

# City of Watsonville, California: Enabling Climate Action

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## ABSTRACT

The City of Watsonville Climate Action Plan (CAP) project includes carbon mitigation strategies, as well as adaptive measures to increase local resilience to future climate impacts. A unique aspect to both the mitigation and adaptation portions of the Watsonville CAP is development of an innovative local carbon fund program. The local carbon fund program utilizes a unique approach to leverage a new carbon impact fee and rebate structure to incentivize energy-efficient new construction and retrofits above and beyond California state energy code (Title 24) requirements to support statewide zero net energy goals. The local carbon fund program will build upon previous efforts and generate revenue for local carbon mitigation projects in support of local economic development goals. This paper discusses the structure of the local carbon fund program, as well as lessons learned from the development process for the Climate Action Plan project. We analyze best practices for creating a local carbon fund program that incentivizes zero net energy buildings and we further describe how economically disadvantaged communities can best develop programs to both mitigate and prepare for climate change.

## Introduction

Climate action planning refers to the development of one or more greenhouse gas (GHG) emissions reduction target(s) along with strategies designed to meet each target in a specific timeframe. In the U.S., the earliest adopted climate action plans (CAPs) at the local (i.e. city or county) level were developed in the period 2004-2008<sup>1</sup>, and as of August 2012 approximately 63% of jurisdictions in the state of California have a CAP or GHG reduction strategy adopted or in progress (Office of Planning and Research (OPR) 2012). In addition, many local jurisdictions have developed a second or third iteration of a CAP, or regularly issue CAP progress reports. However, the field of climate adaptation planning, which focuses on planning for the future impacts of climate change, is newer. Approximately 19% of U.S. municipalities have completed climate adaptation plans (Carmin, Nadkarni, and Rhie 2012) but few have integrated their CAPs with their adaptation plans. Despite the rapid development of CAPs across jurisdictions in California and beyond, local jurisdictions find it difficult to implement CAP recommendations, primarily due to funding and staffing constraints. Low-income communities are particularly challenged, although many types of jurisdictions are currently struggling with reduced staffing and other resources due to lingering effects of the economic recession.

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<sup>1</sup> Some of the leading cities in the U.S. include San Francisco, CA (first climate action plan in 2004); Seattle, WA (first climate action plan in 2006); Boston, MA, Austin, TX, and Philadelphia, PA (first climate action plans in 2007); and Chicago, IL (first climate action plan in 2008).

The City of Watsonville is considered an economically disadvantaged community as defined by the State of California, with significant portions of the City being severely disadvantaged.<sup>2</sup> Also, Watsonville is a community near the California coast with a population of 52,000, which has embarked on the development of an ambitious CAP containing both mitigation strategies and a climate adaptation assessment. The adaptation assessment includes future priorities for increasing resiliency, and the development of a local carbon fund program will support implementation of CAP goals.<sup>3</sup> Watsonville is taking a new approach to local climate policy by combining climate mitigation and adaptation and tying climate-related goals to a local funding stream. This paper explores the development of the innovative Watsonville CAP and local carbon fund program, with a particular focus on exploring the decision-making process around each aspect of the program, and identifying best practices.

## Background

The City of Watsonville has a history of environmental leadership. In 2008, the City was one of the first jurisdictions to develop a Green Building Ordinance requiring local construction projects to achieve green building standards. The ordinance required that both nonresidential and residential projects had to achieve a certain number of points on a green building checklist; projects could voluntarily achieve a Green Building Award by going over the required points. (City of Watsonville 2008).

In one of the more innovative aspects of the program, the City also created a Green Building and Energy fee – equal to 0.025% of each project’s assessed valuation – to fund a Green Building Education Fund. Revenues in the Green Building Education Fund could be used for public educational purposes, staff education, publications, local seminars, and program management. Notably, the City’s Green Building Program and associated fee were effective January 1, 2008, and were thus launched before the state finalized the California Green Building Standards Code (CALGreen), effective August 1, 2009. As of January 1, 2014, the City adopted the updated version of the CALGreen code for all new construction projects, which requires measures beyond the scope of the Watsonville Green Building Ordinance. (City of Watsonville 2014b).

The Green Building Program is only one example of the leadership the City has shown on environmental issues. Watsonville has numerous other programs designed to raise awareness around issues such as energy and water conservation, stormwater management, and waste reduction. For example, the City runs an award-winning Environmental Science Workshop, a program designed to help students to learn how materials can be re-used in creative and exciting ways; the workshop program reaches approximately 600 students each week. In another example of environmental leadership, the City’s Water Resources Center has received numerous awards for green design, including the American Institute of Architects Top Ten Green Projects. Other efforts include a citywide plastic bag and styrofoam ban, and numerous solar panel installations on City-owned buildings. The City is located within a sensitive, ecologically rich wetlands area known as the Watsonville Sloughs, and continued protection of these areas is an important

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<sup>2</sup> A “Disadvantaged Community” is a community with a median household income less than 80 percent of the statewide average. “Severely disadvantaged community” means a community with a median household income less than 60 percent of the statewide average. For a map showing that Watsonville is a disadvantaged community, see California Department of Water Resources, 2014.

<sup>3</sup> A local carbon fund is a mechanism to collect revenues specifically for the purpose of reducing GHG emissions. The revenues could be from donations, or from a mandatory tax or fee.

component of the adaptation and environmental protection strategy in the City. The wetlands are accessed by numerous trails and provide both recreational resources as well as ecological services to the area.

The City of Watsonville's CAP and local carbon fund program is being funded by a grant from the State of California's Strategic Growth Council. The program development is being led by the City with technical assistance from two consultants; the CAP and climate adaptation plan components are being led by DNV GL, with DNV GL's subconsultant EcoShift Consulting, LLC, leading the local carbon fund program. All work was completed with extensive review and input from a City-convened Technical Advisory Committee, comprised of nonprofit and business leaders, and key City staff, as well as input from the community at large.

This project was envisioned to allow the City to meet state requirements for GHG reductions by 2020, as well as requirements under the California Environmental Quality Act (CEQA), and also as a means to lay the groundwork for future efforts. One particular goal of the project is to develop new revenue streams for carbon mitigation projects, through both the local carbon fund program as well as grants and other resources. Another priority of the project and planning is to continuously protect Watsonville's natural resources, including the wetlands area.

## **Climate Action Plan Mitigation**

The CAP includes the following two overall goals for GHG reduction:

- 15% below 2005 levels by 2020<sup>4</sup>, and
- 25% below 2005 levels by 2030.

The City has completed a baseline GHG inventory for 2005, and an update for 2010 to determine the emissions trajectory. Also, the City developed business-as-usual emissions growth forecasts to 2020 and 2030 to understand how emissions will grow based on projected increases in population and jobs in Watsonville. Summaries of these inventories and growth projections are shown later in this paper in Figure 1.

To meet these new emission targets, the Draft Watsonville CAP is largely based on policies included in the Watsonville VISTA 2030 General Plan, an update of the Watsonville 2005 General Plan. This plan provides a roadmap for growth in Watsonville over the next 2 decades, and is designed around nine guiding principles. Table 1 summarizes the principles and associated example supporting strategies from the CAP.

The suite of strategies in the CAP allows the City to meet the established GHG reduction targets by 2020 and 2030. Figure 1 shows a summary of 2005 and 2010 emissions levels, the business-as-usual forecast, reduction targets, and expected emissions reductions due to the CAP strategies.

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<sup>4</sup> This target is consistent with the state-level target included in California Assembly Bill 32.

Table 1. Watsonville VISTA 2030 general plan guiding principles and CAP GHG reduction strategies

Watsonville VISTA 2030 General Plan Guiding Principles	Example Supporting CAP GHG Reduction Strategies
1. Economic Development	Includes strategies to increase the energy efficiency of local businesses, thus reducing utility costs to support economic development by providing additional dollars to be available in the local economy. Encourages businesses to participate in the Green Business Program.
2. Rural Setting	Includes numerous strategies to continue protecting ecologically sensitive and scenic natural lands. Measures include encouraging use of drought-tolerant plants and environmentally-friendly stormwater management systems.
3. Housing	Encourages continued implementation of the Home Energy Assistance Program, which provides energy efficiency services to lower-income residents. Encourages renewable energy for all types of buildings as a means to reduce conventional utility costs, from single-family homes to multifamily dwellings.
4. Transportation	Numerous policies to increase transit ridership, increase use of bicycles for transportation, and encourage car- and other ride-sharing programs, while also encouraging pedestrian travel.
5. Human scale and 6. Downtown	Encourages implementation of the Citywide Street Tree Plan, which provides shade and aesthetic value to the City, including downtown areas.
7. Infill and Reuse	Supports establishing community gardens, particularly in vacant lots, by various community groups
8. Diversity and 9. Heritage	Encourages participation in the CAP by all residents, businesses, and visitors to the City.

Sources: City of Watsonville 2013 and City of Watsonville 2014a.

Some of the more innovative and unique GHG reduction strategies in the CAP include:

- Aggressive water conservation and water recycling. The City supplies water to all customers in the City and some customers in the surrounding unincorporated County; the majority of the water is supplied from local wells, supplemented by small amounts of surface water from nearby lakes and rivers. The City has already developed a water recycling plant that serves some of the surrounding agricultural lands, and has many other strategies to encourage water conservation. The CAP includes a new local “laundry to landscape” program to reuse water from washing machines for landscaping irrigation.
- Community gardens and monthly food swap: Building upon the agricultural nature of the community, local community gardens and a monthly food swap are two strategies designed to increase urban gardening and further build community networks.

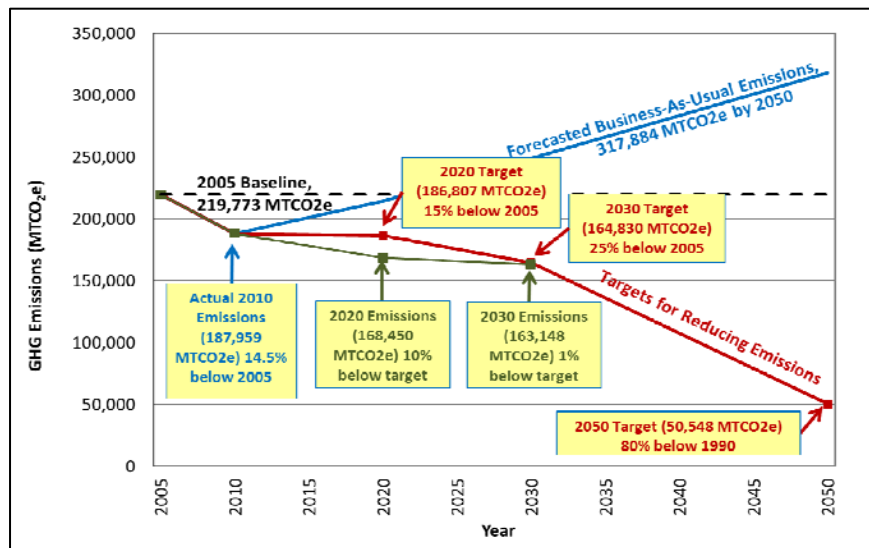


Figure 1. GHG Reduction Targets and Watsonville’s Expected GHG Emission Reductions. *Source:* City of Watsonville 2014a.

- Further encourage sustainability in schools: Many residents have noted a problem with traffic around schools at drop-off and pick-up times. The CAP includes a strategy to educate students, parents, and school staff about transportation alternatives and includes pedestrian and bicycle network improvements near schools. The CAP also includes a strategy to increase solar photovoltaic (PV) panels on school buildings.
- Local distribution points for alternative fuels: Biofuels are a logical choice for Watsonville due to the potential sources of bio feedstock from surrounding agricultural areas. The CAP includes a strategy for providing distribution of alternative fuels as a means to encourage investments in alternatively-fueled vehicles by residents and businesses.

## Climate Action Plan Adaptation

The CAP provides (i) an overview of the potential effects of climate change on the city, (ii) the current policies in place to help mitigate the impacts, and (iii) potential strategies for further consideration. The adaptation portion of the CAP also builds upon existing work, specifically, the draft Local Hazard Mitigation Plan for the City of Watsonville (Lipoma 2012). The project team assessed the level of risk associated with various climate change impacts in order to identify appropriate additional actions for increasing resiliency. To do this, each potential impact received a risk ranking. The risk ranking (Figure 2) was developed based on the probability of an event occurring over the next 40 years multiplied by the estimated magnitude of the consequences associated with the event.

Based on the assessment of the current policies in place and the risk associated with impacts of concern, impacts that likely require additional attention include:

- Heat wave
- Long-term power outages
- Severe storms

- Drought

Flooding and salt-water intrusion are also high-risk issues, and are on-going concerns of the city, but both of these hazards are well-known and addressed by existing plans, policies, and initiatives. Based on these findings, the CAP contains numerous recommendations to further increase the community’s resiliency.

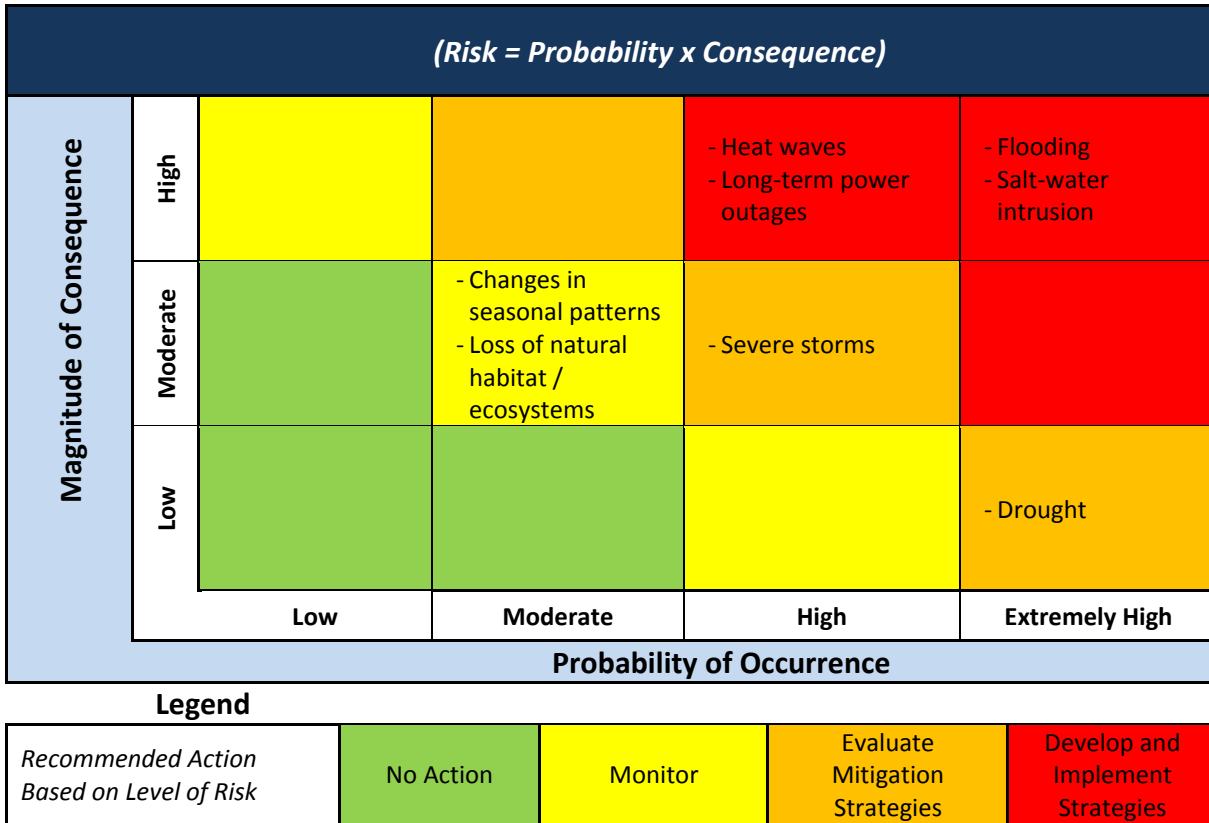


Figure 2: Risk Ranking, 2010 – 2050. *Source:* City of Watsonville, 2014.

Some of the key recommendations are:

- Conduct a community-wide assessment of environmental, health, socioeconomic, and equity vulnerabilities (i.e. the disproportionate impacts of climate change on certain populations), and full assessment of potential climate change impacts, their severity and the potential timing of these impacts.
- Continue to evaluate and implement the near term actions that address future heat waves, drought, power system reliability and severe storms.
- Continue to implement the mitigation measures identified in the City of Watsonville Local Hazard Mitigation Plan.

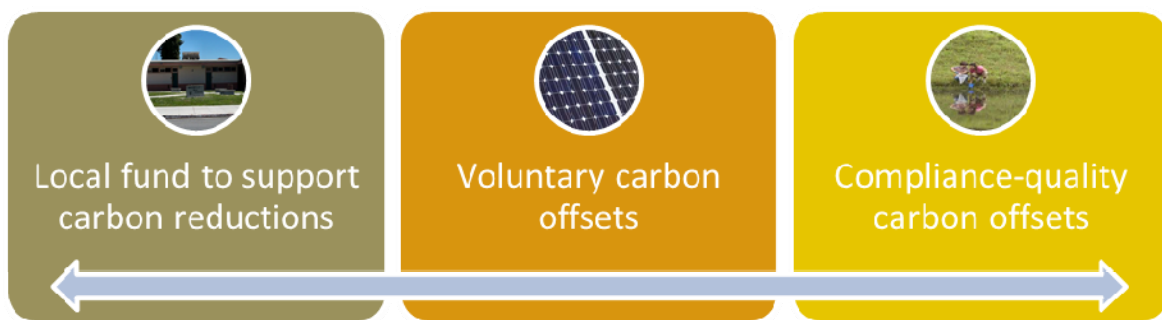
The project team also identified the following key strategies that contribute to both GHG mitigation and climate adaptation:

- Street tree plan: The shade from additional trees could greatly mitigate the impact of future heat waves by enabling buildings to operate more efficiently during hotter months.
- Low impact development and other stormwater management strategies: These strategies address saltwater intrusion and reduce the impact of flooding, while also reducing the energy needed to treat stormwater.
- Water conservation: Water conservation protects Watsonville’s precious groundwater supplies, which have been endangered by saltwater intrusion, and also address the impact of drought. Water conservation also reduces the local energy required to pump, treat, and distribute potable water and to treat wastewater.
- Energy efficiency and renewable energy: Reducing energy demand and increasing locally generated energy resources reduces the impact of long-term power outages.

## Development of the Local Carbon Fund Program

In general, a carbon fund is a mechanism to generate contributions or fees from individuals, businesses, nonprofits, and other parties to fund emissions reductions projects and initiatives. In turn, the funds generally disburse monies to sanctioned projects, which are often pre-defined by the fund’s rules. Carbon funds can provide financing for GHG reduction projects prior to project implementation, thus reducing project risk by providing the upfront investment needed for many projects. Carbon funds have been implemented at the international, national, state and regional levels, but only a handful of local governments have developed a local carbon fund.<sup>5</sup> In some cases, carbon funds have used carbon offsets as a mechanism to measure and verify reductions and to develop tradable credits. In California, the cap-and-trade program tied to the state’s reduction goals in Assembly Bill 32 (AB32) allows regulated entities to reach their emissions threshold in part by purchasing verified offsets.

The development of Watsonville’s local carbon fund program began by reviewing three potential structures (see Figure 3). These structures vary in numerous aspects, including types of projects funded, likely buyers and sellers, the offset prices, registries used, and verification requirements. A summary of these program options is provided in Figure 3. Design options for the



local carbon fund program.

<sup>5</sup> For example, the World Bank has developed several Carbon Funds, which are private or public-private partnerships managed by the Bank. Examples of state or regional-level carbon funds in the U.S. include the Colorado Carbon Fund, which serves all of Colorado, and the Monterey Bay Carbon Fund, which serves the Monterey, CA region, including the City of Watsonville. The City of San Francisco and the City of Cleveland have developed local carbon funds, as has the Finger Lakes region of New York and South Hampton in the UK.

Table 2.

Figure 3. Design options for the local carbon fund program.

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Program Component	Local Fund to Support Carbon Reductions	Voluntary Carbon Offsets	Compliance-Quality Carbon Offsets
General description	<p>These programs encourage individuals, businesses, and other groups to voluntarily contribute to a local carbon fund. Some contributions could also be mandatory through a local tax or mandatory fee. In turn, the carbon fund provides revenues to sanctioned projects.</p> <p>The fund does not develop or sell certified offsets.</p>	<p>These programs sell certified offsets or renewable energy credits (RECs) to local or regional entities from established registries. Often these offsets or RECs undergo third-party verification.</p> <p>For example, offsets or RECs could be purchased by a local business that voluntarily buys offsets and wishes to advertise itself as “100% powered by renewable energy” or a “carbon neutral” company.</p>	<p>These programs are based on a broader GHG reduction regulatory scheme, in this case, the California cap-and-trade program. Offsets are verified by a third party.</p> <p>For example, the City could encourage a carbon offset developer to fund a project to capture methane from local organic waste, verify the offsets, and then sell them on the regulated market under the California cap and trade system.</p>
Project types	<p>Any number of project types as decided by the program administrator, ranging from education and outreach to biodiesel to energy efficiency/ renewable energy to agriculture and wetland enhancements.</p>	<p>Moderate number of project types, depending on guidelines of specific carbon offset registries.</p> <p>Local projects in Watsonville could include composting, organic waste digestion, and refrigerant leak detection and destruction.</p>	<p>Limited number of project types, including forests, nitric acid production, and organic waste digestion.</p> <p>Several protocols are under development to determine acceptable project types.</p>
Likely buyers	<p>Community members and businesses interested in supporting local projects.</p>	<p>Large businesses or LEED projects.</p>	<p>Entities participating in AB32 cap-and-trade to meet compliance obligation.</p>



Program Component	Local Fund to Support Carbon Reductions	Voluntary Carbon Offsets	Compliance-Quality Carbon Offsets
Likely sellers / developers	Any community project as determined by the program administrator	Building owners, landowners, agricultural companies	Landowners, agricultural companies
Offset price (\$/MTCO <sub>2e</sub> )	\$12-\$20	\$3-\$15	\$10 <sup>6</sup>
Registries and verification	None/Self-defined	Verified Carbon Standard; Gold Standard; American Carbon Registry; Climate Action Reserve	Climate Action Reserve; AB32 Compliance Credits

Source: Adapted from Watsonville CAP/Carbon Offset Program Technical Advisory Meeting materials.

Three key priorities considered by the City in developing the local carbon fund program, based on the project goals described earlier in this paper, were:

1. Low administrative burden
2. Allows a wide range of high-impact carbon reductions in the City to support the CAP implementation
3. Control over revenues and ability to invest funds in local projects

The City also considered other options to encourage renewable energy and efficiency, including a revolving loan fund for renewable energy projects, and providing technical assistance to encourage the use of Property Assessed Clean Energy (PACE) projects, but these options were not pursued due to several issues, including initial upfront and administrative costs.

Based on these three program design options and City priorities, Watsonville determined that a local fund to support carbon reductions was its best option. While the City considered the use of compliance-quality verified offsets, it was determined that the cost of verifying carbon reductions was greater than the potential financial and environmental benefits. The voluntary offset program option was not favorable due to the limited number of projects likely to be developed in Watsonville, as well as the limited market for buyers and sellers in the City. Also, the City was not interested in becoming a broker of carbon offsets. Precedent was also another important consideration; developing a local fund to support carbon reductions was also the approach taken by most other carbon funds that the project team reviewed. This option does create additional administrative burden for the City, including defining project types and disbursing funds to projects, but this burden is far less than under other options. This approach also provides full control over revenues and allows a wide range of project types to be implemented in Watsonville.

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<sup>6</sup> Auction reserve price in the CA cap-and-trade program.

## Structure of the Local Carbon Fund Program

Having determined that a local fund to support carbon reductions was the best option, a key question remaining was whether or not the City could develop a dedicated local funding source. If the City could create a mechanism to provide a dedicated funding stream for projects, the Watsonville local carbon fund program would not be dependent on voluntary contributions from local residents, businesses, and visitors. The City determined that a dedicated funding stream in the form of a new impact fee on development projects was an appropriate mechanism to generate revenues for the local carbon fund and promote the use of clean energy technologies.

Development projects in the City of Watsonville for new construction and building additions typically require two types of fees: building permit fees and impact fees. Building permit fees are intended to allow the City to recover the cost of reviewing plans, ensuring the development meets local and state codes, and issuing permits. Impact fees are intended to pay for all or part of the costs of providing public services to the development. Because the local carbon fund program will provide a public service intended to reduce local emissions, increase resiliency, and improve the local quality of life, it was determined that a new carbon impact fee would be appropriate as a revenue source for the local carbon fund program. An overview of the program design is shown in Figure 4.

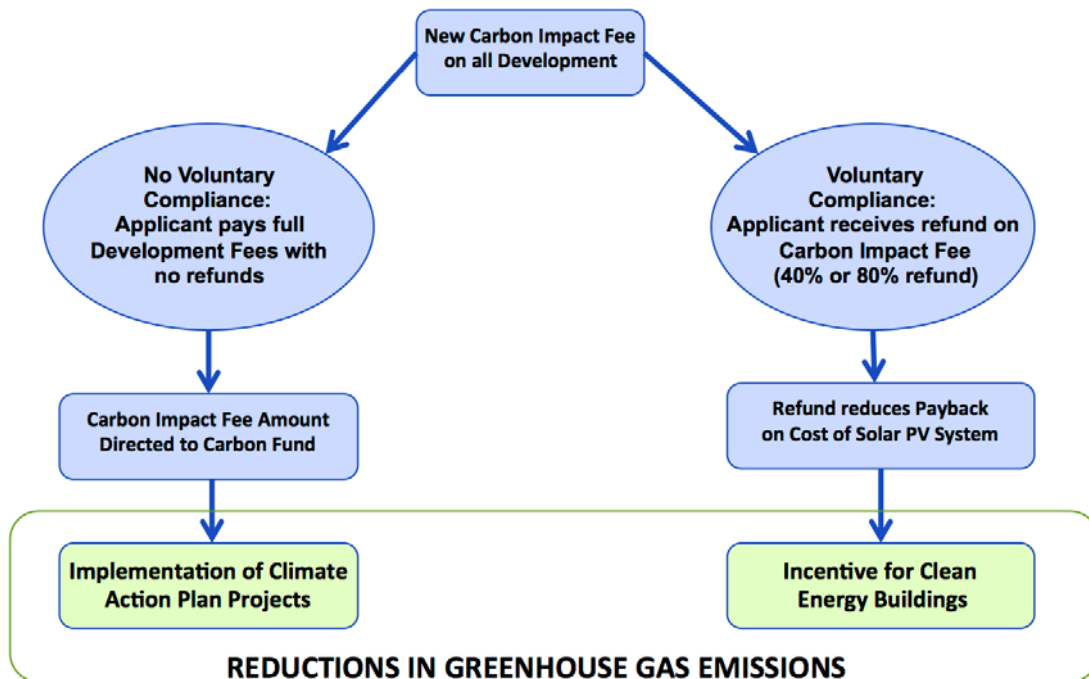


Figure 4. Proposed carbon impact fee and refund option. *Source:* City of Watsonville technical advisory committee meeting 6 materials.

As of the writing of this paper, the City is finalizing the appropriate level for the new carbon impact fee, as well as the pathway for developers to receive a fee refund. The City is considering varying fees for different types of projects on a sliding scale. A fee of up to 1% of the total project assessed value is under consideration for new developments, while lower fees are being considered for building additions. The lowest fees (in the range of 0.5 – 1%) are under consideration for certain types of building additions and alterations. The City also determined

that alterations in single-family homes would be exempt from the fee, to avoid placing a financial burden on homeowners completing alterations, the majority of which are small projects. All fees under consideration would be higher than the previous Green Building Fee, which will continue to be collected, but less than existing building fees.

Development projects will likely have the option to attain a partial or full refund of the carbon impact fee by increasing the energy efficiency of the development and/or by installing renewable generation (such as solar PV), either on the building, or offsite at another location in the City. For example, a 40% reduction in electricity demand from grid-supplied electricity through efficiency gains and/or installing renewable energy results would be eligible for a partial refund, and an 80% reduction in grid-supplied electricity would be eligible for a full refund. Applicants for development projects who submit documentation of grid-supplied electricity demand reduction along with other permit application materials will receive a full or partial refund after normal City building inspections upon project completion. Applicants who do not reduce grid-supplied electricity demand beyond Title 24 energy code as prescribed in by the local carbon fund program ordinance will not receive any carbon impact fee refund.

The City is also considering a refund larger than the amount of the carbon impact fee to create a greater incentive for permit applicants. This could take the form of, for example, an additional 20% refund of all development and impact fees to qualifying projects. However, in order to test efficacy of the program, and ensure that adequate funds remain to pay refunds, this option will not be implemented during the first year of operation. Thereafter, the City may revisit the impact fee and elect to institute a larger refund.

For the same reasons, funds generated by the fee will not be disbursed to projects during the first year of the program, to allow the fund to be fully seeded. After the first year of operation, projects will be funded through collaborative deliberation by the community development and public works departments, and will be approved by the city council according to standard practice.

## **Key Findings and Best Practices**

The CAP, adaptation strategy and the local carbon fund program are interrelated. The local carbon fund is designed to provide much-needed funding to implement the strategies in the CAP. Some GHG reductions are also expected from the rebate provided under the new carbon impact fee. Expanding the installation and use of renewable electricity generation systems on new and existing buildings also increases local resiliency by reducing dependence on grid-supplied electricity. Also, numerous policies that provide both mitigation and increased resiliency are identified in the CAP, and may be prioritized for implementation. Therefore, one best practice identified is to determine strategies that provide multiple benefits to the City.

Watsonville is an urban area surrounded by agricultural and open space lands. Of particular importance are the ecologically sensitive lands in and near Watsonville, including the wetlands. Another best practice is that the CAP identifies numerous strategies that draw upon the City's relationship to its surroundings in a beneficial manner and includes measures that are appropriate and relevant to Watsonville. For example, the CAP supports the preservation of agricultural and open space areas as a key GHG mitigation and adaptation strategy. The CAP also supports use of agricultural areas and the local food production culture to drive further GHG reductions, through the use of locally-produced biofuels, and through development of new community gardens and food swapping events.

Furthermore, in the development of the local carbon fund program, the City prioritized a program design with a low administrative burden that would provide City control of revenues so the City could implement high-impact GHG reduction projects. The City also created a flexible program design that does not overly burden low-income residents and small businesses that may be completing minor alternations to their properties. As a result, the carbon impact fee for alterations is lower than the fee charged for additions and for new development.

Additionally, the project team conducted a significant amount of analysis to determine the appropriate carbon impact fee for each type of development project (new construction, additions, and alternations for industrial, commercial, and residential buildings). The final fee structure is a careful balance between supporting new development in the community, revenue generation for the carbon fund program and true monetary incentive for increasing efficiency and/or installing distributed generation.

Finally, the local carbon fund program was designed to account for the limited resources and administrative time of the City. For example, the City did not have resources to “seed” or administer a revolving fund, and the local carbon fund program was designed to fit seamlessly within the context of the existing building permitting structure.

## Conclusion

Climate change and adaptation are challenging, complex issues that will not be solved with isolated strategies, and are particularly challenging for an economically disadvantaged community such as Watsonville. These issues require ongoing consideration and a long-term view towards implementation. A new carbon impact fee for local construction projects will provide an incentive for additional clean technology strategies, while also generating revenue for CAP implementation. The CAP and adaptation strategy build upon previous efforts and provides a roadmap for future GHG reductions. The City of Watsonville will continue to develop flexible actions to increase sustainability and adapt to changing conditions.

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