-coding system showing the progress of actions by sector.⁹⁰
- Berkeley has an online progress report broken down by sectors showing graphs that compare current emissions with what is needed to meet goals.⁹¹

Recommendation 7.2 Build Sonoma County's awareness and support for climate protection

Discussion: At present there is no forum in Sonoma County to showcase exemplary action and to acknowledge responsible individuals, governments, businesses, and other entities. Doing so would support them as well as be an inspiration to others. Such a forum can also bring the community together and build awareness and alignment for climate protection. Speakers could present key concepts and priorities.

Examples:

- From 2003 to 2012 a consortium of government, business, and community partners in Sonoma County organized "Climate Protection: Everybody Profits," an annual, daylong event attended by about 150 people each year. The conference was the forum where the community's progress was reported.
- During Boulder's community forum, the senior environmental planner exhorted the audience saying, for example, "You can't conserve your way out of the problem; we must also dramatically transform energy source," and "Individuals alone can't change systems; system change requires collective action."⁹²
- In 2011, Multnomah County held a Climate Short Film Contest as part of its quarterly Sustainability Film Series. Community members told stories about local impacts of climate change through short, engaging videos. Winning films were featured at an event in July 2011 that spurred community and media interest in the film contest and issues surrounding climate change.⁹³
- Twice a year, the City of Portland invites diverse community organizations to apply to host the ReTHINK workshop series and then conduct a community action project. The first workshop builds a basic understanding of climate change. The second and third workshops map back to the four action areas of the Climate Action Now! campaign. The City then grants the organization up to \$1,500 to conduct a community action project linked to at least one of the climate action areas.⁹⁴

88 Page 5-6 of Vancouver's CAP update: <https://vancouver.ca/files/cov/greenest-city-2020-action-plan-2012-2013-implementation-update.pdf>

89 http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_progress_report_2013.pdf

90 <http://www.portlandoregon.gov/bps/article/393345>

91 <http://www.ci.berkeley.ca.us/climateprogress/>

92 <http://www.boulderblueline.org/2013/10/10/can-boulder-reduce-its-ghg-emissions-by-80/>

93 Page 20 of Portland's CAP update: www.cap_progress-rept2012_web.pdf

94 Ibid

Acknowledgments

The authors greatly appreciate those who contributed to this report:

Matthew Naud, Ann Arbor
Aaron Bastian, Atlanta
Zach Baumer, Austin
Karen Diemer, Arcata
Alex Porteshawver, Benicia
Timothy Burroughs, Berkeley
Carl Spector, Boston
Elisabeth Vasatka Boulder
Aaron Joseph, Chicago
Brendan Reed, Chula Vista
Mitch Sears, Davis
Kathy Collier, Fort Collins
Haydee Urita-Lopez, Los Angeles
David Somers, Los Angeles
Diana Kitching, Los Angeles
Elizabeth Carvajal, Los Angeles
Omar Pena, Marin County
Luciana Gonzales Miami
Brendon Slotterback, Minneapolis
Stan Edwards, Montgomery County
Allan Cohn, New York City
Scott Wentworth, Oakland
Kristin Brazianas, Oberlin
Shiva Swamantham, Palo Alto
Denver Miller, Pasadena
Sarah Wu, Philadelphia
Peggy Morell, Portland Metro Council
Yvette Rincon, Sacramento
Julia Burrows, Sacramento
Mike Foster, San Jose
James David, San Luis Obispo
Cory Bytof, San Rafael
Calla Ostrander, San Francisco
Tracy Morgancern, Seattle
Lisa Dulude, Snohomish County
Malcolm Shield, Vancouver, Canada
John Hermans, Washington, D.C.

Brant Arthur, Climate Protection Campaign
Michael Boswell, Ph.D., City & Regional Planning, Cal. Polytechnic State University San Luis Obispo
Lauren Casey, Sonoma County Regional Climate Protection Authority
Dave Erickson, California Public Utilities Commission
Lois Fisher, Fisher Town Designs
Justin Gerdes, Forbes Contributor
Amie Glass, Climate Protection Campaign
Woody Hastings, Climate Protection Campaign
Alex Hinds, Sonoma State University
J.R. Killigrew, ICLEI
Misty Mersich, Sonoma County Regional Climate Protection Authority
Rick Pruetz, Planning & Implementation Strategies
Bruce Riordan, Elmwood Consulting
Andrew Seth, Climate Communities
Suzanne Smith, Sonoma County Transportation Authority/Regional Climate Protection Authority
Abby Young, Bay Area Air Quality Management District
Members of the Sonoma County Transportation and Land Use Coalition