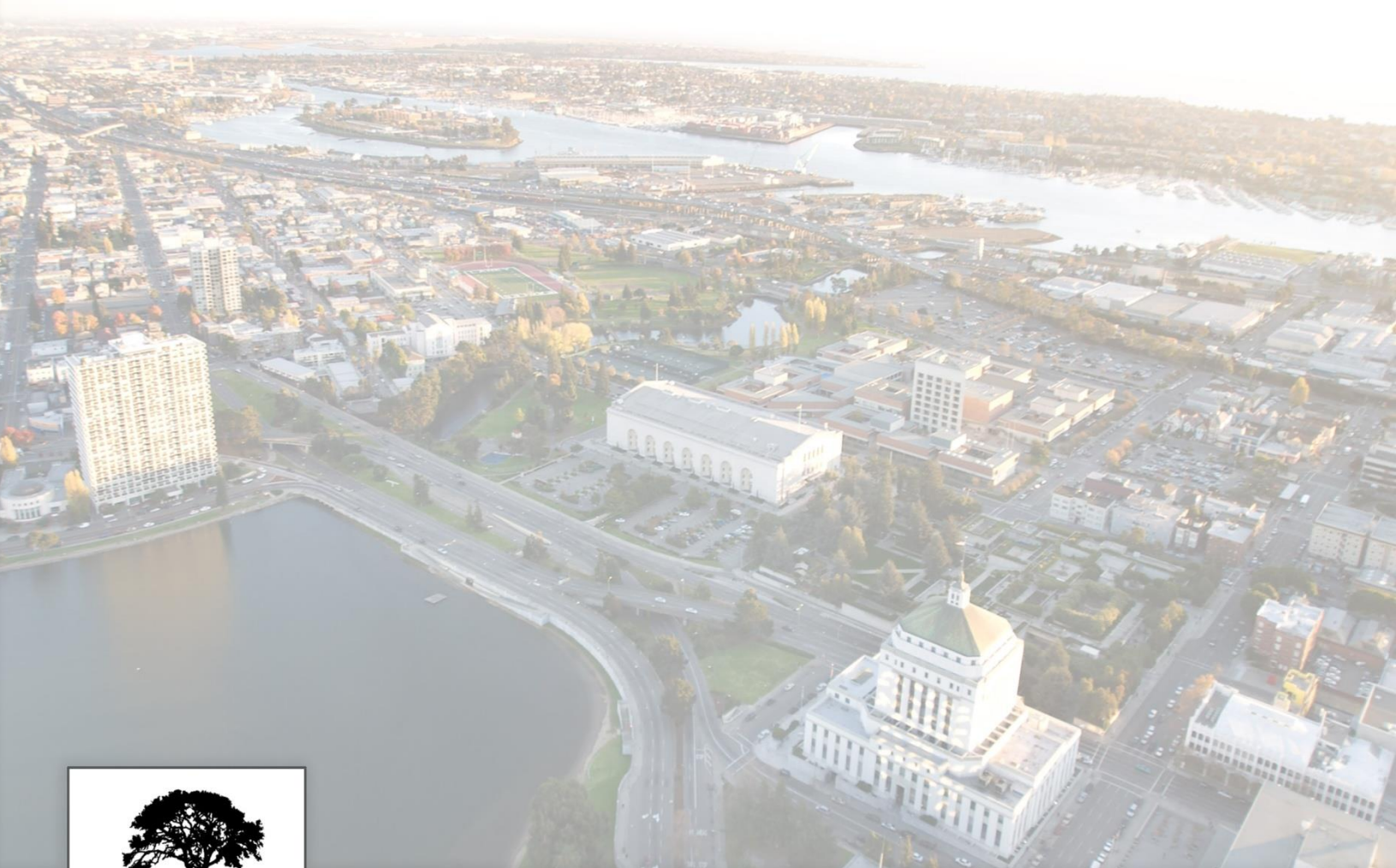


# **City of Oakland**

## **Energy and Climate Action Plan**

**December 4, 2012**

**(Updated March 2018)**



The Oakland Energy and Climate Action Plan was adopted by City Council on December 4, 2012. An Administrative Update to this document was completed in 2018.

**Mayor**

Jean Quan

**Members of the City Council**

Larry Reid (District 7)  
President

Nancy Nadel (District 3)  
Vice Mayor

Desley Brooks (District 6)	Rebecca Kaplan (At Large)
Jane Brunner (District 1)	Pat Kernighan (District 2)
Ignacio De La Fuente (District 5)	Libby Schaaf (District 4)

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Courtney Ruby, City Auditor

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**The Public Works Department would like to thank the following for their contributions to this document:**

**Funders:** City of Oakland, Bay Area Air Quality Management District

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# The 2018 ECAP Update

In 2016-18, City of Oakland staff worked with municipal departments, green business groups, social justice organizations, and environmental stakeholders to update the ECAP. This included cataloguing which Action Items have been completed or are fully underway; reprioritizing existing Action Items based on new economic, technological, or other realities; updating cost estimates; and including the most recent greenhouse gas emissions inventory, which was completed in 2015 for the 2013 reporting year. This revised ECAP does not add any new Action Items to the 2012 version of the document, and the overall goals remain the same as the original document – to reduce greenhouse gas emissions 36 percent by 2020 and 83 percent by 2050.

Community engagement for this Update took place in Spring-Summer 2016, and included a series of workshops, community meetings, and focus groups. Participants included the Oakland Climate Action Coalition and representatives from Oakland’s diverse network of social and environmental justice organizations, green- and clean-tech businesses and nonprofits located in Oakland, and members of the public who volunteered to weigh in at community workshops and events.

Key changes to Priority Action Items are listed in Table 2 of the Appendix. Overall changes to the ECAP are summarized below:

- 32 Action Items have been completed or are fully underway as of early 2017 and are summarized in a new section of Chapter 4, *Priority Actions Complete or Fully Underway*
- 30 Action Items were newly prioritized, as indicated by a star logo in the *Priority Action Supported by Existing Resources* and the *Priority Actions Requiring New Resources* sections of Chapter 4
- Updated climate data was added to the report
- Cost estimates have been added to all Priority Actions in Chapter 4
- The Appendix has been updated to remove previous scenario analysis by sector, and revised to reflect the methodology for creating GHG inventories for communitywide emissions.

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The purpose of the Oakland Energy and Climate Action Plan (ECAP) is to identify and prioritize actions the City can take to reduce energy consumption and greenhouse gas (GHG) emissions associated with Oakland. The ECAP will assist the City of Oakland in continuing its legacy of leadership on energy, climate and sustainability issues, and provide a roadmap for the Oakland community to achieve broad community goals related to reducing GHG emissions.



# Executive Summary

The Oakland Energy and Climate Action Plan (ECAP) was adopted by City Council on December 4, 2012. Its purpose is to identify and prioritize actions the City can take to reduce energy consumption and greenhouse gas (GHG) emissions associated with Oakland. This plan establishes GHG reduction actions, as well as frameworks for coordinating implementation and monitoring and reporting on progress. The ECAP will assist the City of Oakland in continuing its legacy of leadership on energy, climate and sustainability issues. An Administrative Update was completed in 2017-18 to revise the ECAP with progress reporting, re-prioritization based on community input, and the addition of updated cost information for implementing the actions.

In July 2009, the Oakland City Council approved a preliminary GHG reduction target for the year 2020 of 36% below 2005 levels. This planning target was developed based on recent publications of the world's leading climate scientists. The primary sources of Oakland's GHG emissions are Transportation & Land Use, Building Energy Use, and Material Consumption & Waste. The ECAP includes a ten-year plan with more than 150 actions that will enable Oakland to achieve a 36% reduction in GHG emissions with respect to each of these GHG sources. Oakland can accomplish this goal by 2020 through:

- 20% reduction in vehicle miles traveled annually as residents, workers and visitors meet daily needs by walking, bicycling, and using transit
- 24 million gallons of oil saved annually due to less driving and more fuel-efficient vehicles on local roads
- 32% decrease in electricity consumption through renewable generation, conservation and energy efficiency
- 14% decrease in natural gas consumption through building retrofits, solar hot water projects and conservation
- 62 million kWh and 2.7 million therms annually of new renewable energy used to meet local needs
- 375,000 tons of waste diverted away from local landfills through waste reduction, reuse, recycling, and composting

The ECAP also recommends a Three Year Priority Implementation Plan - a prioritized subset of actions recommended for implementation in the next three years. These priority actions will capitalize on near term opportunities and lay the groundwork for long term progress. Some of the recommended priority actions can be implemented with existing and anticipated resources. Others will require the identification of new, in some cases significant, resources to move forward. Implementation responsibility, status and resource needs are outlined for each recommended priority action.

Achieving Oakland's GHG reduction goals will require an unprecedented collaborative effort. The ECAP outlines the role that recent State policies are expected to play in reducing GHG emissions, and provides a vision for the role of additional community leadership. The ECAP also recommends steps the City can take to help Oakland adapt to the impacts of climate change and increase community resilience.

Implementing the actions identified in the ECAP has the potential to create a variety of community benefits, including energy cost savings, local green economic development and job creation, reduced local air pollution, improved public health, and other quality of life enhancements throughout Oakland.

Progress in reducing citywide GHG emissions will be reported bi-annually via a GHG Emissions Inventory. The ECAP will be updated every three years to review progress, identify new priority actions, and maintain momentum.



# Chapter 1 – Background

## The Importance of Addressing Energy and Climate Issues

Solving the challenge of climate change is critical to preserving and improving quality of life in Oakland.

A scientific near-consensus has emerged regarding the dangers of increasing concentrations of greenhouse gas (GHG) emissions in the Earth's atmosphere, and the significant role that human activity is playing in increasing those concentrations.

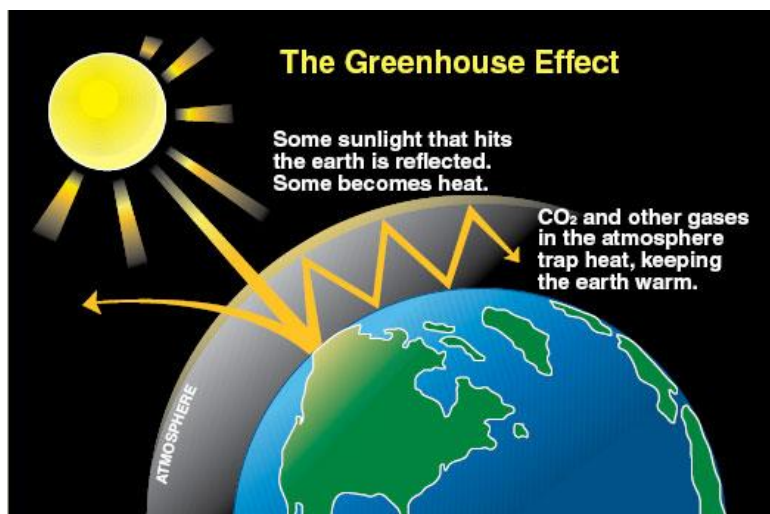
Climate change is projected to impose significant ecological, health, economic and quality of life risks on Oakland and other communities.

Projected local impacts of climate change include rising Bay and delta waters, increased vulnerability to flood events, decreased potable water supply due to shrinking Sierra snowpack, increased fire danger, more extreme heat events and public health impacts, added stress on infrastructure, higher prices for food and fuels, and other ecological and quality of life impacts. Current dependence on fossil fuels not only creates GHG emissions, but imposes other risks associated with energy security, environmental impacts (e.g., the 2010 Deepwater Horizon oil spill in the Gulf of Mexico), and vulnerability to energy price volatility. These risks are magnified for economically disadvantaged communities.

Reducing greenhouse gas emissions, in Oakland and elsewhere, can help to avoid and/or lessen the severity of these impacts. Tremendous collective action will be necessary on a global scale to reduce GHG emissions to safer levels.

### Transforming the threat of climate change into an opportunity for Oakland


Many actions that could be taken locally to reduce energy use and GHG emissions hold the potential to create a range of economic, health and other quality-of-life benefits in Oakland. Actions described in this plan have the potential to attract new green businesses, create hundreds of new local green jobs, and help neighborhoods thrive. By reducing fuel consumption, we can also reduce fossil fuel dependence and local air pollutants, and help to improve public health.



The City of Oakland is dedicated to doing its part to reduce GHG emissions and the threat of climate change. We recognize that many of the sources of GHG emissions can be reduced through local action. We also recognize the need to take local steps to better adapt to the impacts of climate change and improve the resiliency of our community.

We will take action, joining cities around the globe to provide the leadership needed to answer this challenge. In doing so, we are not just working to alleviate the threat of climate change, we are working to create a better Oakland, and a better world, for residents, businesses, and all members of our community.





# **Oakland's Legacy of Climate Leadership**

**Oakland has been ranked among the ten greenest cities in America several times in the last five years. Recent accomplishments include:**

**Constructed dozens of green buildings**


**Launched the Oakland Green Jobs Corps**

**Performed energy retrofits at over 100 of the City's largest municipal facilities**

**Adopted a green building ordinance for civic buildings**

**Installed nearly 100 miles of new bikeways and over 3,000 bike parking spaces**



An aerial photograph of a city, likely New York City, showing a dense urban landscape with numerous skyscrapers and buildings. A large, green park area is visible in the center, surrounded by water. The image is used as a background for a presentation slide.

**Installed 6 megawatts of  
local solar energy systems**

**Achieved leading rates of  
waste diversion and recycling**

**Implemented food scraps  
composting program**

**Increased emphasis on dense, transit-  
oriented, mixed-use development  
featuring green buildings and  
alternative transportation options**



# The Next Phase of Local Climate Action

Building on Oakland's legacy of climate protection progress, the next phase of action on energy and climate issues must consist of efforts in two major areas: Mitigation and Adaptation. The primary focus of this ECAP is on Mitigation – reducing energy use and GHG emissions. Recommendations are also included for moving forward with Adaptation strategies. It is important to make progress in these two areas simultaneously.

## Mitigation

Mitigation refers to actions that reduce the creation of greenhouse gas emissions. These include strategies to reduce transportation fuels used to move people and goods around, reducing natural gas used to heat our homes, reducing electricity use used to light and power our buildings, and reducing consumption of material goods and disposal of materials into landfills. Reducing GHG emissions in collaboration with other communities around the world can help us to avoid, or at least lessen, some of the projected impacts of climate change.

Figure 1. Areas Targeted for GHG Reductions



## Adaptation

Adaptation refers to activities that can help our community adapt to the impacts of climate change. Projected local climate impacts include sea level rise, reduced water availability from shrinking snowpack, and increased occurrence of extreme heat events and wildfires. Some impacts, such as minor sea level rise, are already starting to be observed – the result of decades of fossil fuel combustion and other activities such as deforestation. Adaptation strategies may include imposing land use restrictions in vulnerable low-lying areas, upgrading storm and sewer infrastructure, and practicing water conservation. Adaptation strategies are further discussed in later chapters.

Figure 2. Sea Level Rise Vulnerability is One of Many Projected Local Climate Impacts



Source: Pacific Institute

# Oakland's Greenhouse Gas Emissions

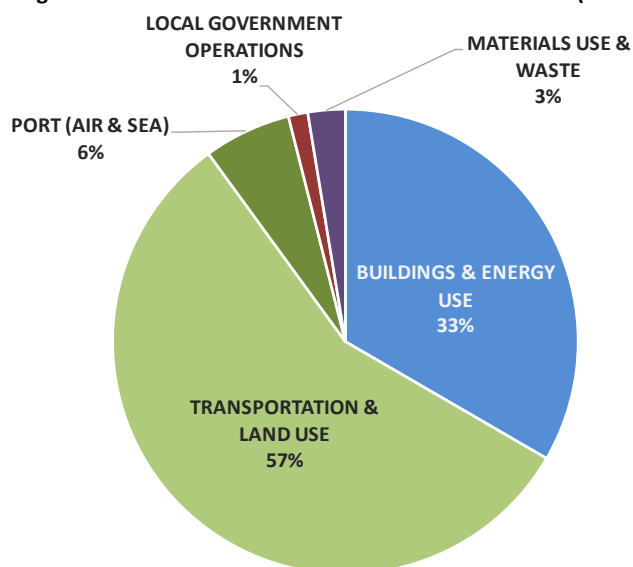
Oakland's citywide carbon footprint can be measured in multiple ways. Each perspective illuminates opportunities to reduce greenhouse gas emissions through local action. Transportation & Land Use, Building Energy Use, and Material Consumption & Waste are the three largest sources of GHG emissions in Oakland.

**Figure 3** illustrates a "sector-based" perspective of GHG emissions over which the City government has a relatively high degree of influence. These sources include emissions occurring within Oakland's boundaries, as well as external emissions from citywide electricity consumption and waste sent to landfill. From this perspective, building energy use and fuel used for transportation are both major sources of GHG emissions.

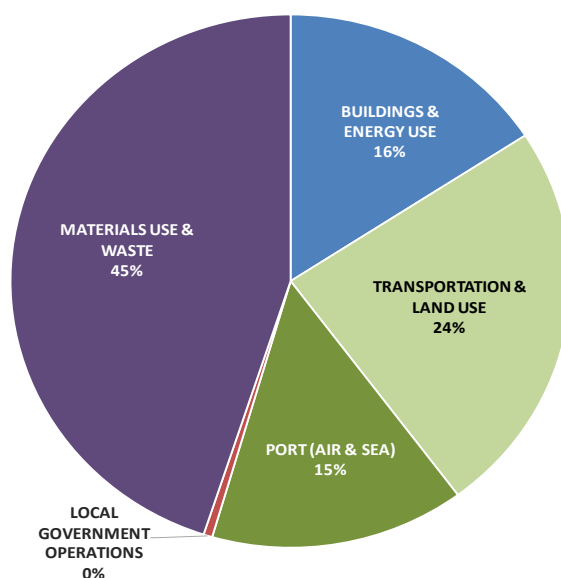
**Figure 4** shows the City's GHG emissions when including the activities occurring outside of the city that are necessary to bring goods and services to Oakland. Oakland's GHG Emissions Inventory documents the lifecycle, or "consumption-based" emissions of the City, which show waste as the primary source of emissions associated with the City.<sup>i</sup> This perspective highlights the potential to reduce GHG emissions through waste reduction and recycling.

**Transportation & Land Use, Building Energy Use, and Material Consumption & Waste are each significant sources of GHG emissions, and all can be addressed through local action.**

**Figure 3. Sector-Based View of Oakland GHG Emissions (2015)**



**Figure 4. Consumption-Based View of Oakland GHG Emissions (2015)**



For the purposes of the ECAP, these categories of GHG emission sources have been defined to include the following issues:

- **Transportation & Land Use:** integrated planning; transit-oriented development; bike/pedestrian issues; parking; vehicles/fuels; Port of Oakland operations; urban forestry; and the City fleet.
- **Building Energy Use:** new construction; building operations; retrofits of existing buildings; water use / conservation; renewable energy; product efficiency; City facilities; and streetlights.
- **Material Consumption & Waste:** waste reduction; recycling; composting; reuse and repair; rehabilitation and renovation; landfill waste; purchasing; producer responsibility; and local urban agriculture.



## 2020 GHG Reduction Goal

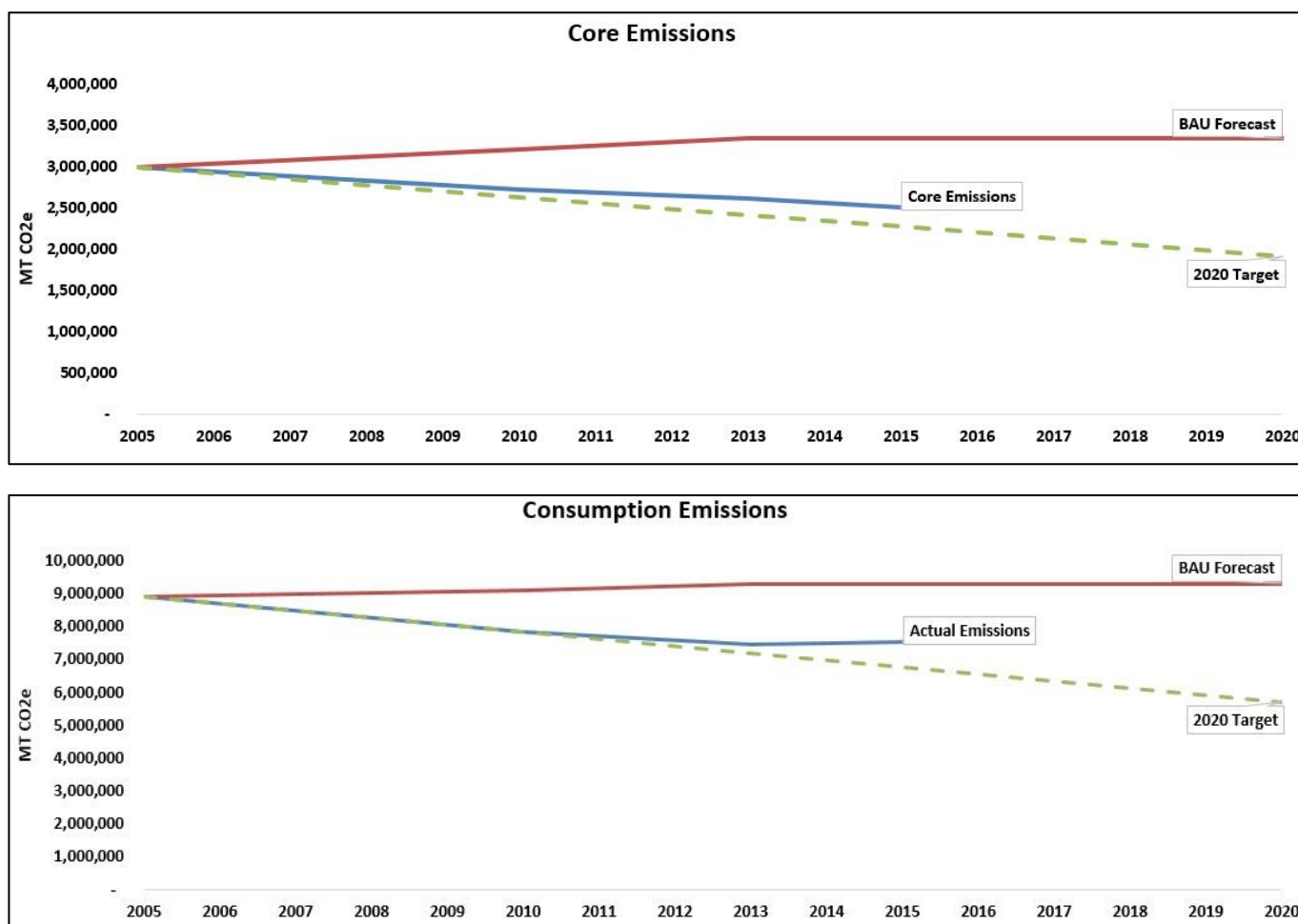
In July 2009, the Oakland City Council approved a GHG emissions reduction target for the year 2020 at 36% below 2005 levels, on a path toward reducing GHG emissions by 83% below 2005 levels by 2050.

This planning target was developed based on the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report (2007), widely recognized as the world's leading body of climate scientists. According to the report<sup>ii</sup>, achieving this level of GHG reductions throughout the industrial world will help to produce a level of climate stabilization that would avoid the worst future climate impact scenarios.<sup>iii</sup> Additional background on this GHG reduction target is provided in the ECAP Appendix.

Figure 5 below shows the progress of the City in meeting the 2020 goal, from both the consumption and core perspectives. Although substantial progress has been made in reducing emissions in both perspectives, significant work remains to be completed in meeting the adopted goals. The Action Items set forth in Chapter 2 of this ECAP represent the City's strategy in targeting emissions reductions both locally and globally.

**36%**  
Reduction in  
GHG Emissions

Figure 5. Core and Consumption Emissions Reduction Progress Towards 2020 GHG Target (2015)



# Chapter 2 – Implementation and Reporting

## **Implementing the Plan**

City Departments that are responsible for each priority action will provide regular status updates to the Environmental Services Division. Annual reports will be presented to the City Council. These reports will be made publicly available on the Sustainable Oakland website, [www.sustainableoakland.com](http://www.sustainableoakland.com).

ECAP implementation will involve an inter-agency staff team to provide staff-level coordination. This team will discuss progress and challenges in ECAP implementation. Team members will continue relationships with key external partners (e.g., PG&E, EBMUD, StopWaste.org) to foster coordination and collaboration.

## **Updating and Evolving the Plan**

Annual updates on the status of ECAP implementation is made by staff. The full ECAP is updated every three years, including updates to Oakland GHG inventories every 2-3 years.

The City will benefit from monitoring the implementation of priority actions during the planning period (2012-2020), and will have the opportunity to learn from these observations to improve plans going forward. Successful programs may be continued and expanded, while unsuccessful actions can be dropped or reconfigured. Other unforeseen changes (e.g., technological advancements, energy price changes, economic growth rates, updated climate models, funding availability) will be considered in future updates to this plan. Future updates will also be informed by consideration of how social equity issues are impacted by ECAP implementation, both with respect to adaptation and mitigation. The City will provide ongoing opportunities for the public to receive information on the City's progress in implementing ECAP actions, and to provide input as the implementation process proceeds. These will include coordination with the community climate forums listed as Action Items in the Community Engagement section of this ECAP.

## **2017-18 Administrative Update**

The City completed an update to the ECAP in 2017-18, revising the document to reflect progress made towards implementation since the adoption of the Plan in December 2012. This included the creation of a new category identifying actions that are fully implemented or complete. Additional changes included updates to information about Oakland's greenhouse gas emissions, revisions to action items to reflect new legislation, technology, and strategy, and addition of implementation costs to priority actions.





## **Priority Actions Supported by Existing Resources**

Some ECAP actions can be accomplished with existing resources, or with the aid of anticipated external support (e.g., grants). The Priority Actions Supported by Existing Resources below are expected to move forward with existing or anticipated resources, and will be implemented during the next three years (2017-2020). Some of these actions are in progress, but require additional focus and attention to fully implement. Table 1 provides a summary of when the City anticipates beginning work on each action and which department/ division is responsible for implementation.

**Table 1. ECAP Actions Supported by Existing Resources, by Current PA Designation**

<b>Priority Action</b>	<b>Implementation Start</b>	<b>Responsible Department/Division</b>
PA 1. Launch and Develop a Funding Plan for the Downtown Shuttle	Underway	Economic and Workforce Development, Department of Transportation
PA 2. Advance Bus Rapid Transit in Oakland	Underway	Oakland Public Works
PA 3. Establish Alternative Mechanisms for Meeting Parking Requirements	Underway	Department of Transportation, Planning and Building Department
PA 4. Plan for Electric Vehicle Infrastructure	Underway	Oakland Public Works, Department of Transportation
PA 5. Launch a Residential Green Retrofit Program	Underway	Oakland Public Works, Housing and Community Development Department
PA 6. Implement Advanced Operating Procedures for City Facilities	Underway	Oakland Public Works
PA 7. Retrofit City Facilities to Improve Energy Performance	Underway	Oakland Public Works, Planning and Building Department
PA 8. Encourage Land Owners to Lease Space for Food Production	By 2020	Planning and Building Department
PA 9. Provide Additional Information on Energy and Climate Issues Including Energy and GHG Reduction Progress through Existing City Channels	Underway	Oakland Public Works
PA 10. Expand Outreach on Energy and Climate Issues through Partnerships with Local Organizations	Underway	Oakland Public Works
PA 11. Promote Climate-Related Educational Opportunities	Underway	Oakland Public Works
PA 12. Convene Community Climate Forums	Underway	Oakland Public Works
PA 13. Support Local Green Jobs Programs	Underway	Mayor's Office, Economic and Workforce Development, Housing and Community Development Department, Oakland Public Works
PA 14. Participate in Regional Climate Adaptation Discussions	Underway	Planning and Building Department, Economic and Workforce Development
PA 15. Include Measures to Reduce the Urban Heat Island Effect in Planning Documents	By 2020	Oakland Public Works
PA 16. Provide Staff Training on Climate Impacts and Adaptation	Underway	Oakland Public Works

## Priority Actions Requiring New Resources

Putting Oakland on a steady path of progress toward achieving a 36% reduction in GHG emissions by 2020 will require the implementation of additional actions during the next three years, beyond those described above for which existing resources are available. The Priority Actions Requiring New Resources identified in Table 2 below will move forward if new resources can be found. Note that while some of these actions are already underway, they require new resources to be fully implemented. See page 40 for more information on these proposed actions.



**Table 2. Priority Actions Requiring New Resources**

Priority Action	Anticipated Implementation Start	Responsible Department/Division
PA 17. Increase Multi-Income Housing near Transit Hubs	2018	Planning and Building Department, Housing and Community Development Department
PA 18. Accelerate Completion of Bicycle and Pedestrian Plans	2017	Department of Transportation
PA 19. Optimize Street Design to Support Transit, Bicycling, and Walking	2017	Department of Transportation
PA 20. Expand and Enhance Public Transit Service and Amenities	2018	Department of Transportation
PA 21. Expand Car Sharing	2017	Department of Transportation
PA 22. Impose Parking Maximums and Develop Strategies to Minimize Parking Need	2016	Planning and Building Department; Department of Transportation
PA 23. Call for Climate Action by Port Tenants	2017	Elected Officials and Departmental Staff
PA 24. Develop an Urban Forestry Master Plan	2017	Oakland Public Works
PA 25. Conduct a Robust Urban Tree Inventory	2017	Oakland Public Works
PA 26. Update City Tree Ordinances	2017	Oakland Public Works
PA 27. Implement Street Tree Planting Pilot	2017	Oakland Public Works
PA 28. Accelerate City Fleet Vehicle Replacement	2019	Oakland Public Works
PA 29. Subsidize Transit and Transportation Alternatives for City Employees	2019	Human Resources Management Department
PA 30. Seek Resources to Support Energy Programs	2017	Oakland Public Works
PA 31. Encourage Citywide Energy Conservation and Efficient Product Purchasing	2018	Oakland Public Works
PA 32. Engage Largest Electricity Consumers in Energy Retrofits	2019	Economic and Workforce Development, Oakland Public Works
PA 33. Consider Energy Benchmarking Requirements for Commercial Buildings	2019	Planning and Building Department, Oakland Public Works
PA 34. Launch the Weatherization and Energy Retrofit Loan Program	2009	Housing and Community Development Department



PA 35. Create a Renter-Occupied Residential Energy Retrofit Program	2019	Housing and Community Development Department, Oakland Public Works
PA 36. Adopt and Implement a Residential Energy Conservation Ordinance	2020	Planning and Building Department, Oakland Public Works
PA 37. Facilitate Community Solar Programs	2019	Oakland Public Works
PA 38. Encourage Rainwater Harvesting	2010	Oakland Public Works
PA 39. Increase Public Landscaping with Drought-Resistant Plants and Trees	2017	Oakland Public Works
PA 40. Install water Efficient Fixtures and Equipment in Municipal Facilities	2018	Oakland Public Works
PA 41. Study Options for Advancing Next-Level Waste Reduction	2019	Oakland Public Works
PA 42. Promote Waste Reduction through Enhanced Producer Responsibility	2019	Oakland Public Works, Economic and Workforce Development Department
PA 43. Encourage Local Reuse and Repair	2018	Oakland Public Works, Economic and Workforce Development Department
PA 44. Community Climate Action Guide	2014	Oakland Public Works
PA 45. Support Local Climate Workshops	2017	Oakland Public Works
PA 46. Facilitate Community Input on Climate Issues	2017	Oakland Public Works
PA 47. Develop an Oakland Climate Action Model Practices Campaign	2018	Oakland Public Works
PA 48. Study Potential Local Climate Impacts	2015	Oakland Public Works, Planning and Building Department
PA 49. Communicate Climate Impacts to the Community	2017	Planning and Building Department, Economic and Workforce Development
PA 50. Identify and Act on Opportunities to Improve Resilience in City Plans and Policies	2016	Multiple Agencies (e.g., Oakland Public Works, Planning and Building Department, etc.) based on strategies
PA 51. Participate in Development of a Regional Climate Adaptation Strategy	2013	City Administrator (Resilience), Planning and Building Department, Oakland Public Works
PA 52. Develop a Resilience-Based Climate Adaptation Plan	2019	City Administrator (Resilience), Planning and Building Department, Oakland Public Works
PA 53. Promote the Development of Oakland's Urban Forest	2017	Multiple Agencies (e.g., Oakland Public Works, Planning and Building Department, etc.) based on strategies
PA 54. Promote Water Conservation and Efficiency	2015	Multiple Departments including Planning and Building Department, Oakland Public Works
PA 55. Promote Measures to Reduce the Impact of Floods	2010	Multiple Departments including Planning and Building Department and Oakland Public Works
PA 56. Encourage Recycled Water Delivery and Use	2017	Multiple Departments including Planning and Building Department and Oakland Public Works

## Cost of Priority Actions Requiring New Resources

The ECAP includes budget estimates for resources the City would need to implement the 40 Priority Actions Requiring New Resources. The average annual cost to the City associated with implementing all 40 of these actions is projected to be approximately 25 FTE per year and \$179 million for related expenses. It is outside the scope of the ECAP to include a total budget for other actions proposed for implementation through 2020. It is important that the City identify long-term funding streams to support the continued energy and climate action.



## Potential for Adverse Economic Impact

Implementation of climate actions, whether imposed by Federal, State or local law, or from voluntary community action at a level commensurate with achieving Oakland's 36% GHG reduction target, may result in potential reductions in revenues to the City associated with decreased energy and fuel consumption (e.g., Utility Consumption Tax, Alameda County Transportation Improvement Authority [Measure B-ACTIA], State Gas Tax). Conversely, an influx of new revenues may result from the creation of new green business activities (e.g., business tax and sales tax revenue associated with energy retrofit work performed, green business attraction, local job creation associated with implementation activities). It is beyond the scope of the ECAP to estimate net costs and benefits associated with achievement of the 36% GHG reduction target.

## Cost to Oakland Community and Stakeholders

In addition to resources required by the City to support implementation, achieving the 36% GHG reduction target will require complementary action throughout the community in many areas. For example, the City may develop and offer programs assisting property owners in improving energy efficiency of their buildings. In most cases, those property owners would require additional resources to implement the upgrades. In another example, the City would require resources to participate in the development of a Public Transit Master Plan for Oakland. AC Transit would also require significant additional resources to increase the frequency of its service and provide amenities needed to foster significant increases in ridership.

It is beyond the scope of the ECAP to project total implementation costs that might be borne by the greater Oakland community in the course of taking primarily voluntary action at the level necessary to achieve a citywide GHG reduction of 36%. However, these costs would clearly be significant. For example, voluntary energy efficiency improvements for homes in Oakland would likely require a total investment in the hundreds of millions of dollars. Much of this work has the potential to create significant cost savings for property owners and/or tenants, and some households could experience a net positive cash flow. However, identifying resources to support initial implementation costs is a significant barrier to implementation. ECAP actions (e.g., working with partners to expand financing options) are identified to help overcome such barriers, but cannot fully remove the need for resources.

## Potential Funding Opportunities

Through a variety of partnerships, both the City of Oakland and many of its partner non-profit organizations have been successful in securing resources to support new energy and climate programs. These programs include support for residential energy retrofits and expanded weatherization services, downtown commercial energy retrofits, and the launch of a new downtown free shuttle.

Opportunities to seek funds are expected to remain available throughout the life of the Plan. Assuming that capacity to seek funds exists, Oakland will continue to be competitive. Examples of funding sources the City should continue to explore include:

- State and Federal energy grants
- Foundation support
- Air District & CA Air Resources Board grants
- Emerald Cities Collaborative support

- Federal appropriations
- HUD Sustainable Communities planning grants
- EPA Climate Showcase Communities grants
- State and Federal transportation funds
- MTC directed regional transportation dollars
- California Cap and Trade dollars
- Regional gas tax/green investment fee
- Surcharges on GHG intensive energy use
- Parking rates
- Solid Waste Franchise Fees
- Federal tax credits
- EPA Clean Water Revolving Loan Fund
- Reformulated Gasoline Settlement Fund
- Development impact fees
- Permit fees
- Tax increment financing

### **Considerations of Job Quality and Economic Development in Implementation**

Climate action by the City and complementary action by the Oakland community have the potential to foster significant green job creation and green economic development in Oakland. The City encourages the expansion of local green job training programs to help provide the workforce needed to achieve these goals. The City also encourages private employers to ensure that these are high quality, living wage jobs offering green career pathways for local residents. The City will continue to support these objectives by applying existing living wage, local hire and prevailing wage policies to its programs and projects.



## **Action Items Deemed Complete or Fully Underway**

The ECAP, as adopted in December of 2012, included 175 action items necessary to meet the 36 percent reduction goal. As part of the 2017-18 ECAP Update, a full assessment was made of the process toward completion for each of these actions. The actions that remained incomplete were reorganized into the original three categories: (1) Priority Actions Supported by Existing Resources, (2) Priority Actions Requiring New Resources, and (3) Additional Actions. Action items that have been completed or are fully underway have been removed from these categories, and are noted below in Table 3 to illustrate progress that has been made in implementing the ECAP.

**Table 3. ECAP Actions Completed or Fully Underway, by Original Priority Action (PA) Designation**

<b>Priority Action</b>	<b>Anticipated Implementation Start</b>	<b>Responsible Department/Division</b>
PA 1. Identify and Adopt Priority Development Areas	Fully Underway	Transportation Services, Planning and Building Department - Strategic Planning, Redevelopment
PA 4. Participate in Quarterly SB 375 Discussions	Fully Underway	Transportation Services, Planning and Building Department - Strategic Planning, Housing and Community Development
PA 5. Call for Port of Oakland GHG Reduction Targets and Plans	Fully Underway	Elected Officials
PA 7. Adopt a Green Building Ordinance for Private Development	Completed Fall 2010	Planning, Building Services
PA 8. Offer Property-Based Energy Financing	Completed September 2015	Environmental Services, Planning, Building Services
PA 9. Launch a Downtown Commercial Retrofit Program	Completed 2012	Economic Development, Environmental Services
PA 10. Encourage Participation in Local Energy Efficiency Programs	Fully Underway	Environmental Services
PA 12. Conduct a Multi-Family Affordable Housing Retrofit Pilot	Fully Underway	Housing and Community Development
PA 13. Expand Weatherization Program Delivery	Completed Spring 2012	Housing and Community Development
PA 15. Create an Oakland-Specific Water-Efficient Landscaping Ordinance	Fully Underway	Planning and Building Department - Strategic Planning
PA 17. Improve Energy Performance of New City Facilities	Fully Underway	Environmental Services
PA 19. Restructure Solid Waste Management System	Completed July 2015	Environmental Services
PA 20. Refine Implementation of C&D Recycling Ordinance	Fully Underway	Building Services and Permit Center, Environmental Services
PA 21. Promote Waste Reduction at Community Events	Fully Underway	Environmental Services
PA 22. Develop Regulations Enabling Urban Food Production	Completed 2014	Planning and Building Department - Strategic Planning, Economic Development
PA 30. Develop a Comprehensive Transportation Policy Plan	Fully Underway	Department of Transportation

PA 31. Improve Transportation & Land Planning Integration in Every Planning Effort	Fully Underway	Department of Transportation, Planning and Building Department - Strategic Planning, Economic Development
PA 32. Create and Adopt a Transportation Impact Fee to Support Implementation	Completed May 2016	Department of Transportation, Planning and Building Department - Strategic Planning, Engineering, Building Services
PA 33. Update Local CEQA Standards to Reduce Emphasis on Congestion Impacts	Completed 2016	Department of Transportation, Planning and Building Department - Strategic Planning
PA 36. Conduct a Citywide Dynamic Parking Pricing Study	Fully Underway	Department of Transportation, Planning and Building Department - Strategic Planning, Finance
PA 41. Discontinue Subsidizing Parking for City Employees	Completed 2010	Human Resources, Department of Transportation, OPW Equipment Services
PA 43. Market Energy Retrofit Opportunities to All Oakland Businesses	Fully Underway	Business Development
PA 47. Encourage the Creation of On-Bill Financing for Energy Retrofits	Completed 2015	Environmental Services
PA 51. Encourage PG&E to Offer Green Power Options	Fully Underway	Environmental Services
PA 52. Monitor Community Choice Energy	Fully Underway	Environmental Services, Finance
PA 53. Enforce Mandatory Recycling	Fully Underway	Environmental Services, Building Services (Code Compliance)
PA 54. Conduct Residential Social Marketing Campaigns and Business Outreach	Fully Underway	Environmental Services
Non-PA. Increase Density near Transit to Improve Livability	Fully Underway	Planning and Building Department - Strategic Planning, Department of Transportation
Non-PA. Promote Bicycle Safety Training, Transit System Use, and Other Non-Auto Transportation	Fully Underway	Department of Transportation
Non-PA. Encourage the Creation of Local Bike Sharing Programs	Fully Underway	Department of Transportation
Non-PA. Upgrade to Energy-Efficient Streetlights	Completed June 2014	Oakland Public Works - Electrical Services Division
Non-PA. Provide City Employee Staff Training on Climate Issues.	Fully Underway	Environmental Services Division

## **Tracking and Reporting on Progress**

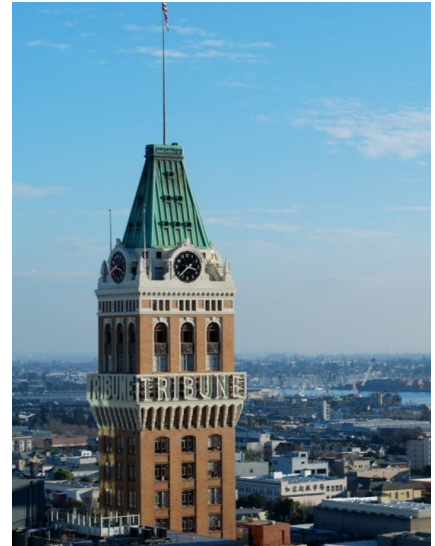
The City will report on the status of priority actions and key performance metrics on an annual basis beginning one year after ECAP adoption. Reporting will be delivered through a variety of dissemination methods to various interest groups and stakeholders. Multiple actions identified in the Community Engagement section of the ECAP will serve as additional vehicles for reporting on implementation progress.

Oakland's success in reducing energy use and GHG emissions will be measured through regular GHG Emissions Inventories. Inventories will continue to be conducted utilizing the best available information, including GHG accounting systems similar to those used previously to ensure accurate comparisons to the baseline 2005 emissions. While not an exhaustive list, these systems form the basis of data included in GHG emissions analysis, and help inform the City's progress in meeting the GHG reduction goal.

## Key Performance Metrics

### Transportation and Land Use

- Vehicle miles traveled
- Gallons of petroleum fuel consumed
- Percent of mode share represented by each form of transportation
- Miles of identified bikeways
- Number of bicycle and electric vehicle parking spots
- Electric Vehicle ownership rate
- Percent of Oakland residents living within ½ mile of major bike lane
- Total number of transit passenger miles traveled
- Total number of bus service hours
- Total miles of bus lines
- Funding allocated to transit projects (all sources)
- City fleet fuel consumption
- Per capita airplane miles traveled



### Building Energy Use

- Community-wide electricity consumption
- Community-wide natural gas consumption
- Number of low-income residential units served by weatherization assistance programs
- Number of homes participating in residential energy retrofit programs
- Number of properties utilizing property-assessed energy financing
- Number of commercial and industrial buildings participating in energy rebate programs
- Percent of electricity from carbon-neutral sources
- Amount of energy (kWh and therms) generated from local renewable sources
- Amount of energy (kWh and therms) consumed by City operations
- Amount of electricity (kWh) generated at City facilities

### Material Consumption

- Lifecycle greenhouse gas emissions from discarded materials
- Number of repair businesses in Oakland

### Waste Reduction

- Tons of waste landfilled
- Tons of material recycled by City franchisees or contractors
- Tons of organic material composted by City franchisees or contractors
- Amount of construction and demolition (C&D) debris diverted from landfills
- Amount of waste generated by City operations

### Community Leadership

- Number of individuals pledging to take and/or reporting climate actions



## Chapter 3. A Collaborative Approach

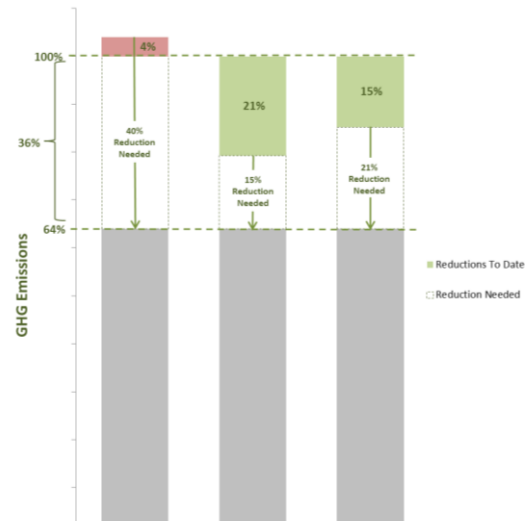
### Achieving Oakland's 2020 GHG Reduction Goal

Achieving a 36 percent reduction in citywide GHG emissions by 2020 requires a collaborative effort between government, business, and residents. This effort requires unprecedented action to address all three of the major sources of GHG emissions:

- Transportation & Land Use
- Building Energy Use
- Material Consumption & Waste

For the purpose of developing the ECAP, Oakland's GHG reduction goal is applied to each of these three categories of GHG emission sources. This level of GHG reduction can be accomplished by 2020 by achieving the following targets:

Figure 6. Applying the 36% GHG Reduction Goal in Each Emissions Source Category



**20% reduction in vehicle miles traveled** annually as residents, workers and visitors meet daily needs through transit, walking, and bicycling

**24 million gallons of gasoline and diesel saved** annually on local roads due to less driving and more fuel efficient vehicles

**32% reduction in annual electricity consumption** through conservation and energy efficiency in homes and businesses

**14% reduction in annual natural gas consumption** through retrofits to Oakland's homes and commercial buildings and aggressive conservation

**62 million kWh and 2.7 million therms of renewable energy production** annually from local solar panels, biofuels, and other renewable energy technologies

**375,000 tons of waste diverted** annually away from local landfills through waste reduction, reuse, recycling, and composting



# Role of Federal, State, Regional Partners

The ECAP is intended to complement actions taken by federal, state and regional governments to address the threat of climate change.

The Federal government has begun to take an increasing interest in solving the challenge of climate change. President Obama issued an executive order in 2009 calling for GHG reductions in Federal government operations.<sup>iv</sup> The U.S. Environmental Protection Agency has also begun to take steps to recognize GHG emissions as an environmental problem. While federal leadership is recognized and beneficial, the ECAP is structured to ensure local commitment and progress on climate policy and greenhouse gas reductions can continue regardless of national priority or focus.

In California, climate policies adopted at the State level (e.g., AB 32, SB 375, SB 350) aim to reduce statewide GHG emissions to 1990 levels by 2020, with a doubling of energy efficiency and renewable energy by 2030.<sup>v</sup> Executive Order S-3-05 issued by Governor Schwarzenegger calls for statewide GHG reductions of 80% below 1990 levels by 2050.<sup>vi</sup>

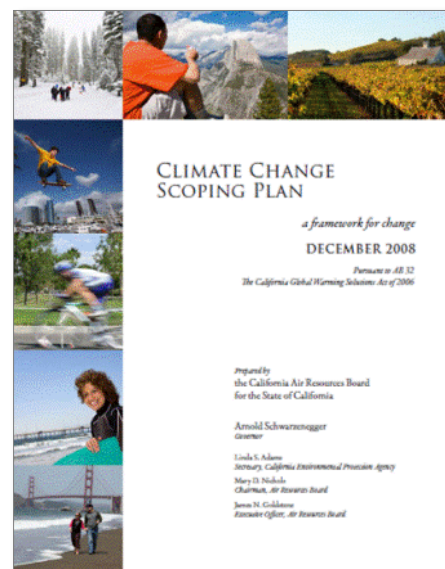
In December 2008, the California Air Resources Board (CARB) adopted the Climate Change Scoping Plan, outlining a variety of State-driven strategies to help achieve these statewide goals.<sup>vii</sup> Complementary and supplemental local actions will be needed to help reach these goals. Among the strategies contained in the CARB Scoping Plan are: vehicle fuel efficiency and low carbon fuel standards; energy efficiency standards for buildings; aggressive renewable portfolio standards for electricity generation; hybrid vehicle support; high speed rail; industrial sector energy efficiency measures; growing sustainable forests; and recycling and waste measures. While some of these strategies may not affect Oakland, most will have some impact in Oakland and are considered in the context of developing local GHG reduction targets and plans to meet the targets.

## State policies are projected to result in significant progress toward Oakland's 2020 GHG reduction goal.

Some of the State-driven strategies, such as requiring the sale of more fuel-efficient vehicles and lower carbon fuels, are projected to reduce GHG emissions in Oakland without imposing new burdens on local government. Other State strategies outline goals for reducing GHG emissions that will only be met if action is taken by local governments and communities.

For the purpose of quantifying GHG emissions and needed reductions, projections of Oakland's 2020 GHG emissions have been adjusted based on projected changes in population, economic activity and vehicle miles traveled.<sup>viii</sup> These projections also assume implementation of State-driven strategies that will not require additional local government action. Achievement of other State-defined goals requiring local action is not assumed without the implementation of actions recommended in this ECAP.

The role of regional partners in achieving Oakland's future GHG reduction goals is very significant. Regional partners such as the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) are working to reduce emissions through development of regional housing allocations for Bay Area cities, transportation plans, and priority development areas. Several strategies that hold promise would require new regional action by a regional body or the collective action of all the cities and counties.



## Role of City Government and Local Action

The primary purpose of the ECAP is to identify and prioritize actions the City can take to reduce energy consumption and GHG emissions associated with Oakland. The ECAP also tells the story of action the Oakland community would need to take in partnership with the City to achieve a 36 percent reduction in GHG emissions.

The City of Oakland can provide leadership and leverage, and can play an important role in helping to reduce citywide energy use and GHG emissions. The City can enact new policies; develop new plans, programs and projects; and help to educate and motivate additional community progress.

For example, land use and transportation plans developed by the City can help to orient new development around transportation networks that reduce dependence on automobiles and associated GHG emissions. Examples of relevant City planning documents include: the General Plan Land Use and Transportation Element and Housing Element; the Zoning Code; and the Bicycle and Pedestrian Master Plans.

City policies and programs can help to reduce energy use associated with residential and commercial buildings as well. For example, the City's proposed Green Building Ordinance for Private Development would help to ensure that new residential and commercial buildings and rehabilitations of existing buildings are designed to achieve high levels of energy efficiency and green performance.

The City has significant influence over GHG emissions associated with materials and waste through its solid waste management programs. The City's garbage franchise agreement and recycling service contracts define the type, frequency and cost of garbage, recycling and compost collection services, and can be tailored to keep more materials out of landfills.

The City also has an important role to play in educating and motivating all members of the Oakland community to join in the effort to reduce energy use and GHG emissions. The City can encourage voluntary action, promote model local practices, provide opportunities for new ideas from the community to further strengthen local efforts, and track and report on Oakland's progress in reducing energy use and GHG emissions.

### **Achieving a 36 percent reduction in GHG emissions will require unprecedented leadership by the City and the Oakland community**

Leadership from local businesses, non-profit organizations, civic groups and others will be essential to achieving Oakland's 36% GHG reduction target. As champions connected throughout the Oakland community, these organizations can help to build a movement around local climate action.

Oakland's success in reducing GHG emissions will ultimately depend on the day-to-day decisions of individuals. For example, achieving a 36% GHG reduction target will require all members of the community to drive an average of 20% less by walking and biking for neighborhood trips, using public transit, combining trips, and telecommuting where possible. Thirty percent of Oakland's homes and businesses will need to undergo energy improvements. Local service providers (e.g., PG&E, AC Transit) will play key roles in enabling individuals to make choices that reduce GHG emissions. These and other organizations will have a big role to play in creating interest and encouraging action throughout the community.





# Community Climate Action Guide

Achieving significant GHG reductions will require everyone in the Oakland community working together. Below are ideas to consider as you reduce your own climate footprint. To view more ideas, download a stand-alone copy of this guide, and access tools for calculating your own carbon footprint, visit the City's website at [www.sustainableoakland.com](http://www.sustainableoakland.com). Please also see the Community Climate Action Guide created by OCAC, available at <http://oaklandclimateaction.org>.



## First Steps

### Greening Your Home

- Try adding a layer before turning on the heat
- Plug all appliances into powerstrips and turn off the strips when not in use
- Replace incandescent light bulbs with LED bulbs
- Choose ENERGY STAR labeled appliances
- Insulate your water heater and lower the water heater temperature
- Install and use a clothesline
- Use timers on connected appliances, such as gaming systems
- Install weather stripping around external doors
- Conserve water with water-efficient showerheads and faucets

### Getting Around

- Switch one work commute trip per week to biking, walking, taking transit or telecommuting
- Accomplish at least two neighborhood trips per week by biking or walking
- Plan out non-work trips in advance and combine where possible
- Carpool with neighbors, co-workers

### Consume Less, Waste Less

- Recycle and compost all eligible materials
- Bring your own bag for shopping
- Purchase durable goods made from recycled materials
- Avoid excessively packaged goods
- Consider repair and reuse options before purchasing new items
- Eat meat at one less meal each week

### Lead the Way

- Educate your family and establish green family practices
- Discuss action opportunities with neighbors, such as lowering water heater temperature, hiring an energy improvement contractor, or biking to work one day per week
- Discuss safe routes to school, transit, walking and bicycling with neighbors and help create a safe street environment



## Bigger Steps

### Greening Your Home

- Have a home energy audit done and take actions that will pay for themselves within 5-10 years
- Look for opportunities to include passive solar design to minimize winter heating needs in new building or remodeling projects
- Collect rainwater for outdoor water needs
- Plant trees on your property
- Plant water-efficient landscaping, including smart controllers (See Bay Friendly Guidelines)
- Install solar panels on your home or select optional green power alternatives from your electricity provider

### Getting Around

- Purchase a hybrid or electric vehicle
- Purchase a bike and ride it often
- Choose to live where automobile dependence can be minimized (e.g., near transit, work, school, shopping)
- Try not owning a car
- Fly less often for business; try web meetings & video conferencing

### Consume Less, Waste Less

- Repair and reuse goods whenever possible
- Adapt used materials for new purposes (e.g., mason jars for cups)
- When shopping in stores, look for options in Oakland first
- Plant a garden to grow your own food
- Freeze, can, dry and preserve seasonal fruits and vegetables
- Go vegetarian

### Lead the Way

- Become a mentor to other members of the community
- Become a community resource and share your skills and experience with others taking local climate action



## Chapter 4

# Leveraging Near-Term Opportunities and Laying the Groundwork for Long Term Progress: Final Three-Year Priority Implementation Plan

It is important for the City to prioritize its efforts carefully, and proactively implement the highest-priority recommended actions when the necessary resources are available. This chapter presents a Priority Implementation Plan for making progress toward Oakland's 36% GHG reduction target in the final three years of the 2020 ECAP.

**The Three-Year Priority Implementation Plan is divided into three sections:**

- **Priority actions supported by existing resources**
- **Priority actions requiring new resources**
- **Priority actions complete or fully underway as of Spring 2017**

In each section, recommended priority actions are grouped into the three primary GHG reduction categories, along with a set of highlighted community engagement recommendations, and steps to assist Oakland in adapting to climate change, in the following order:

- Transportation & Land Use
- Building Energy Use
- Material Consumption & Waste
- Community Engagement
- Climate Adaptation & Increasing Resilience

Priority actions recommended using existing and anticipated resources are summarized with descriptions of current implementation status. Priority actions recommended for implementation that will require new resources include status updates if available and estimates of resource needs, along with recommended implementation responsibility if resources become available.

While some GHG reduction activities are listed as Priority Actions, full implementation of all ECAP action items is necessary for Oakland to achieve a 36 percent reduction in GHG emissions by 2020. Prioritization is intended to assist City staff and community partners in identifying which measures hold the most potential in the near term, due to timeliness, available funding, depth of GHG reduction, or other factors. It is the intent of the City to pursue completion of all action items by 2020.



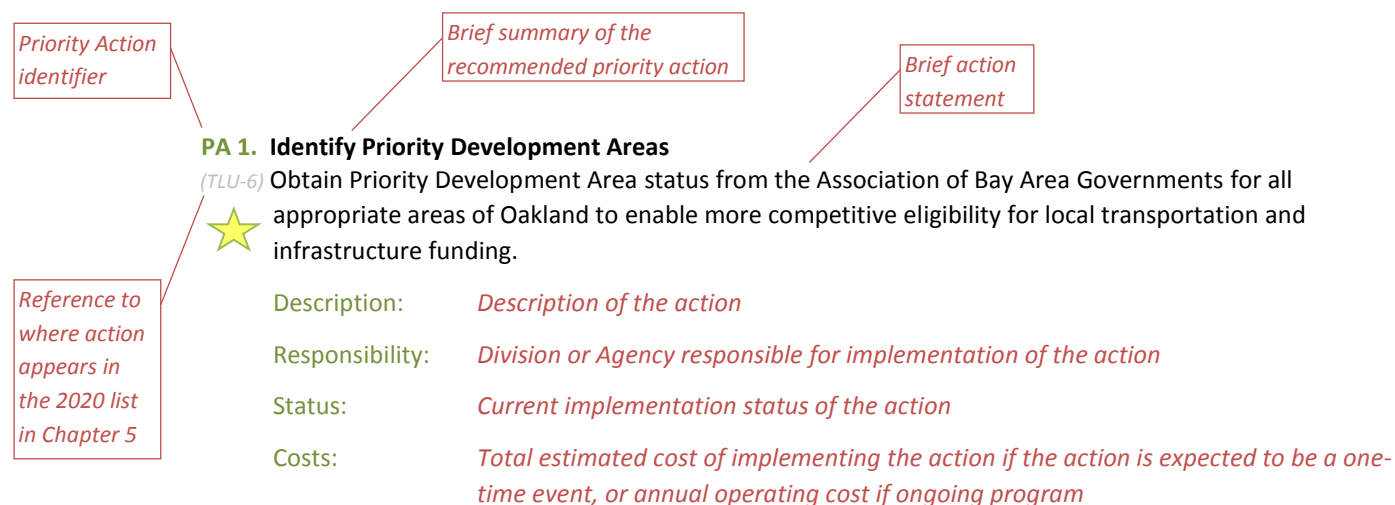
# Priority Actions Supported by Existing Resources

During the end of the ECAP period (2017-2020), the City will implement a prioritized set of recommended actions for which resources are available. These recommended actions can be implemented using existing or anticipated resources and staffing levels, including anticipated grants from the California Energy Commission (CEC), Bay Area Air Quality Management District (BAAQMD), and others. Implementation of some Priority Actions will benefit from expected and recently awarded Greenhouse Gas Reduction Fund grants, funded by California’s Cap and Trade system. Many of the actions included in this section are already in progress.

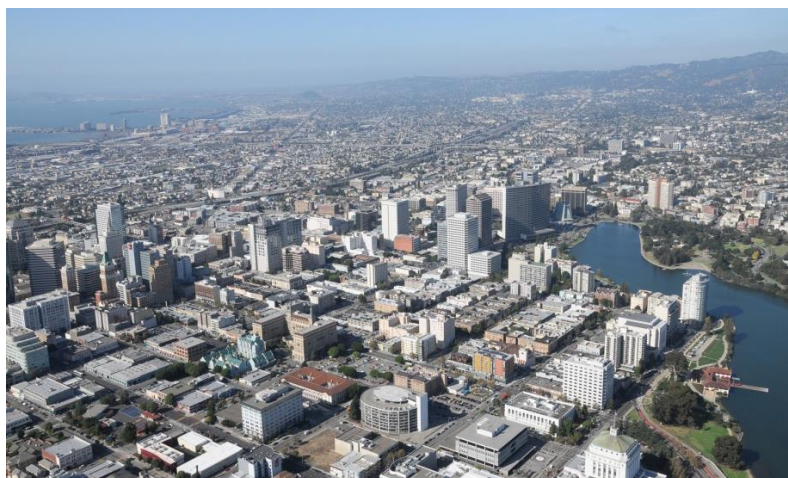
These priority actions will create GHG reduction benefits and lay the foundation for future actions that can create additional GHG reductions in the coming years. Additional resources to continue and/or expand these actions beyond the next three years, as well as to implement additional energy and climate actions, will be necessary to continue Oakland’s progress as a national and global climate leader.

## How to Read This Section

Each action below is presented through a standard format containing each of the following elements.



★ The star icon (shown at left) indicates actions in the Three Year Priority Plan that were newly prioritized during the 2017 ECAP Update.



## Supporting Resources

Supporting resources are summarized for each Priority Action. The total cost associated with implementing all proposed Three Year Priority Actions supported by existing resources is projected to be approximately 5.5 staff FTE per year, 0.5 fellow time per year, and an additional \$ 9.10 million for related expenses (e.g., consultant support).

## Transportation and Land Use

Combustion of fossil fuels for transportation is a major source of GHG emissions associated with Oakland, and all of California. This includes people moving to and from home, work, school, shopping, recreation, and other destinations, as well as the transport of goods. Other local air pollutants linked to increased incidence of health problems such as asthma, heart disease, and cancer, many of which disproportionately affect Oakland's low income and vulnerable populations, also result from use of transportation fuels.

Addressing transportation emissions presents a tremendous opportunity to simultaneously reduce GHG emissions and improve the health and safety of Oakland residents. Efforts to reduce GHG emissions from the transportation sector also present opportunities to create a more equitable, sustainable, affordable, and healthy Oakland, by addressing the interconnections between land use and transportation. How and where housing, jobs, shopping, and other opportunities are located has a fundamental effect on both GHG emissions and the choices that people have for meeting their daily needs.

A number of tools are available to help the City reduce GHG emissions associated with transportation and land use. These include: land use and transportation planning; providing interconnected bicycle and pedestrian options; tailoring parking policies to reduce vehicle trips; supporting affordable, safe, and reliable public transportation options; promoting fuel-efficient vehicles and low- or zero-carbon fuels; partnering with the Port of Oakland to reduce Port-related emissions; engaging employers to reduce commute and business trips; promoting urban forestry; and improving the City vehicle fleet.

Between 2012 and 2017, Oakland has made progress in a number of these areas, embracing a variety of climate-friendly development principles in the City's General Plan, focusing new development around transit hubs, adopting forward-thinking Bicycle and Pedestrian Master Plans and significantly expanding the city's bikeway network, and adopting a Clean Fleets policy aimed at improving the fuel efficiency of the City's vehicle fleet.

A number of other ongoing actions are recommended for completion during the next three years. These actions include:

- Expand and Develop a Sustainable Funding Plan for the Downtown Shuttle (operational since 2013)
- Advance Bus Rapid Transit in Oakland (under construction since 2017)
- Plan for Electric Vehicle Infrastructure (ongoing implementation since 2012)

The following Transportation and Land Use priority actions are supported by existing resources. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these priority actions will cost an average of 0.7 FTE per year and \$ 7.43 million for expenses throughout the next three years. Following are descriptions of each of these actions, along with information on implementation status.



## Priority Actions

### PA 1. Launch and Develop a Funding Plan for the Downtown Shuttle

(TLU-13) Launch and sustain a downtown free shuttle to increase transit use in the downtown area. Explore options to expand the shuttle up the Broadway corridor.

**Description:** The City launched a new downtown shuttle serving the Broadway corridor from Jack London Square to the Uptown area in 2010, and in 2014, ridership surpassed three million. Rides on the shuttle are free to the public. The shuttle is projected to create a net reduction in GHG emissions by reducing the need for private automobile trips; the City estimates that the shuttle reduces vehicle miles driven by 3.3 million each year, eliminating over 800 tons of CO<sup>2</sup> emissions annually. The shuttle also benefits downtown merchants.

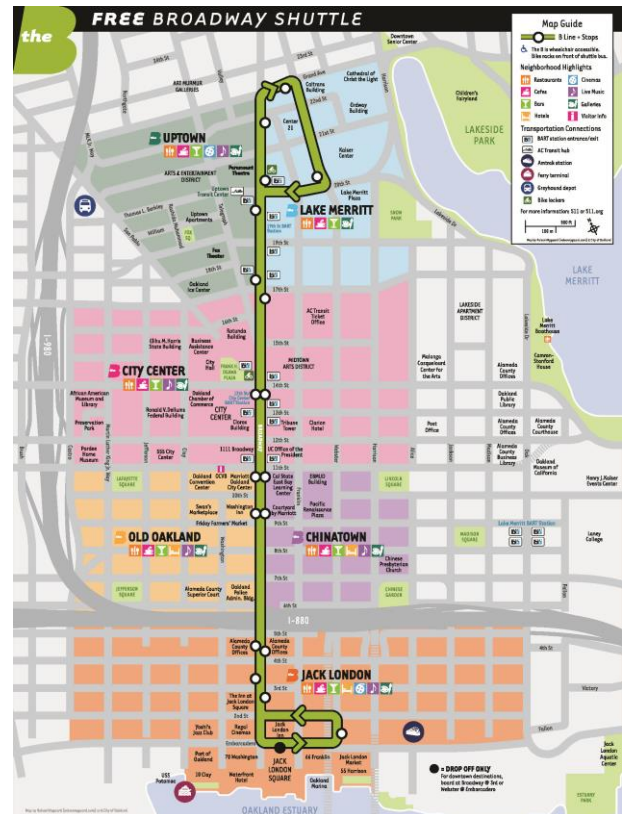
The launch and initial operating phase of the shuttle was supported by a grant from the Bay Area Air Quality Management District. Funding is in place to support the operation of the shuttle for a two-year period. During this time, the City will work to develop a long-term funding strategy to sustain the shuttle beyond the grant period, including development of a “fair share” methodology for assigning a portion of the costs to new development.

Existing staff resources are sufficient to support the launch of the shuttle. Additional resources may be needed to perform urban economic analysis, outreach and strategy development to create an ongoing sustainable funding stream beyond the grant period.

**Responsibility:** Economic and Workforce Development

**Status:** The Broadway Shuttle is fully operational, providing 685,229 individual trips in 2016, running until 10-pm on weekdays and 1am on Friday and Saturday nights. Each year, approximately \$910,000 is raised from private property owners and public transit agencies to cover the shuttle’s annual operating costs. Currently, the City is studying the feasibility and potential for an expansion to the Broadway Shuttle to enhance the local and regional transit systems' efficiency, improve connectivity between the corridor's neighborhoods, and spur economic development on and adjacent to Broadway. The Study Area includes Broadway, the city’s central downtown corridor, from Jack London Square to Kaiser Permanente Medical Center, and 40th Street from Broadway to MacArthur BART.

**Costs:** 0.5 FTE per year plus \$900,000 of expenses per year  
Cost Total: \$980,000 annually





## PA 2. Advance Bus Rapid Transit in Oakland

(TLU-14) Support implementation of bus rapid transit (BRT) in Oakland along the Broadway and International Boulevard corridors while minimizing short-term potential impacts to neighborhoods and businesses.

**Description:** Establishing new fixed guideway transit service will be critical to reaching our emissions goals and fostering shifts from automobile travel to transit. Bus Rapid Transit (BRT) offers a significant opportunity to make transit easier, faster, safer, more reliable, and more convenient. The City is working with AC Transit to establish a 9.5 mile BRT system on these routes, from the San Leandro BART station to Oakland's Uptown. Service will run as fast as every five minutes during peak hours, and vehicles will be powered by hybrid electric or clean diesel.



City staff and consultants provide services on an as-needed basis to support, facilitate, and oversee the BRT project construction and operations. These resources are sufficient to support and oversee the BRT construction and operations from the City's standpoint.

Based on its experience with this initial BRT project, the City should consider other opportunities to advance BRT as a local and regional strategy.

**Responsibility:** Oakland Public Works

**Status:** The project is under construction and is being phased through various zones to minimize impacts to the community. Portions of project work are also being staged and scheduled over the next year and a half. Revenue service is expected to begin by late 2018.

**Costs:** The City's construction phase costs include \$1,450,000 reimbursable from AC Transit plus an additional \$230,000 in funding for staff in at least three different departments and technical consultants plus \$2,500,000 for business sustainability programs.  
Cost Total: \$4,180,000

## PA 3. Establish Alternative Mechanisms for Meeting Parking Requirements

(TLU-28) Develop regulations that would permit parking requirements to be met through alternative approaches demonstrated to reduce parking demand and GHG emissions.

**Description:** The City will seek resources to conduct a comprehensive review of parking policy regulations for new development. New regulations will be developed for parking requirements in the planning code pertaining to new development on private property. These regulations would permit parking requirements to be met through alternative approaches demonstrated to reduce parking demand and GHG emissions. These approaches may involve a range of transportation demand management strategies, including on-site car-share vehicles, secure bicycle parking and showers, and subsidized transit passes.

**Responsibility:** Department of Transportation, Planning and Building Department

**Status:** In 2016, the City amended its minimum parking requirements to reduce parking in most new developments. The new regulations removed minimum parking requirements and imposed parking maximums and mandatory car share spaces for all new developments in downtown; further reduced parking minimums in transit-oriented development zones; and adjusted requirements for nearly all other development and zoning types, including special requirements for affordable housing. In addition to these changes, in 2017 the new Department of Transportation launched a

three-year Demand Responsive Parking and Transportation Demand Management initiative, designed to maximize efficient use of parking through active management of the supply as part of a multi-modal approach to developing neighborhood transportation infrastructure and mode-shift.

Within the next five years, the City plans to conduct a study on the effectiveness and impacts of the 2016 parking regulations, and consider overhauling the residential parking program based on the results of that study.

**Costs:** 0.08 FTE for two years plus \$250,000 of expenses  
Cost Total: \$285,000

#### PA 4. Plan for Electric Vehicle Infrastructure

(TLU-33) Participate in regional electric vehicle (EV) infrastructure planning and develop new processes to support local use of electric vehicles.

**Description:** The City will seek resources to address EV infrastructure planning and develop new processes to facilitate community adoption of EV technologies. The City is already partnering with other Bay Area cities and other partners in an effort to make the Bay Area the EV capital of the United States.

Achieving this vision will require planning and implementation of EV charging infrastructure in publicly accessible locations throughout the community, including industrial zones and transit village areas where infrastructure improvements are being contemplated. It will also require increased institutional capacity and changes, such as new permitting processes to enable private residents and businesses to install charging infrastructure.

The City will also seek to add EVs, plug-in hybrid vehicles and supporting charging infrastructure to the municipal vehicle fleet.



**Responsibility:** Oakland Public Works, Department of Transportation

**Status:** In 2014, the City hired an Energy Policy Analyst whose duties include securing resources to expand the City's electric vehicle infrastructure. Activities to date have included securing over \$250,000 in grants to install public EV chargers at City-owned public parking facilities; updating the City's building code to require enhanced EV charging infrastructure in all new construction; pursuing additional funding opportunities to advance a transition to EVs for hard-to-reach sectors including low-income residents, multifamily buildings, and medium-duty truck fleets; participating in regional working groups to advance EVs across the Bay Area; and working with local stakeholders to identify solutions for expanding the network of EV chargers.

**Costs:** 60 hours staff time per year  
Cost Total: \$9,000 annually

## Building Energy Use

Energy used to heat, light, and power Oakland's buildings and for outdoor lighting is another major direct source of GHG emissions. Natural gas consumption is the largest source of GHG emissions related to buildings, followed by emissions from power plants that supply Oakland's electricity.

A number of methods are available to the City to reduce GHG emissions from building energy use. These include optimizing energy efficiency in new construction; retrofitting existing buildings to reduce energy consumption; promoting energy and water conservation and efficiency; advancing the use of renewable energy; reducing the use of natural gas; and improving the energy performance of municipal facilities. Oakland's greatest opportunities lie in retrofitting the city's existing building stock.

Oakland already has made progress in a number of these areas, adopting green building ordinances for civic and private buildings, implementing energy retrofits in most of the City's existing 100 largest facilities, working with partners to guide implementation of East Bay Energy Watch programs delivering energy efficiency services to local businesses, promoting green building construction, and installing more than six megawatts of solar electric panels. A number of actions identified as Priority Actions in the 2012 ECAP have been completed or are fully underway; these include adopting a Green Building Ordinance for Private Development in October 2010; offering Property Based Energy Financing throughout Oakland as of September 2015; and successfully completing a Stimulus-funded Downtown Commercial Retrofit Program.



The following Building Energy Use priority actions are supported by existing resources. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these priority actions will cost an average of 2.6 FTE per year, 100 fellow hours per year, and \$564,000 for expenses throughout the next three years. Following are descriptions of each of these actions, along with information on implementation status.

### **Priority Actions**

#### **PA 5. Launch a Residential Green Retrofit Program**

(BE-21) Launch a new energy retrofit program to improve energy efficiency of existing single-family and multi-family residential properties via promoting green improvements; providing green construction specs; certifying green contractors; connecting homeowners, landlords and tenants with financing options (e.g., new property-based financing), and providing quality assurance support.

**Description:** The Energy Upgrade California (EUC) residential energy retrofit program was seeded by contributions from local governments throughout Alameda County in 2009 and supported by ARRA funding, and has since grown to be a statewide umbrella brand for a suite of energy efficiency programs. The initial funding enabled the development of green building technical guidance for existing single family residential retrofits. Under the leadership of the Association of Bay Area Governments and StopWaste, the local EUC administrator, Oakland is now partnering with other local governments and agencies throughout Alameda County and across the region to implement the program. EUC fosters energy efficiency, water conservation, and other green improvements of existing single-family and multi-family residential properties in Oakland and throughout Alameda County. The program performs outreach to promote green improvements; provide green construction technical guidance; maintain a green contractor certification system; connect



homeowners, landlords, and tenants with financing options (e.g., property-based financing); and providing quality assurance support. The program also promotes the value of third-party certification of energy and green building improvements.

**Responsibility:** Oakland Public Works, Housing & Community Development

**Status:** Oakland's single family homes and multifamily buildings are eligible for incentives and assistance through BayREN's local version of Energy Upgrade California. From the program's full launch in 2014 through January 2017, 79 Bay Area multifamily building projects totaling 4,027 residential units had completed construction and received rebates through the EUC Bay Area Multifamily Building Enhancements program; in Oakland, 2,000 multifamily residential units had construction completed through the program. And, in 2016 alone, 329 single family Oakland homes were served by the EUC Home Upgrade and Advanced Home Upgrade programs, yielding savings of 100,529 therms and 126,545 kWh.

**Costs:** 2 hours staff time per year  
Cost Total: \$300 annually

#### **PA 6. Implement Advanced Operating Procedures for City Facilities**

(BE-42) Enhance and implement standard operating procedures to improve energy efficiency in City facility operations.

**Description:** Continuous improvement of written standard operating procedures (SOPs) is necessary to ensure that City facilities operate with superior energy efficiency. New and enhanced written SOPs will be developed through interdepartmental collaboration and added to existing standards used by Oakland Public Works to sustain American Public Works Association accreditation. These SOPs will cover a range of topics including utility cost reporting, energy efficiency retrofitting, direct digital controls, lighting equipment maintenance, and photovoltaic equipment maintenance.

**Responsibility:** Oakland Public Works

**Status:** Building Energy Management Systems (EMS) have been installed in most major municipal buildings, with enhanced controls for HVAC and lighting systems. Monthly reports are prepared and distributed for review and use by building managers.

**Costs:** 40 hours staff time per year and 100 hours from Sustainability Fellowship Staff (fellow time)  
Cost Total: \$24,000 annually plus \$1,400

#### **PA 7. Retrofit City Facilities to Improve Energy Performance**

(BE-44) Perform energy efficiency upgrades to existing City facilities, supported by ARRA funding.

**Description:** The City will retrofit existing municipal facilities to improve energy efficiency and reduce operating costs. Several energy retrofit projects have been funded by the ARRA Energy Efficiency and Conservation formula block grant. These projects include modifications to the Police Administration Building's lighting, heating, ventilating and air conditioning (HVAC) equipment; the City Administration Building automated HVAC controls; Data Center servers; and lighting systems throughout City facilities.

**Responsibility:** Oakland Public Works, Planning and Building Department

**Status:** A variety of facilities have been retrofitted to improve energy efficiency, including the buildings listed above. Significant opportunities remain among municipal buildings for efficiency projects.

**Costs:** 2.5 FTE per year; capital costs to vary based on availability of financing  
Cost Total: \$490,000 annually for staffing; capital costs not estimable at present

## Material Consumption and Waste

The manufacture, transport, use, and disposal of material goods represents the largest single source of consumption-based emissions. While many of these emissions do not occur within Oakland's geographic boundaries, consumption and disposal decisions (which include what we buy, how and how long we use it, and what we do with it when we've finished with it) made by each member of the Oakland community play a major role in the creation of these GHG emissions, both globally and locally.

The Oakland City Council adopted a Zero Waste Goal in 2006, calling for a 90% reduction in waste sent to landfill by 2020. The City's Zero Waste Strategic Plan outlines strategies for meeting this goal, which prioritize "systems" solutions to reduce landfilled waste, and expand waste reduction, recycling, and composting programs. By pursuing the City's adopted Zero Waste strategies, Oakland can help to create GHG reductions on the same or greater order of magnitude compared to those related to transportation and building energy use. Because GHG emissions affect Oakland regardless of where they are created, reducing emissions associated with materials and waste represents a significant local opportunity.



A number of tools are available to the City to reduce GHG emissions associated with material consumption and waste. These include restructuring Oakland's municipal code, garbage franchise agreement, and residential recycling service contracts; increasing reuse, repair, recycling, and composting; advocating for statewide producer responsibility legislation; and promoting local food and material choices. Replacing energy-intensive virgin resources with energy-efficient recycled resources can create significant GHG benefits, help to address global resource depletion, and lead to local economic development benefits. Composting organic wastes can help to replace emissions-intensive, petroleum-based fertilizers with carbon-capturing, water-saving compost, and reduces toxic runoff from California's farms. The Zero Waste hierarchy of reduce, reuse, recycle, and compost can be viewed as a global energy efficiency program that significantly reduces the energy and other natural resources used to create consumer goods, from cars to packaging to food. Many of these actions have already been accomplished or started in the first years of the ECAP period.

Oakland had already made progress in a number of these areas prior to the ECAP's adoption, adopting a Zero Waste Goal and Strategic Plan, offering residential curbside compost collection on a citywide basis, adopting a construction and demolition debris ordinance, developing regulations enabling urban food production, and promoting responsible purchasing behaviors such as buying recycled-content products. Since the ECAP's adoption, further progress has been made, as the City restructured its Solid Waste Management System and franchise hauler contracts, was instrumental in implementing a county-wide ban on single-use carry-out plastic bags, and improved implementation of the Construction and Demolition Debris Ordinance.

The following Material Consumption and Waste priority action is supported by existing resources. Although funds have already been allocated for this action, implementation will cost an average of \$4,200 for expenses and 100 fellow hours per year throughout the next three years. Following is a description of the action, along with information on implementation status.



## Priority Action

### PA 8. Encourage Land Owners to Lease Space for Food Production

(MW-18) Encourage local utilities, public agencies and other large land owners to offer commercial leases to local organizations for the purpose of local food production and/or foraging.

- Description:** The City will encourage local utilities, public agencies, and other large land owners to offer commercial leases to local organizations for the purpose of local food production and/or foraging.
- Responsibility:** Planning and Building Department  
- Strategic Planning
- Status:** The City plans to begin work on this action during the next three years.
- Costs:** 100 hours fellow time per year  
Cost Total: \$1,400 annually





## Community Engagement

The City and its partners have an important role to play in educating and motivating all members of the Oakland community to join in the effort to reduce energy use and GHG emissions, and in providing tools and pathways to more effectively engage in that effort. Through its leadership, networks, and existing communication channels, the City can help to spur the high levels of community participation needed to solve the challenge of climate change, and seed opportunities for new ideas from the community to further strengthen local efforts. In addition, the City can track and report on Oakland's progress in reducing energy use and GHG emissions, and promote local examples of model practices throughout the community.



However, while the City can put Oakland in position to reduce GHG emissions, Oakland's success in meeting its climate goals will ultimately depend on the day-to-day decisions of individuals. For example, achieving Oakland's GHG reduction goals will require all members of the community to drive an average of 20% less. As much as possible, everyone will need to accomplish neighborhood trips by walking and biking, using public transit, combining trips, and telecommuting. 30% of Oakland's housing stock will need to undergo energy improvements, and 30% of Oakland's businesses will need to participate aggressively in energy efficiency programs. All Oaklanders must work to achieve the city's Zero Waste goals by recycling and composting. While the City has a profound responsibility in ensuring the infrastructure and appropriate policy environment to facilitate these decisions, local organizations also have a big role to play in motivating interest and action throughout the community, and helping demonstrate paths to success.

The City of Oakland can foster additional voluntary community action by setting a positive example, offering a vision of needed community actions, and encouraging and collaborating with local organizations where appropriate to accelerate progress. Achieving Oakland's GHG reduction goals will require engagement of early adopters and harder-to-reach residents alike. Local organizations, including community-based organizations, business, labor, educational institutions, and others, can help to educate, motivate, and empower the entire community to participate in and benefit from local climate action. As champions connected throughout the city, these organizations can help to build a movement around local climate action.

A number of actions that involve community engagement are recommended for completion during the remainder of this ECAP period. These actions include:

- Expand Outreach and Engagement on Energy and Climate Issues
- Partner with Local Organizations to Expand Engagement
- Convene Quarterly Community Climate Forums
- Produce an Annual Climate Progress Report
- Support Local Green Jobs Programs

The following Community Engagement priority actions are supported by existing resources. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these priority actions will cost an average of 2 FTE per year, 0.4 fellow time per year, and \$978,000 for expenses throughout the next three years. Following are descriptions of each of these actions, along with information on implementation status.

## Priority Actions

### PA 9. Provide Additional Information on Energy and Climate Issues Including Energy and GHG Reduction Progress through Existing City Channels

(CE-1, CE-15,

& CE-17) Expand the City's website and other outreach channels to track and report annually on Oakland's progress in reducing energy use and GHG emissions and provide more comprehensive and action-oriented information regarding opportunities to reduce energy use and GHG emissions.

**Description:** The City can accelerate community action and increase transparency by enhancing its use of existing outreach channels. For example, content on the City's website can be enhanced to report regularly and in greater depth on Oakland's progress toward reducing GHG emissions, including GHG reduction achievements of the Oakland community; provide key performance metrics for evaluating Oakland's progress toward achieving climate goals; highlight model practices and examples of leadership throughout the community; illuminate opportunities for the community to provide input to relevant City planning documents, policies and programs; support local action; and provide action-oriented recommendations for community consideration at home and work.

The City can also expand its promotion of the Alameda County Green Business Program, and encourage more businesses to become certified (as of March 2017, there are 190 certified Green Businesses in Oakland). The City provides additional information via annual events such as EarthEXPO, Bike to Work Day, and the Art and Soul Festival, but has more untapped potential in sharing information and participation opportunities through its Stewardship programs.

**Responsibility:** Environmental Services

**Status:** Two comprehensive GHG emission inventories have been completed since the ECAP's 2012 adoption by Council, with a third planned for late 2017. The City reports GHG emissions annually through the Carbon Disclosure Project (CDP), as well as through the Global Covenant of Mayors. The *Sustainable Oakland Report*, a climate action progress report on the status of selected climate actions and key performance metrics for evaluating Oakland's climate progress, is published annually and posted to the City's website. This report can be provided to community organizations, associations, networks, businesses, schools, and other interested parties for further dissemination throughout the community. Energy and climate content on the City's website can be found at [www.sustainableoakland.com](http://www.sustainableoakland.com). This includes information about new programs, such as PACE financing, Energy Upgrade California, and more, as well as links to this document and to Oakland's emissions inventories. Finally, the City is in the process of creating an online Sustainability Dashboard to showcase specific climate and energy progress.

Since the ECAP was written, the City has expanded green building information provided through its Green Building Resource Center located near the Planning and Building counters in the Dalziel Building at 250 Frank H. Ogawa Plaza. New content is constantly being added to the City's Green Building Resource Center, and to the green building pages on the City's website. Further improvements will be made in the process of the current re-design of the City's website. In concert with the City's resilience efforts, Environmental Services staff are developing and enhancing tools to enhance engagement with vulnerable and disadvantaged communities across Oakland to ensure that these communities are able to take maximum advantage of the City's energy and climate resources. Finally, the City has not fully leveraged novel ways of collecting information and ideas from residents about innovative approaches to climate mitigation. Since the ECAP adoption in 2012, social media tools have proliferated; an enhanced social media presence could aid in the efforts both to spread messages about climate action, and to collect information and ideas from the community. Doing so would likely require additional resources.

**Costs:** 0.20 FTE per year, 504 hours staff time per year, and 0.33 fellow time per year  
Cost Total: \$130,000 annually

**PA 10. Expand Outreach on Energy and Climate Issues through Partnerships with Local Organizations**

(CE-2) Partner with community-based organizations, neighborhood associations, business associations, and others to promote local climate action throughout the community through new and traditional channels.

**Description:** By partnering with local organizations, the City can more efficiently and effectively reach all members of our diverse community to foster engagement on energy and climate issues. This outreach can highlight and encourage the community to take advantage of existing climate action programs. It can also help to educate and motivate community members to make additional changes to reduce GHG emissions in the areas of energy efficiency and conservation at home and work, alternative transportation options, food and material goods consumption and disposal, and more.



Collaborating organizations may have a geographic, demographic, topical, or other focus. Examples include community-based organizations, environmental justice organizations, neighborhood associations, business associations, faith-based organizations, community centers, schools, and others. Their efforts might include building ongoing local networks, holding neighborhood-scale events and workshops, encouraging engagement on City policy and planning efforts, and implementing community-led demonstration projects. Basic information and messaging can be delivered to local partners for their use under existing resources. New resources would be required to help develop accessible, multi-language educational and promotional materials that collaborating organizations could utilize to support more effective outreach, and to more effectively support demonstration projects.

**Responsibility:** Environmental Services

**Status:** Dozens of local organizations have come together around both the development and implementation of the Energy and Climate Action Plan, demonstrating significant organizing capacity and commitment to energy and climate issues. The City has provided information to these organizations to share through their networks, and has partnered with these organizations in outreach events and workshops. Great potential exists to enhance these collaborations to further expand outreach and engagement, including in conjunction with the City's Resilient Oakland Initiative.

**Costs:** 0.55 FTE per year  
Cost Total: \$120,000 annually

**PA 11. Promote Climate-Related Educational Opportunities**

(CE-8) Encourage OUSD and other organizations to provide educational opportunities on energy and climate issues to local youth, and to integrate energy and climate action within operational practices where possible (e.g., safe routes to school and green schools programs).



**Description:** Reaching out to youth, via the educational curriculum as well as through the design of the environments in which they learn and play, is one of the most important channels for conveying the importance of climate action and achieving sustainable behavior change that will affect our society for generations to come. City of Oakland staff – including Sustainability, Environmental



Stewardship, and Resilience staff – frequently work with teachers and other personnel from Oakland schools to guest lecture, help plan or participate in environmental events, judge student competitions, and more. The City will continue to expand these efforts where possible, aiming to reach a broader range of youth from all parts of the city.

Working with school facility staff to lower the environmental impact of school operations and to transform schools into examples or living laboratories in which students can see climate-friendly and resilient practices at work is also critical. City staff will endeavor to partner with school personnel to encourage best environmental practices, and, where feasible, to pursue funding and other opportunities to improve the resilience and adaptive capacity of school facilities.

**Responsibility:** Environmental Services

**Status:** This work is ongoing. In recent years, Environmental Services staff have begun to bolster relationships with school personnel, including teachers and OUSD facilities staff.

**Costs:** 24 hours staff time per year plus 48 hours fellow time per year  
Cost Total: \$4,000 annually

### PA 12. Convene Community Climate Forums

(CE-10) Convene community climate forums three times per year to provide informal opportunities for members of the public and local community organizations to learn about local climate protection progress and opportunities, network, and provide suggestions.

**Description:** The Oakland community, including those who live, work, study, shop, and/or play here, includes a wide variety of informed, dedicated individuals with the capacity to contribute ideas to speed progress on energy and climate actions. The City will convene community forums three times each year dedicated to discussion of energy and climate issues.

The community climate forums may be convened as informal meetings enabling community members to learn about energy and climate action progress and opportunities, network, and provide suggestions to City staff and each other. These forums can also provide a venue for partnering organizations to make presentations on related issues.

**Responsibility:** Environmental Services

**Status:** The City held forums in 2012 and 2013, but were not continued due to staffing constraints. Other community organizations, such as the Oakland Climate Action Coalition (OCAC), have conducted community forums for their members and the broader community. In years where the City was unable to hold forums, City staff participated in forums convened by OCAC and other community partners. The City convened two forums and a series of smaller focus groups in the Spring and Summer of 2016 in conjunction with the ECAP update. There remains a need for a more comprehensive, centrally-organized, and regularly-held set of forums. As of early 2017, the City is working with partners to determine a viable pathway for holding regular forums.

**Costs:** 45 hours staff time per year  
Cost Total: \$7,000 annually

### PA 13. Support Local Green Jobs Programs

(CE-20) Engage with local green jobs training providers to coordinate strategic planning and encourage programs to develop local workforce capacity and assess, train, and place local residents to perform energy retrofits and other green improvements.

**Description:** Many of the actions recommended in the ECAP have the potential to create demand for new local green jobs. Examples include green building construction, retrofitting existing buildings, installing solar panels, creating new bikeways, installing electric vehicle charging equipment, providing

recycling services, growing more local food, and installing water-efficient landscaping. The City will engage with the Workforce development Board, Green Corridor partners, and local green jobs training providers (e.g., the Oakland Green Jobs Corps) to encourage curricula and skills development in alignment with projected demand for new green workforce. These efforts can improve training opportunities for Oakland residents and help to increase the employment success of local green job program graduates.

For example, in 2009-2011, the City worked with the Peralta Community College District to run a two-year Green Works development program in the Coliseum Redevelopment Area. Funds were used to provide 40 East Oakland young adults with green education and training via special courses taught through the Peralta Community College District, including green landscape construction and site design. Project participants worked with local neighborhood stakeholders to help construct green landscape design-build projects that improve neighborhood parks and public places in the Coliseum area of East Oakland. In 2014, the City partnered with Laney College, Rotary Club of Oakland, and Passive House CA, to retrofit a previously burned, blighted, and abandoned home to the highest standards of energy efficiency and sustainability. The program taught valuable building science skills while students remodeled the home, reusing as many of the materials on-site as possible. The home's new residents will rarely need to use mechanical heating, and will enjoy improved indoor air quality and a healthy home.



**Responsibility:** Mayor's Office, Economic and Workforce Development, Housing, Environmental Services

**Status:** Since the ECAP was first written, "green job training" has evolved such that green jobs have been integrated into broader job training programs. Today, neither Green Corridor partners nor the Oakland Green Jobs Corps exist. The Cypress Mandela Training Center, which administered the Oakland Green Jobs Corps, operates a thriving construction skills training program, which continues to prepare its trainees for placement with solar installers and contractors using green building techniques. The City participates in ongoing dialogues with local green job training program providers and related programs. Examples of recent and current activities include the Green Residential Construction unit in the Vocational Training program at Youth Employment Partnership, which receives Federal funds appropriated via the City's Workforce Development Board. Other green employment linked to City sponsored or supported programs include training and internships for Civicorps members delivered by Waste Management of Alameda County as part of its solid waste (Mixed Materials and Organics) contract with the City; promotional support from the City for low income residential solar installations performed by GRID Alternatives for the installation of solar panels on low income owner-occupied homes; and City sponsorship of the California Youth Energy Services program to Oakland's youth, which has cumulatively trained more than 100 at risk youth in energy and water efficiency auditing skills. In April 2017, the City provided technical support to a consortium led by California Interfaith Power and Light for a Green Jobs Fair engaging 15 different employers to encourage connections for Oakland youth to entry level green jobs. The City's Housing Rehabilitation Program currently partners with Laney College, the Cypress Mandela Training Center, and others to teach energy efficiency and green building retrofit skills. The City's

Residential and Lending Services Program has partnered with Alliance for West Oakland Development and are currently in conversation with Civicorps about job training for construction jobs, which include sustainable and green building methods.

**Costs:**

0.25 FTE per year and 115 hours in other staff time per year

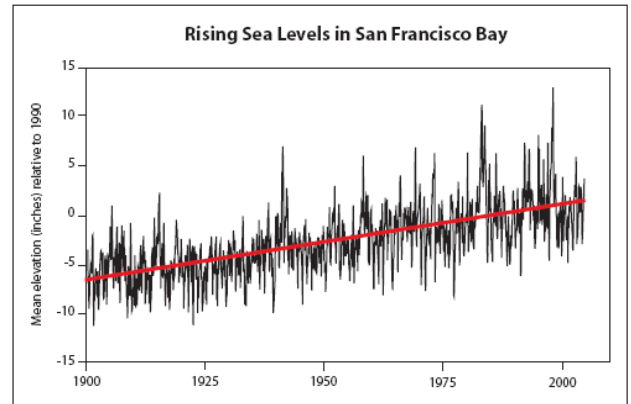
Cost Total: \$65,000 annually



## Climate Adaptation and Increasing Resilience

Some impacts of climate change, such as sea level rise and changing precipitation patterns, are already affecting the community – the result of decades of fossil fuel combustion and other activities, such as deforestation, that have already happened. It is important to engage in mitigation efforts to lessen future climate impacts and ensure those impacts do not overwhelm our ability to adapt. Taking action to adapt to climate impacts that are already happening, and will continue to happen, is also critically important.

Projected local impacts of climate change include significantly decreased snowpack in the Sierra Mountains (the source of most of Oakland's potable water supply); rising Bay and Delta waters; increased fire danger; greater frequency and intensity of heat events; added stress on infrastructure; higher prices for goods; lower quality of life for residents; and ecological impacts. The National Research Council has predicted that sea levels off the California coast are likely to rise 36 inches by the end of this century, and could rise as much as 66 inches.<sup>ix</sup> A set of climate scenarios prepared for the California Energy Commission project that mean sea level along the California coast could rise by as much as 4.5 feet by 2100.<sup>x</sup> According to maps produced by the Bay Conservation and Development Commission (BCDC), the Oakland-based Pacific Institute, and the National Oceanic and Atmospheric Administration, many low-elevation areas of Oakland would be vulnerable to flood events under these scenarios.<sup>xi</sup>



Climate change vulnerability is a function of exposure to climate impacts, sensitivity to those impacts, and the capacity to adapt and recover. All members of the Oakland community could be affected by some of these impacts (e.g., water use restrictions), and certain population segments may be especially vulnerable. For example, more frequent and severe heat events could exacerbate existing public health problems related to poor air quality, especially affecting the elderly and those living or working in areas with high concentrations of air pollutants. Increased fire danger is likely to affect those living in the Oakland hills, while increased flooding danger in low-lying areas is of additional concern near land or facilities containing hazardous materials. Vulnerable communities already at higher risk of housing displacement and struggling to meet basic needs are likely to be hardest hit by some of these changes, and will have the hardest time bouncing back in the aftermath of catastrophic events such as wildfires and floods. The City of Oakland will continue to work with local and regional partners to explore adaptation strategies to ensure that climate impacts are minimized.

The following climate adaptation and increasing resilience priority actions are supported by existing resources. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these priority actions will cost an average of 0.3 FTE per year and \$129,000 for expenses throughout the next three years. Following are descriptions of each of these actions, along with information on implementation status

### **Priority Actions**

#### **PA 14. Participate in Regional Climate Adaptation Discussions**

(AD-1) Participate in discussions on climate adaptation and resilience issues with local governments and other experts.

**Description:** The City will continue to develop capacity around climate adaptation and resilience by exploring relevant issues with local partners and other experts. Where possible, the City will collaborate with local organizations such as BCDC, the Pacific Institute, Climate Bay Area, and other local governments, to enhance understanding of projected local impacts of climate change, how those impacts will affect Oakland, and potential strategies for moving forward to advance climate adaptation and increase community resilience. The City will monitor and advise major climate

adaptation efforts of neighboring cities and entities operating within city boundaries as resources permit with consideration of impacts to Oakland neighborhoods and infrastructure. The City will also collaborate with other local governments to advocate for consideration of urban issues and coastal city issues in the context of regional adaptation discussions. Existing resources will enable the City to participate in occasional meetings of ongoing regional climate adaptation discussions.

**Responsibility:** Planning and Building Department - Strategic Planning, Economic Development, Engineering

**Status:** The City participates in discussion with the Bay Conservation and Development Commission, the Local Government Sustainable Energy Coalition, ICLEI, SPUR, the Association of Bay Area Governments, and the Urban Sustainability Directors Network on climate adaptation programs. The City also administers a Resilience Program through the 100 Resilient Cities grant from the Rockefeller Foundation. The City will continue to identify local governments and other experts (including community groups with relevant expertise where appropriate) to engage in ongoing climate adaptation discussions.

**Costs:** 180 hours staff time per year  
Cost Total: \$35,000 annually

#### PA 15. Include Measures to Reduce the Urban Heat Island Effect in Planning Documents

(AD-8) Update planning documents and building codes to include requirements for high albedo (reflective) surfaces where possible to reduce the urban heat island effect and mitigate public health impacts of extreme heat events.



**Description:** The urban heat island effect is a phenomenon where temperatures in many dense urban areas are elevated relative to the surrounding area due to several factors that include heat-producing activities (such as energy generation and auto use), an absence of trees and other flora that would have a cooling effect, and a predominance of heat-trapping surfaces such as dark roofs and asphalt. This effect exacerbates not only the warming effect of greenhouse gases, but also many of the negative impacts of climate change, such as extreme heat. Installing highly reflective surfaces, such as on roofs and pavement, can mitigate this effect. In the course of updating the City's Residential Green Building Ordinance (see Action BE-1), the City will include requirements for high-albedo (reflective) surfaces where possible to reduce the urban heat island effect and mitigate public health impacts of extreme heat events.

**Responsibility:** Environmental Services

**Status:** This item was added to the Priority List in 2017. No action has been taken.

**Costs:** See required resources for BE-1.

#### PA 16. Provide Staff Training on Climate Impacts and Adaptation

(AD-14) Provide training for City staff on projected climate impacts, vulnerability issues, and adaptation strategies.



**Description:** Building on the City's ongoing Environmental Lecture Series (see Action BE-47), the City will provide staff training on immediate and long-term projected effects of climate change, including disaster events such as extreme heat and flooding, as well as anticipated secondary effects such as housing displacement. Training will also address the unique vulnerability issues facing specific populations in Oakland, such as the disabled community or seniors, as well as neighborhoods that are particularly vulnerable due to their geographic location, lack of access to resources, or compounding factors such as poverty. Internal and external presenters will address adaptation and mitigation strategies, including those already being implemented such as the City's Green Streets program, as well as planned or innovative measures such as restored marshlands, on-site blackwater treatment and reuse, etc.

**Responsibility:** Environmental Services

**Status:** The City has conducted the monthly Environmental Lecture Series since 1998. Over 100 lectures have occurred through the program to date, primarily focusing on climate change mitigation measures (transportation sustainability, energy efficiency, etc.). Content on climate Impacts, vulnerability, and adaptation can be added to the training schedule relatively easily.

**Costs:** See Action BE-47.



# Priority Actions Requiring New Resources

Putting Oakland on a steady path of progress toward achieving a 36% reduction in GHG emissions by 2020 will require the implementation of additional actions during the end of the ECAP period (2017-2020), beyond those recommended for completion under existing and anticipated resources described in the last chapter. The City should continue pursuing resources to enable implementation of all Priority Actions.

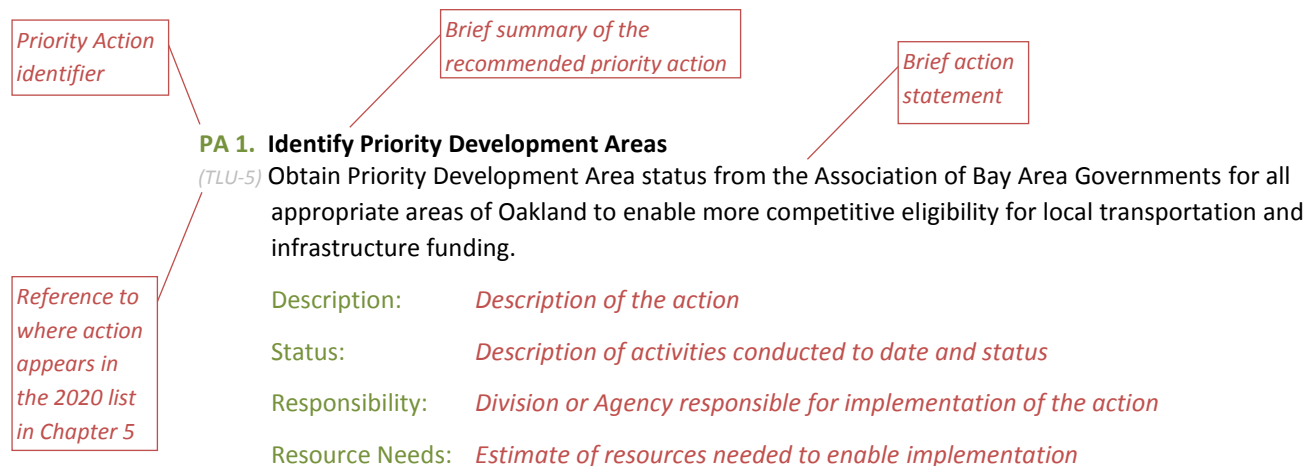
The actions below will move forward if new resources can be found. One important source of grant funding for the City and its partners is the Greenhouse Gas Reduction Fund (GGRF), which is supported by revenues from California's Cap and Trade system. The City has already applied successfully for several GGRF grants, particularly to support the sustainability-related aspects of affordable housing. These grants require deep partnerships for implementation, and pursuing them can strengthen the relationships among various community leaders and the City in the pursuit of our common climate and resilience goals.

The recommendations in this section were initially developed based on Council-approved criteria used to assist with evaluation and prioritization of potential GHG reduction actions within the ECAP:

- GHG Reduction Potential
- Implementation Cost and Access to Funding
- Financial Rate of Return
- GHG Reduction Cost Effectiveness
- Economic Development Potential
- Creation of Significant Social Equity Benefits
- Feasibility & Speed of Implementation
- Leveraging Partnerships
- Longevity of Benefits

## How to Read This Section

Each action is presented through a standard format containing each of the following elements.



The star icon indicates Priority Actions that were newly prioritized during the 2017-18 ECAP Update. These actions were included in the 2012 ECAP, but were not in the list of original list of Three Year Priority Actions.

## Resource Requirements

Resource needs are summarized for each recommended action. The total cost associated with implementing all proposed Three Year Priority Actions requiring new resources is projected to be approximately 24.9 staff FTE per year, 2.1 fellows per year, and an additional \$179 million for related expenses (e.g., consultant support). The City will continue to pursue fundraising opportunities for unfunded priority actions.

## Transportation and Land Use

The following Transportation and Land Use priority actions are proposed for implementation by the end of the ECAP period. Some can be accomplished as one-time actions, while others will require ongoing investment. Implementation of each of these priority actions will require new resources. Implementing all Transportation and Land Use priority actions is projected to require an average of approximately 17.7 FTEs per year and an additional \$170.6 million over the next three years, including \$8.6 million per year for fleet replacement and \$131.6 million for the implementation of the Bicycle and Pedestrian Master Plans.

### PA 17. Increase Multi-Income Housing near Transit Hubs

(TLU-9) Actively promote the construction of housing, at a range of price levels, near transit hubs and corridors in balance with local employment opportunities to meet the needs of Oakland's workforce.



**Description:** The City will seek resources to increase housing at a range of price levels near transit hubs to reduce the need for personal automobiles, preserve affordable housing in the city, and ensure that all facets of Oakland's workforce have the option to live within the city and near the services they need. This action may include the adoption of zoning changes, impact fees, and a transit-oriented development affordability policy.

**Status:** This action was added to the priority list in 2017. In 2016, City council approved new development impact fees on market rate housing to fund affordable housing and related amenities. The fees went into effect in late 2016, and will increase until 2020. A community engagement process is currently ongoing for Plan Downtown, a specific plan that aims to address the need for more housing at all price levels near the downtown BART stations, the Amtrak station, and the Ferry terminal. The plan is projected to be complete by 2019, and will provide additional policy guidance linking land use, transportation, economic development, housing, public spaces, cultural arts, and social equity. In order to ensure that social equity is adequately addressed, the City contracted with the Institute for Sustainable Economic, Educational and Environmental Design (I-SEED), to develop a social equity strategy that will guide policy and institutional change to address structural inequality through land use and other mechanisms, focusing specifically on Plan Downtown. The Planning and Building Department also plans to work with the new Department of Race and Equity to integrate the Plan Downtown process as part of Oakland's Citywide equity initiatives. As resources become available, additional similar efforts to engage the community in transit-oriented equitable planning and development may be pursued. The City has also promoted affordable housing in numerous individual developments in recent years, including with the support of GGRF funding from the State Affordable Housing and Sustainable Communities (AHSC) program. Developments have included MacArthur Station (108 affordable units), and two affordable developments that received AHSC funding in 2014-15 located in East Oakland's Fruitvale neighborhood and in Downtown (72 affordable units). For the latter projects, funds are supporting both development and transit-related amenities, including safe pedestrian and bicycle travel and safe connections to nearby transit stops.

**Responsibility:** Planning and Building Department - Strategic Planning, Housing and Community Development Department

**Resource Needs:** 48 hours staff time per year  
Cost Total: \$7,000 annually



**PA 18. Accelerate Completion of Bicycle and Pedestrian Plans**

(TLU-16) Accelerate the completion of bicycle and pedestrian networks as noted in the Bicycle and Pedestrian Master Plans and other General Plan policies to provide safe, healthy transportation choices for all residents.

**Description:** The City is seeking resources to accelerate the completion of bicycle and pedestrian networks as noted in the Bicycle and Pedestrian Master Plans and other General Plan policies to provide safe, healthy transportation choices for all residents.

Improvements that would increase access to transit, transportation linkages, jobs, and commercial activity in disadvantaged neighborhoods are prioritized. The Pedestrian and Bicycle Plans already include processes for updating priorities to include new infrastructure opportunities.

Project development and personnel costs are largely funded by external grants. Additional external grants are available to support additional FTEs. The level of increased staff capacity recommended below would enable the City to double the amount of bicycle facilities it currently produces annually.

Over time, full implementation of the Bicycle Master Plan is projected to cost approximately \$38 million.<sup>xii</sup> Full implementation of the Pedestrian Master Plan is projected to cost approximately \$109 million.<sup>xiii</sup>

**Status:** As of late 2016, over 150 miles of bike lanes have been completed in Oakland, and nearly four percent of Oaklanders commute to work primarily by bicycle. The City is also welcoming the East Bay expansion of Bay Area Bike Share, with the installation of bike share stations and 850 bikes installed in Oakland in spring and fall 2017. The Draft Pedestrian Master Plan was released in April 2017, with Council adoption expected in June 2017. The City will initiate an update to the 2007 Bicycle Master Plan in 2017.

**Responsibility:** Department of Transportation

**Resource Needs:** Creation of 2.5 FTE positions offset by external funds to accelerate implementation, \$22,576,750 for the Bicycle Master Plan implementation through the end of 2019, and \$109,000,000 for Pedestrian Master Plan implementation  
Cost Total: \$520,000 annually plus \$131,600,000 for implementation of the Bicycle Master Plan and the Pedestrian Master Plan

**PA 19. Optimize Street Design to Support Transit, Bicycling, and Walking**

(TLU-17) Optimize the design of streets to support transit, bicycling, and walking (e.g., via bulb outs, traffic signal synchronization, transit and emergency signal priority)

★ **Description:** The City will implement Oakland's Complete Streets Policy through a corridor development program that prioritizes pedestrians, bicyclists, and transit riders, to improve the safety and livability of key corridors across the city. This program will be cross-functional, including both planners and engineers, to develop, design, and implement complete streets projects. Supporting these efforts, the City will develop design guidelines and technical guidance on optimizing street design for transit, bicycling, and walking, including policy guidance on mode shift goals. The City will also establish a Signal Operations Unit and create a signal operations plan that prioritizes safety for all modes, including implementing pedestrian signal policy



To complete this item, a multidisciplinary team of six planners and engineers is needed to oversee planning, outreach, and project development. Additionally, four traffic engineering staff dedicated to managing the operations of traffic signals in Oakland to prioritize transit, biking, and walking will be needed.

- Status:** This action was added to the priority list in 2017. A project development team is proposed as part of the FY 17-19 Department of Transportation budget. The Department has initiated the development of design guidelines and anticipates completion by the end of 2017. A signal operations unit is also proposed as part of the Department's FY 17-19 budget.
- Responsibility:** Department of Transportation
- Resource Needs:** 10 FTE per year  
Cost Total: \$1,740,000 annually

## PA 20. Expand and Enhance Public Transit Service and Amenities

(TLU-19) Collaborate with regional partners to expand and enhance public transit service, interconnections, vehicle amenities, and associated facilities.



- Description:** In partnership with regional transit agencies (e.g., AC Transit, BART, shuttles, Amtrak, taxis, San Francisco Bay Ferry), the City will seek resources to expand and enhance public transit services and amenities. This may include smaller transit shuttles to underserved areas of the community, improved connection timing, and more.
- Status:** This action was added to the priority list in 2017. The City is already pursuing several projects that will enhance and/or improve linkages with regional public transportation infrastructure, including the Free Downtown Shuttle (see PA-2 / TLU-13), Bus Rapid Transit (PA-3 / TLU-14), and enhanced amenities along key BART stops. In 2016, the City's new Department of Transportation published its Strategic Plan, which lays out goals for a sustainable, responsive, and equitable transportation ecosystem including ensuring that Oaklanders feel safe walking and waiting for the bus at all times of day or night, creating a Complete Streets Corridor system, and planning and implementing fast, frequent and reliable transit.
- Responsibility:** Department of Transportation
- Resource Needs:** 240 hours staff time per year  
Cost Total: \$33,000 annually

## PA 21. Expand Car Sharing

(TLU-25) Explore potential strategies for increasing the availability of car share vehicles throughout the city (e.g., consider providing priority car share locations in high trafficked areas to car share companies willing to make car share vehicles available and accessible in less trafficked or underserved areas).



- Description:** The City of Oakland is working with car sharing organizations to make the public right of way and municipally owned parking lots and garages available for car sharing services as the City deems appropriate and in a manner that balances all modes of transportation. The City has established basic requirements to operate a car sharing service, and monitor feedback from Oakland residents about car sharing services. In planning and permitting car sharing services, the City has considered current and projected parking and accessibility conditions in both residential and commercial districts. The goal is to ensure that all residents, including seniors, people with disabilities, and disadvantaged residents, are served by this environmentally beneficial mode of transportation. The City intends to work with car sharing organizations so that all neighborhoods and communities have equitable access to car sharing services. The financial impact of administering a car sharing program should be cost neutral to the City.

- Status:** Oakland City Council amended the Municipal Code to include car share permits in support of the pilot program. The first free-floating car share operation was launched in April 2017, with the introduction of 250 car share vehicles by American Automobile Association's new Gig Car Share venture.
- Responsibility:** Department of Transportation
- Resource Needs:** 1 FTE per year plus \$439,769 in grant funding from MTC  
Cost Total: \$210,000 annually plus \$450,000

**PA 22. Impose Parking Maximums and Develop Strategies to Minimize Parking Need**

(TLU-30) Impose parking maximums on new development and assist developers, lenders, property owners, and tenants in preparing strategies to minimize parking demand and encourage shifts to transit and other transportation modes.



- Description:** The City will continue to seek resources and study possible strategies to expand the areas where parking maximums are imposed, and work with multiple stakeholders to identify additional strategies to reduce the need for parking.
- Status:** This action was added to the priority list in 2017. In 2016, the City imposed parking maximums in Downtown of 1.25 spaces per residential unit. A suite of additional strategies have been applied in Downtown to reduce the need for parking, including requiring building owners to provide transit passes for tenants in all new developments, unbundling the cost of parking from residential rent, and requiring car share spaces in all new residential parking facilities. Parking minimum requirements were also lowered throughout the City, particularly in Downtown and along major transit corridors.
- City Council asked staff to study the effects of the parking reductions on parking behavior, including how residential neighbors are being impacted by the changes. Council also directed staff to update the residential parking permit program, which does not currently address spillover from major corridors resulting from the new policies. In addition to pursuing these directives, the City will continue to explore ways of reducing the need for personal transportation, and the need for parking, throughout the City, including through parking regulations, incentives for alternate transportation modes, and enhancing strategic partnerships with regional transit agencies and others.
- Responsibility:** Planning and Building Department - Strategic Planning, Department of Transportation
- Resource Needs:** 0.08 FTE for two years plus 2 hours staff time per year  
Cost Total: \$32,000 plus \$250 annually

**PA 23. Call for Climate Action by Port of Oakland Tenants**

(TLU-39) Call upon the Port of Oakland to establish GHG inventories and reduction goals associated with tenant activities, and plans for achieving those goals with appropriate tenant commitments, potentially including requiring specific high-impact GHG reduction measures (e.g., electrification of land-based aviation equipment and low-carbon electricity purchase for leased spaces).

- Description:** Beyond the Port's own operations, GHG emissions associated with tenant activities at the Port can be significant. Through relationships with its tenants (e.g., lease agreements), the Port can advance additional GHG reductions associated with tenant activities.
- Status:** The City and Port maintain dialogue on these issues via the City-Port Liaison Committee and peer-to-peer staff level discussions. While discussions have occurred at the staff level, no formal goal has been established.
- Responsibility:** City Council members and Departmental Staff
- Resource Needs:** 16 hours staff time  
Cost Total: \$3,000

#### PA 24. Develop an Urban Forestry Master Plan

(TLU-45) Develop an urban forestry master plan outlining how the City will protect, develop and maintain diversified and appropriate tree plantings on City right-of-ways.

**Description:** The City will seek resources to develop an urban forestry master plan outlining how the City will protect, develop, and maintain diversified and appropriate tree plantings on City right-of-ways in a manner consistent with Bay Friendly Guidelines. This plan will include: the criteria and process for planting of new trees; an annual tree planting goal based on the results of an urban tree inventory; a citywide canopy coverage goal and canopy coverage goals for specific disadvantaged neighborhoods; carbon sequestration goals for the urban forest; approved species for streetscapes and parklands; an economic analysis of the value of the urban forest; maintenance priorities and process for existing trees; a long-term funding plan; and clear roles for the City and community partners.



**Status:** In 2017, the City applied for a \$999,999 grant from CAL FIRE, through the Statewide Greenhouse Gas Reduction Fund, to conduct a street and park tree inventory (see PA 25), conduct broad community engagement, craft an urban forestry master plan, and conduct limited demonstration tree planting in partnership with local nonprofits. While the application was not successful, the City will build on the work conducted through the creation of the application to continue seeking funds from other sources.

**Responsibility:** Environmental Services; Parks and Tree Services

**Resource Needs:** 2 FTE for one year plus \$110,000 of expenses  
Cost Total: \$525,000

#### PA 25. Conduct a Robust Urban Tree Inventory

(TLU-46) Develop a robust urban tree inventory of all trees in proximity to sidewalks, medians, public buildings, parks, and other public rights-of-way.



**Description:** The City will employ an inventory method that will have the capacity to include data for private property. To promote public-private partnerships and community engagement, the method will be usable by both the public and City staff for inventorying, assessment, and planning, and the City will work with nonprofit partners to explore ways of engaging the public in the data collection process. If possible, the data platform should be shared outside of Oakland and used for larger data collection and analysis.

**Status:** This action was added to the priority list in 2017. Conducting a complete street and park tree inventory was part of the City's 2017 unsuccessful application to CAL FIRE. The City is continuing to explore funding opportunities for a complete urban tree inventory.

**Responsibility:** Environmental Services; Parks and Tree Services

**Resource Needs:** 1 FTE for one year plus up to \$340,000 of expenses  
Cost Total: \$540,000



## PA 26. Update City Tree Ordinances

(TLU-47) Revise the City Street Trees and Shrubs Ordinance (Municipal Code 12.32) and the Protected Trees Ordinance (Municipal Code 12.36) to include the provision of preventative maintenance and management of trees in City rights-of-way, to ensure the continued health of all parks and forested land within the city and encourage tree planting on private land throughout the community, and to include effective enforcement provisions.



**Description:** The revised ordinances should be based on the Street Tree Inventory and the Urban Forestry Master Plan, and reference the Energy and Climate Action Plan. They should also include, by reference, professional standards such as ISA (International Society of Arboriculture) and/or ANSI A300 for planting, pruning, and species selection. The revised Street Trees and Shrubs Ordinance should include regulations for mature tree care and tree protection at/near construction sites. Both ordinances should be amended to include effective enforcement provisions.

**Status:** This action was added to the priority list in 2017. The City has not identified recommendations for the updating of these Ordinances, and funding has not been identified for the needed implementation associated with updates.

**Responsibility:** Environmental Services; Parks and Tree Services

**Resource Needs:** 500 staff hours  
Cost Total: \$70,000

## PA 27. Implement Street Tree Planting Pilot

(TLU-48) Implement a street tree planting pilot project with local partners utilizing advanced planting techniques.



**Description:** Since the City's tree planting program was ended in 2008 due to budget cuts, the program has not been reinstated. A robust urban tree planting program is essential to make up for trees that are lost due to disease or other reasons, and to build canopy coverage in disadvantaged areas and other parts of the city where canopy coverage is particularly low. The City will seek resources to reinstate the tree planting program and, in the interim, to conduct tree planting pilots in partnership with local organizations.

**Status:** This action was added to the priority list in 2017. Implementing a street tree planting pilot through demonstration planting of 300 street trees in key disadvantaged neighborhoods was part of the City's unsuccessful 2017 application to CAL FIRE. The City is continuing to explore funding opportunities for this activity.

**Responsibility:** Environmental Services; Bureau of Infrastructure and Operations

**Resource Needs:** 0.25 FTE for 1 year plus \$45,000 of expenses  
Cost Total: \$100,000

## PA 28. Accelerate City Fleet Vehicle Replacement

(TLU-52) Increase the rate of fleet vehicle replacement to retire older inefficient vehicles and continue to replace vehicles with fuel efficient and alternative fuel models.

**Description:** The City will seek resources to accelerate the rate at which it replaces fleet vehicles, creating increased opportunities to improve fuel efficiency and reduce GHG emissions associated with the municipal vehicle fleet. While proper maintenance can help to preserve vehicle fuel economy, the greatest technological opportunity to reduce GHG emissions associated with the City's vehicle fleet is at the point of purchasing new vehicles. The City's adopted Clean Fleets policy requires that vehicles achieving superior fuel efficiency and/or operated on alternative fuels (e.g., compressed natural gas, electric and plug-in hybrid vehicles, trucks with anti-idling controls) be given preference in the procurement of new vehicles. However, the recent pace of vehicle replacement has not offered many opportunities to improve overall fleet fuel efficiency.

According to the April 2009 Public Works Department Performance Audit, the City should “Prepare a five-year equipment replacement plan for the City’s fleet for a review by the operating departments and the Budget Office. The City should increase its funding for the replacement of the equipment fleet by \$5.5 million annually.”<sup>xiv</sup> The Performance Audit recognizes that the City does not currently have funding to meet these needs.

**Status:** As of 2017, the City municipal fleet consists of 1,200 vehicles and an additional 300 units of equipment (wheeled machinery). Of this total, 569, or 38 percent, are alternative fuel or advanced technology. These include 366 on- and off-road renewable diesel vehicles, 99 CNG light- and medium-duty vehicles, 10 CNG heavy-duty vehicles, 63 Hybrid electric sedans, 26 Battery Electric Sedans, and five neighborhood electric vehicles. Since 2002, 100% of non-Law Enforcement sedan purchases have been alternative fuel or hybrid. The City has increased its alternative fuel or advanced technology non-law enforcement sedans from 28 percent in 2003, to 63% in 2017. In addition, all diesel-powered solid waste collection trucks used in Oakland under the former contracts, approximately 140 vehicles, have been replaced by low-emissions natural gas-powered trucks. Most of these trucks use locally produced natural gas made from landfill methane.

During the end of the ECAP period, the City will continue to seek funds to continue replacing the oldest fleet sedans to battery electric or hybrid; replacing the older street sweeper, refuse truck, cargo vans with CNG-powered vehicles; and converting all remaining conventional diesel vehicles to renewable diesel. The City also plans to expand the use of shared pool vehicles, and explore other advanced fuel technologies, including hydrogen fuel cell-powered sedans.

**Responsibility:** Equipment Services

**Resource Needs:** \$9,830,000 per year

#### **PA 29. Subsidize Transit and Transportation Alternatives for City Employees**

(TLU-53) Provide subsidized transit passes and/or other alternative transportation benefits to City employees to encourage alternatives to driving.

**Description:** The City will seek resources to provide subsidized transit passes and/or other alternative transportation benefits (e.g., bicycle commuter allowances) to City employees to encourage alternative modes of commuting. The City already participates in the Commuter Check program, offering employees the opportunity to make pre-tax purchases of transit passes for rides on BART and AC Transit. Providing additional transit incentives can encourage more employees to use transit for commuting to work. For example, unlimited use subsidized transit passes can be provided to City employees through participation in the AC Transit Easy Pass program. Likewise, the City could provide additional benefits to employees who choose to bike or walk to work, such as bicycle commuter or shoe allowances.

**Status:** The City offers a pre-tax set asides for transit passes for all employees. In 2016, approximately 800 employees affiliated with the IFPTE Local 21 Union became eligible to receive free AC Transit EasyPass as part of the current labor contract. The passes are a pilot program, which the City and the union will revisit in the next round of labor negotiations. By purchasing EasyPasses for all IFPTE Local 21 members, the City received a 95% discount off the value of the passes. To date, 489 Local 21 members have signed up for an EasyPass. During the month of March, 2017 (most recent available data), 155 unique individuals used the pass for a total of 2,319 boardings (93 average daily trips and 21 average weekend trips).

**Responsibility:** Human Resources – Benefits

**Resource Needs:** 0.25 FTE in Transportation Services and 0.25 FTE in Human Resources personnel for 1 year plus \$120,000 of expenses for participation in the Easy Pass program  
Cost Total: \$225,000

## Building Energy Use

The following Building Energy Use priority actions are proposed for implementation by the end of the ECAP period. Some can be accomplished as one-time actions, while others will require ongoing investment. Implementation of each of these priority actions will require new resources. Implementing all Building Energy Use priority actions is projected to require an average of approximately 7 FTEs per year, 1.6 fellow time, and an additional \$6.0 million for expenses over the next three years.

### PA 30. Seek Resources to Support Energy Programs

(BE-6) Pursue funding to augment existing, and create new residential and commercial energy programs to reduce energy consumption throughout the community.

**Description:** The City will continue to seek resources to augment existing, and create new programs to foster a reduction in energy use throughout Oakland's residential and commercial properties. This may include opportunities offered by PG&E, California State Energy Program, Bay Area Air Quality Management District, and others. For example, the City may pursue funding to promote energy retrofits, offer free or subsidized energy audits, provide technical assistance, or provide targeted incentives.

Existing resources are sufficient for responding to a limited number of potential funding opportunities on an annual basis. Additional resources would augment the City's capacity to submit a greater number of competitive proposals.

**Status:** Since the ECAP was adopted, the City has worked with the Association of Bay Area Governments to secure CPUC funding for BayREN programs, and obtained additional grants for energy efficiency, renewables, and other energy programs from a variety of sources, including technical assistance and ongoing incentives from PG&E. With the 2018 launch of East Bay Clean Energy, the county-wide community choice aggregation program, additional opportunities will likely arise for locally-determined clean energy and efficiency programs.

**Responsibility:** Environmental Services

**Resource Needs:** 240 hours staff time per year  
Cost Total: \$45,000 annually

### PA 31. Encourage Citywide Energy Conservation and Efficient Product Purchasing

(BE-7) Encourage all businesses and residents to conserve electricity, natural gas, and water, and to choose energy- and water-efficient replacement products.

**Description:** The City will seek resources to create or support a marketing campaign and offer technical assistance in coordination with local partners to encourage all businesses and residents to reduce their energy consumption through conservation and energy efficient product purchasing. The campaign will provide information about conservation opportunities to all households and businesses, in collaboration with outreach performed by PG&E, EBEW, EBMUD, trade groups, and community-based organizations. All households will be encouraged to reduce energy use in their homes, and demonstrate the environmental and health benefits of electricity over natural gas appliances and systems. The campaign will also encourage the purchase of energy-efficient products and appliances to help residents and businesses reduce energy use.

Implementation of this Action Item will be coordinated with local and regional providers of energy efficiency and conservation programs, including the Bay Area Regional Energy Network, East Bay Community Energy, and PG&E.

**Responsibility:** Environmental Services

**Resource Needs:** 50 hours staff time per year for 4 years, 80 hours staff time per year, and 0.5 fellow time per year  
Cost Total: \$40,000 plus \$26,000 annually

**PA 32. Engage Largest Electricity Consumers in Energy Retrofits**

(BE-14) Offer technical assistance to help Oakland's most energy intensive businesses achieve superior energy efficiency results by participating in programs offered by PG&E and other organizations.

**Description:** The City will seek resources to create a new program that guides the approximately 400 businesses that consume 50% of the electricity used in Oakland into existing energy auditing, water conservation, and rebate programs offered by PG&E and other organizations. These 400 firms represent approximately 10% of Oakland's medium-to-large businesses, with 30 of them consuming over 25% of total citywide electricity. This program will engage each targeted business to create an energy efficiency and demand reduction strategy, or roadmap, tailored to that business' opportunities and circumstances, aiming at average annual energy savings of at least 20%. Estimated collective energy costs savings are \$28 million per year.

Implementing this program will require extensive outreach to Oakland's ~400 biggest energy users. The program will aim to secure participation from property owners, tenants, and building management companies. The program will create customized roadmaps encouraging businesses to participate in all applicable PG&E energy efficiency and conservation programs and EBMUD water conservation programs, to perform comprehensive energy and water audits, and to implement all cost-effective retrofit opportunities. Property owners would pay for implementing the improvements, factoring in the benefits of rebate programs from PG&E and others. PG&E, East Bay Energy Watch, StopWaste and EBMUD will be among the organizations invited to collaborate and coordinate closely on this program. Some projects may take advantage of property based clean energy financing (see PA 8).

**Status:** While the City has engaged with PG&E to identify and work with the City's largest energy users, data rules set by the California Public Utilities Commission, and interpreted and enforced by the State's Investor Owned Utilities, including PG&E, limit the City's ability to accomplish this action. In addition to actively seeking funding to support this action, the City is also working with regional and statewide partners, as well as directly with PG&E, to identify solutions to the data access issues that currently prevent most municipal governments from accessing energy data regarding their jurisdictions' industrial facilities.

**Responsibility:** Business Development, Environmental Services

**Resource Needs:** 20 hours staff time per year for 4 years and 10 hours staff time per year  
Cost Total: \$16,000 plus \$2,000 annually

**PA 33. Consider Energy Benchmarking Requirements for Commercial Buildings**

(BE-15& BE-16) Consider requiring energy benchmarking of commercial sector buildings by a certain date.

**Description:** The City will seek resources to research and develop options for requiring energy benchmarking of commercial sector buildings. Benchmarking energy use can yield insights into energy performance and opportunities to save energy and money through improved efficiency and conservation. Energy benchmarking tools are available to help private building owners gain additional perspective on the relative energy use of their buildings, and where opportunities for efficiency improvements may exist. In developing options for requiring energy benchmarking, the City will consider issues associated with building types, level of effort needed by the building owner or operator, verification, related educational tools, and the availability, privacy and automation potential of energy data.

**Status:** The City has applied for funding to research and develop commercial benchmarking requirements, but has not received funding to date.

**Responsibility:** Planning, Building Services, Environmental Services

**Resource Needs:** 0.75 FTE for three years plus 150 hours staff time  
Cost Total: \$490,000



**PA 34. Launch the Weatherization and Energy Retrofit Loan Program**

(BE-23) Create the Weatherization and Energy Retrofit Loan Program (WERLP) to provide zero-interest loans to help low-to-moderate income residents improve energy efficiency and reduce energy costs, supported by \$1.8 million of ARRA Community Development Block Grant (CDBG) funds.

**Description:** The WERLP offers loans of \$6,500 to \$30,000 to owner-occupied low-income and moderate-income households. Loan funds can only be used for energy efficiency-related improvements such as attic insulation, caulking, weather-stripping, water heater insulation, energy-efficient light fixtures, furnace maintenance, energy saving appliances, and systems rehabilitation and replacement. Eligible systems include the furnace, windows, doors, water heater and roof. Loans are interest free and repaid upon sale of property without any periodic payments.



At its inception in 2009, the program expected to serve 75 homes by the end of 2012, with a goal of reducing energy bills by 30% on average, while generating 108 jobs and connecting with trainees from the Oakland Green Jobs Corps. The WERLP was introduced as an expanded offering of the City's Lending and Rehabilitation Services.

**Responsibility:** Housing and Community Development Department

**Status:** This program is ongoing, and a total of 98 properties have been served since its inception. The City coordinates with local building performance professionals to ensure that training opportunities are available to local contractors. The City also works to ensure that energy retrofits are performed to industry standards. After ARRA funds were exhausted in 2012, the City continued the program using Community Development Block Grant (CDBG) funding. As of 2017, it is funded through a combination of CDBG and loan repayments. The current level of funding allows the program to serve approximately 20 properties per year.

**Resource Needs:** 3.6 FTE per year plus \$2,400,000 of expenses  
Cost Total: \$715,000 annually plus \$2,400,000 of expenses

**PA 35. Create a Renter-Occupied Residential Energy Retrofit Program**

(BE-24) Create a new energy retrofit program to facilitate energy efficiency and water conservation improvements in existing renter-occupied residential properties by supporting outreach as well as assistance designing model tenant-landlord agreements so that all parties equitably share the costs and benefits of energy efficiency.

**Description:** The City will seek resources to develop new tools and assistance to foster energy retrofits of renter-occupied properties. This will include engaging stakeholders to provide recommendations on how to ensure that both owners and tenants can be protected and receive benefits from energy efficiency retrofits so that both have an incentive to support energy improvements.

**Status:** Since the ECAP was adopted, the Bay Area Regional Energy Network (BayREN) was formed, with leadership from Oakland. One of the BayREN's signature programs is the Bay Area Multifamily Building Enhancements Program, or BAMBE, which provides incentives and technical assistance to multifamily building property owners and managers to implement energy efficiency projects. The program assists in planning energy saving improvements designed to save 15% or more of a building's energy and water usage, and provides \$750 per unit in rebates to help pay for the upgrades. The City assists in marketing this program to Oakland property owners and managers. California Youth Energy Services (CYES), which operates during the summer months, serves residents of approximately 250 Oakland homes per

year, including renters, providing energy efficiency and water conservation education and limited measure installation. Additional resources are needed to provide an in-depth energy retrofit program to single-family home renters throughout Oakland. The City lacks plans and staff capacity to undertake income review and monitoring for single family rental properties.

**Responsibility:** Housing and Community Development, Environmental Services

**Resource Needs:** 0.5 FTE for 3 years  
Cost Total: \$270,000

### PA 36. Adopt and Implement a Residential Energy Conservation Ordinance

(BE-25) Adopt an ordinance requiring cost-effective residential energy- and water-related improvements at time of sale, or under other appropriate conditions with consideration of affordability and equity.

**Description:** The City will seek resources needed to research and develop options for adopting a residential energy conservation ordinance (RECO). A RECO can be an effective tool for increasing energy efficiency of Oakland's existing housing stock. The RECO can be designed to require cost-effective energy- and water-related improvements at time of sale or under other appropriate conditions, fostering continuous energy improvement of Oakland's building stock in a manner that is beneficial for residents. Lessons can be drawn from years of RECO implementation in Berkeley. Issues of affordability and equity must be considered in the process of developing an effective and appropriate RECO. The RECO can also be designed to require disclosure of home energy performance based on past utility bills in a prescribed manner, helping to raise the profile of energy use in home buying decisions and spur additional retrofit action.

**Status:** The City has applied for funding to research and craft a RECO, but has not received funding to date.

**Responsibility:** Planning, Building Services, Environmental Services

**Resource Needs:** 1 FTE for one year and 1 fellow for one year  
Cost Total: \$230,000

### PA 37. Facilitate Community Solar Programs

(BE-28) Encourage and collaborate with local partners to launch a community solar program to increase local use of renewable energy, including solar-thermal energy to produce heat and hot water.

**Description:** The City will seek resources to encourage and collaborate with local partners to offer a community solar program(s) promoting increased use of renewable energy. Such a program may perform outreach to residents and businesses about opportunities to utilize solar energy; provide technical assistance including opportunity assessment and procurement support; connect residents to property-secured and other financing opportunities; offer to coordinate collaborative purchasing for local installation of solar energy systems; and/or offer free energy opportunity audits and technical assistance for this purpose.



- Status:** Community solar programs are traditionally administered by utilities. PG&E launched a community solar program available to Oakland residents beginning in October 2015. Additionally, the City ran Sunshares, a solar group buy for Oakland residents and their families in Fall 2014 and again in Spring/Summer 2016 in partnership with Vote Solar. The second group buy included options for residents without solar access on their own roofs. More work is needed to complement PG&E's offerings to address the needs of small and disadvantaged communities, and to link PG&E's program with additional external and non-traditional resources. With East Bay Community Energy, the county-wide community choice aggregation program, launching in 2018, additional opportunities will arise to design and co-market innovative, community-based renewable energy opportunities.
- Responsibility:** Environmental Services
- Resource Needs:** 0.5 FTE per year  
Cost Total: \$145,000 annually

### PA 38. Encourage Rainwater Harvesting

(BE-35) Encourage the installation of rainwater harvesting through water collecting cisterns in new development to capture water during the rainy season for outdoor uses and/or indoor uses.



**Description:** The City will seek resources to encourage residents, developers, and building owners to install rain barrels and water collecting cisterns in new developments to capture rainwater for outdoor and/or indoor uses. In the last ten years, California has seen one of the most severe droughts in recorded history. Capturing rainwater is a relatively easy way to increase a community's resilience to drought, providing for a potentially significant portion of water needs during the dry season. Rain barrels help to protect our creeks and the Bay by reducing urban runoff, and reduce the need for homes to use treated potable water for outdoor use.

**Status:** In 2010-2012, the City ran a successful Rain Barrel Program, a three-year initiative funded by the Clean Water State Revolving Fund and the Federal Stimulus program. The program provided subsidized rain barrels to Oakland residents, schools, churches and nonprofits. It also provided educational workshops, green job training for youth and interns, and cistern demonstration projects to public entities including Chabot Space and Science Center, Skyline High School, and Merritt College. Nearly 1,400 Oaklanders purchased and installed 2,708 rain barrels and cisterns, for a total of 400,545 gallons of new rainwater storage. The City will seek external funding to reinstate this program, and will explore ways of encouraging rain barrel or cistern installation in new development.

**Responsibility:** Watershed Protection, Environmental Services

**Resource Needs:** 40 hours staff time plus 10 hours per year  
Cost Total: \$7,000 plus \$2,000 annually

### PA 39. Increase Public Landscaping with Drought-Resistant Plants and Trees

(BE-40) Increase the amount of public space landscaped with drought-resistant plants and trees meeting Bay Friendly Landscaping Guidelines.



**Description:** The City of Oakland uses drought-resistant plants and trees when replacing those that are dead, dying, or diseased. The City follows Bay Friendly Guidelines when considering new plantings or capital improvement projects. The City has replaced nearly five acres of ornamental/passive lawns through lawn conversion projects. This includes installation of drip irrigation, use of cardboard and mulch to suppress weeds, compost to add nutrients to the soil, and drought resistant native grasses and trees. These projects have been made possible through grants from StopWaste and rebates from EBMUD. In addition, the City follows the Water Efficient Landscape Ordinance (WELo), which requires retrofitting of all overhead irrigation spraying in new landscape or construction projects.

**Responsibility:** Oakland Public Works, Parks and Tree Services Division

**Status:** The 2011-2016 drought and lack of resources has made it necessary to follow best landscape maintenance practices when considering new landscaping. The City continues to use innovative ideas to conserve water, reduce maintenance costs, and pursue sustainable landscape practices. Oakland Public Works has eliminated lawn areas where feasible to reduce water and resource demands. The City continues to follow the Water Efficient Landscape Ordinance (WELO) to retrofit all overhead irrigation spraying in new landscape or construction projects. The City will continue to do lawn conversions to conserve water and resources, as funds become available.

**Costs:** 96 hours per year  
Cost Total: \$12,000 annually

**PA 40. Install water Efficient Fixtures and Equipment in Municipal Facilities**

(BE-41) Create standard operating procedures for installing water efficient fixtures and equipment in municipal buildings, landscapes, ballfields and swimming pools at regular replacement schedules, and proactively when cost-effective.



**Description:** The City will seek resources to reduce the water consumption in municipal buildings, landscapes, and recreational areas by installing water efficient technologies such as faucet aerators, low flow toilets and urinals, low flow showerheads, drip irrigation systems, irrigation control systems, and monitoring systems. The City will seek to incorporate supportive water reduction features such as improved onsite water retention, water storage, and other installations into site improvements to cost effectively minimize water usage at municipal sites.

**Responsibility:** Oakland Public Works

**Status:** The City has incorporated a variety of these measures in parks and buildings, and will continue to implement this action as facilities are modernized and projects undertaken.

**Costs:** 96 hours per year  
Cost Total: \$12,000 annually



## Material Consumption and Waste

The following Material Consumption and Waste priority actions are proposed for implementation by the end of the ECAP period. Some can be accomplished as one-time actions, while others will require ongoing investment. Implementation of each of these priority actions will require new resources. Implementing all Material Consumption and Waste priority actions is projected to require an average of 0.7 FTE per year and an additional \$1.32 million for expenses over the next three years.

### PA 41. Study Options for Advancing Next-Level Waste Reduction

(MW-6) Study options for advancing the next level of waste reduction activities to help achieve the City's adopted Zero Waste Goal.

**Description:** The City will seek resources to study and support additional actions that may be needed in the coming years to help Oakland progress toward its Zero Waste goal. These may include actions to further increase rates of recycling and composting, target particular problem materials, etc. The City will continue to collaborate with StopWaste in considering potential actions to further reduce waste toward achieving Zero Waste.

**Status:** In July 2015, Oakland launched new trash, compost, and recycling collection services for residents and businesses under new contracts with Waste Management of Alameda County (WMAC) and California Waste Solutions. New services include compost collection at multi-family buildings, bulky item collection and recycling for all residents, increased illegal dumping cleanup, more choices of compost and recycling cart sizes, and ongoing zero waste outreach. The contracts advance Oakland each year toward its Zero Waste goal to keep all recyclable and compostable material out of landfills through progressive annual diversion requirements. New recycling and material processing facilities, including a composting facility at the Altamont Landfill in Livermore, will divert discards from landfill. With this new facility, the first in Alameda County, Oakland's organic materials will be locally composted for the first time.

**Responsibility:** Environmental Services

**Resource Needs:** 0.5 FTE per year plus \$1,000,000 of expenses  
Cost Total: \$90,000 annually plus \$1,000,000 of expenses



Photo: Matt Southworth

### PA 42. Promote Waste Reduction through Enhanced Producer Responsibility

(MW-13) Promote reduction of product waste and better management of hard-to-recycle and toxic products by encouraging producers to manufacture and distribute products using materials and processes that minimize toxics, reduce harmful environmental impacts, and facilitate reuse and recycling. Support statewide producer responsibility legislation. Support



the creation of convenient and cost-effective product take-back opportunities for the public through existing retail distribution systems.

- Description:** The City is a founding member and continues to support the California Product Stewardship Council (CPSC), which advocates for the better management of hard-to-recycle and toxic products through producer responsibility, producer responsibility legislation, and the creation of product take-back opportunities. The product stewardship movement is organized at the state level, with cities and communities support that effort through advocacy. The City will seek resources to increase support for and participation in the CPSC.
- Status:** This action was added to the priority list in 2017. Producer responsibility standards have led to improved recycling rates for prescription medications, mattresses, carpeting, and other materials.
- Responsibility:** Environmental Services, Economic Development
- Resource Needs:** 0.10 FTE per year  
Cost Total: \$12,000 annually

#### PA 43. Encourage Local Reuse and Repair

(MW-15) Foster local reuse and repair opportunities, including by expanding community outreach efforts promoting re-use of buildings materials, and “buy local” programs focusing on goods made from recycled materials.



- Description:** Our communities are awash in goods that have been intentionally manufactured to be disposable in relatively short time periods. Many products, and a majority of packaging materials, are designed to be used just once and then discarded. And as this “planned obsolescence” has become the norm, even items that can be repaired or repurposed are often simply disposed of in favor of new, cheap replacements. As a result, repair professionals (such as cobblers and blacksmiths) – once a thriving sector of the US economy – are rapidly dwindling from the urban landscape. Not only is it harder to find professionals to repair common household goods, but the very skills to conduct simple repairs are taught less and less frequently in schools.
- The City will seek resources to create and encourage local reuse and repair opportunities for a wide range of products, including supporting the work of partners engaged in these activities. This may include supporting local “repair fairs;” supporting businesses that use locally recycled or repaired materials, or businesses that offer repair as a service; and encouraging the purchase of reusable or repairable goods over disposable alternatives. It may also include working with local makers and vocational programs to encourage the development of skills useful for repairing common household goods, or for making use of reused materials.
- Status:** This action was added to the priority list in 2017. The City’s Environmental Services Division promotes the recovery and reuse of building materials by building permit holders when it provides C&D debris recycling requirements technical assistance. Repair professionals and businesses have been included in the City’s EarthEXPO.
- Responsibility:** Environmental Services, Economic and Workforce Development
- Resource Needs:** 0.10 FTE per year  
Cost Total: \$12,000 annually

## Community Engagement

The following Community Engagement priority actions are proposed for implementation by the end of the ECAP period. Some can be accomplished as one-time actions, while others will require ongoing investment. Implementation of each of these priority actions will require new resources. Implementing all Community Engagement priority actions is projected to require an average of approximately 0.5 FTE per year, 0.5 fellow time per year, and an additional \$390,550 for expenses over the next three years.

### PA 44. Community Climate Action Guide

(CE-3) Develop and distribute a community climate action guide and targeted educational materials in collaboration with local organizations to inspire all members of the Oakland community to take action to reduce GHG emissions.

**Description:** The City will seek resources to accelerate local action throughout the community by developing and distributing new online and hardcopy materials such as a community climate action guide and other materials targeted at specific actions (e.g., why and how to adjust your water heater temperature). The City can collaborate with local organizations to distribute these materials in an effort to inspire all members of the Oakland community to take action to reduce GHG emissions.



**Status:** In 2014, the Oakland Climate Action Coalition, in coordination with the City and with support from the San Francisco Foundation, East Bay Community Foundation, and the Local Sustainability Matching Fund, authored the Oakland Community Climate Action Guide to inform and motivate residents to reduce GHG emissions and better prepare for the effects of climate change. The guide remains available online, but could be more effectively marketed throughout the community. The City and its partners will seek to publicize this work throughout the community.

**Responsibility:** Environmental Services

**Resource Needs:** 20 hours staff time plus \$50,000 of expenses  
Cost Total: \$55,000

### PA 45. Support Local Climate Workshops

(CE-4) Establish a mini-grant program to provide financial and other support to local organizations to convene neighborhood-scale or issue-based community climate action workshops.

**Description:** The City will seek resources to accelerate community action by supporting local workshops and events dedicated to education and raising awareness about opportunities to address energy and climate issues and create co-benefits through climate action. These workshops can leverage the existing roles and relationships of collaborating organizations, and can be tailored to geographically, demographically or topically-focused segments of the community. In the process, the City can develop new understanding of how to target new programs and policies to engage all members of the Oakland community effectively and appropriately. Providing information through in-person delivery channels and forums

fostering community dialogue about energy and climate issues will be critical to accelerating voluntary climate actions.

**Status:** The Oakland Climate Action Coalition and its grassroots members have convened several forums addressing climate action, environmental justice, and resilience through various grant funded initiatives. In 2017, through its Sustainability and Resilience efforts, the City is seeking new ways to partner with community groups to promote climate action and resilience, including by a community engagement process focused on Sea Level Rise in West Oakland, and through the pursuit of grant funding to support a community-driven project prioritization process for Priority Conservation Areas. The City secured \$15,000 from the Rockefeller Foundation as part of the Resilient Oakland Initiative for the West Oakland Environmental Indicators Project (WOEIP) to conduct workshops related to sea level rise impacts in 2016.

**Responsibility:** Environmental Services

**Resource Needs:** 0.25 FTE for three years, 48 hours staff time per year, 48 hours fellow time per year, plus \$300,000 in expenses  
Cost Total: \$7,100 annually plus \$300,000 in expenses

#### PA 46. Facilitate Community Input on Climate Issues

(CE-11) Establish and highlight opportunities for the community to provide suggestions to City staff and policy makers regarding how the City can augment its climate protection efforts through adjustments to local planning, policies and programs.



**Description:** The City will seek resources to create new opportunities, and enhance existing opportunities, for community members and organizations to participate in the policy process for climate action and resilience. This may include enhancing community forums (see CE-4 and CE-10), building out web and social media tools, and leveraging existing avenues for innovative community engagement such as City Camp Oakland and Open Oakland.

**Status:** This is a new Priority Action in 2017. The City can build on a number of existing resources to develop and highlight tools for meaningful community engagement. Such activities, as well as allocating staff time to collecting, assessing, and acting on feedback, will require additional resources. The City is currently carrying out a pilot project in equitable community engagement in West Oakland in conjunction with the Resilience Oakland Initiative. Pilots can also occur through City Camp Oakland and similar venues.

**Responsibility:** Environmental Services

**Resource Needs:** 400 hours fellow time to establish forum design and materials plus 60 hours fellow time per year to implement  
Cost Total: \$5,000 plus \$750 annually

#### PA 47. Develop an Oakland Climate Action Model Practices Campaign

(CE-16) Develop a local climate action model practices campaign collaborating with local organizations to document and promote examples of local climate actions to the community.

**Description:** The City will seek resources to aid local organizations in promoting local model practices and encouraging widespread adoption of affordable energy and climate-friendly behaviors throughout the community. This campaign would utilize multimedia approaches to make it easier for members of the community to promote do-it-yourself actions and teach each other to implement them. Low-cost multimedia technology could be provided to local organizations to document personal and neighborhood climate actions and share them with the larger community.

Examples of actions that might be demonstrated include replacing faucets and showerheads with low-flow devices; lowering the water heater thermostat temperature; installing water heater insulation; repairing windows; installing a clothesline; repairing a bicycle; maintaining proper air pressure in car



tires; using web-based tools to plan trips on BART and AC Transit; identifying materials that can be recycled; building garden boxes and compost bins; prioritizing the potential to repair or reuse an item when making purchasing choices; repairing common household items; and sorting kitchen food scraps for composting.

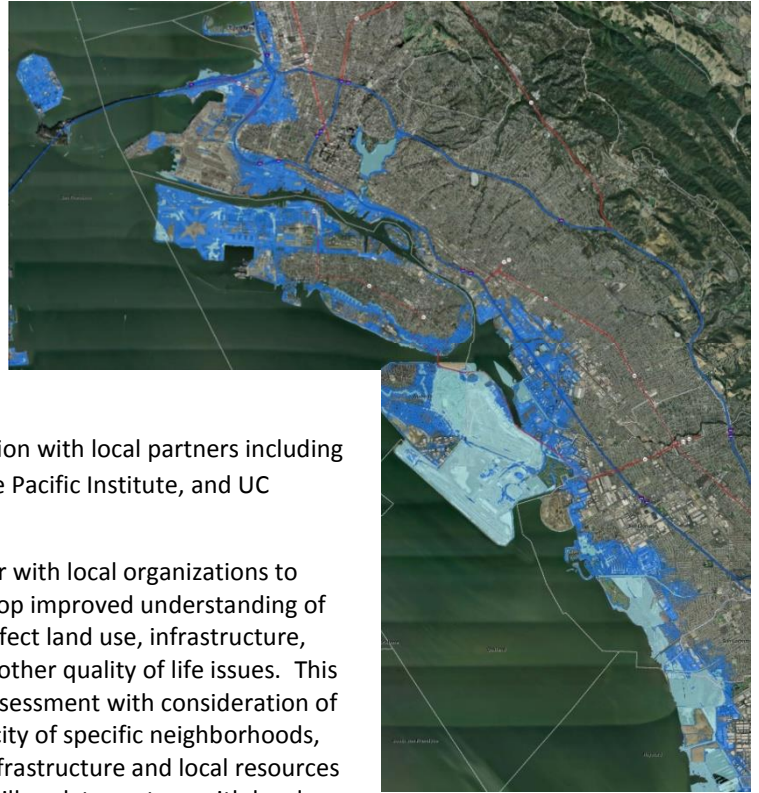
**Status:** Various elements of model practices exist, but have not been pulled together into a single document or campaign.

**Responsibility:** Environmental Services

**Resource Needs:** 40 hours staff time and 100 hours fellow time  
Cost Total: \$7,000

## Climate Adaptation and Improving Resilience

The following priority actions are proposed for implementation by the end of the ECAP period. Some can be accomplished as one-time actions, while others will require ongoing investment. Implementation of each of these priority actions will require new resources. Implementing all Climate Adaptation priority actions is projected to require an average of 0.3 FTE per year, 0.6 fellow time per year, and an additional \$1.04 million for expenses throughout the next three years to study and communicate with the community about climate impacts.



### PA 48. Study Potential Local Climate Impacts

(AD-2) Conduct a study of all local climate impacts in collaboration with local partners including the Bay Conservation and Development Commission, the Pacific Institute, and UC Berkeley.

**Description:** The City will seek resources to partner with local organizations to study local climate impacts and develop improved understanding of how these impacts are expected to affect land use, infrastructure, public health, the local economy and other quality of life issues. This study would include a vulnerability assessment with consideration of both projected impacts and the capacity of specific neighborhoods, population segments, and affected infrastructure and local resources to adapt to those impacts. The City will seek to partner with local experts at BCDC, the Pacific Institute, and UC Berkeley to study climate impacts and translate impacts in a meaningful way that can help to inform future planning decisions in Oakland. Resource needs assume that local and regional partners will act in a lead capacity for the study of climate impacts under separate funding.

**Status:** BCDC, through the Adapt to Rising Tides (ART) program, completed its Oakland Alameda Resilience Study in 2015, assessing long term climate risks to Oakland properties. Additional analysis is being conducted regionally. In October 2016, as part of the City's Resilience Strategy, the City began drafting a Preliminary Sea Level Rise Road Map, drawing heavily on the ART findings. In the final years of the ECAP period, the City will work with community partners and others, including grassroots nonprofits in vulnerable neighborhoods throughout Oakland, to finalize the Road Map using locally-generated data and locally-identified metrics.

**Responsibility:** Environmental Services, Planning and Building Department - Strategic Planning

**Resource Needs:** 200 hours staff time plus \$530,000 of expenses  
Cost Total: \$550,000

### PA 49. Communicate Climate Impacts to the Community

(AD-3) Communicate information about local climate impacts to the Oakland community to develop shared understanding, the will for personal and collective action, and local capacity to participate in development of climate adaptation strategies.

**Description:** The City will seek resources to develop new educational materials and perform outreach to inform the Oakland community about projected climate impacts and to better understand the communities' key concerns and understanding of local resources. Developing a greater shared understanding of potential impacts will be critical to generating the will for personal and collective action that may be needed to implement future adaptation strategies, as well as the capacity of Oakland community members to

engage in adaptation planning efforts. This will include developing content that could be delivered through existing channels such as the City's Citizens of Oakland Respond to Emergencies (CORE) program, planned Community Climate Forums (see PA 26), partners that deliver similar services such as Bay Area Red Cross and Alameda County Health Department, and local organizations interested in communicating about climate impacts within their networks. Content will be developed with consideration of opportunities to address identified community vulnerabilities, and tailored to specific audiences. This action will be most effective if local organizations have capacity to assist with development of messaging and delivery of content, which is outside the scope of the proposed budget.

- Status:** As part of the City's community engagement to finalize the Preliminary Sea Level Rise Road Map (see PA 59), the City is launching a deep engagement project in West Oakland in 2017 in partnership with the West Oakland Environmental Indicators Project and others. Additional resources are needed to carry out this project effectively. In addition to informing the City's planning, the results of this project are intended to inform future and ongoing engagement around climate change impacts throughout Oakland, beginning with those populations most vulnerable to the threats from climate change.
- Responsibility:** Planning and Building Department - Strategic Planning, Marketing, Economic Development
- Resource Needs:** 145 hours staff time (one time) plus 108 hours staff time per year  
Cost Total: \$25,000 plus \$17,000 annually

#### **PA 50. Identify and Act on Opportunities to Improve Resilience in City Plans and Policies**

(AD-4) Identify potential adaptation strategies to improve community resilience to climate change, and to integrate these with City planning and policy documents and processes where appropriate.

- Description:** The City will seek resources to research, analyze, and recommend adaptation strategies to improve community resilience to projected impacts of climate change and integrate these with City planning and policy documents and processes where appropriate. Example adaptation strategies may include:
- Considering vulnerability to flood events during the project approval process
  - Storm/sewer infrastructure design criteria and upgrades in major projects and the City's Capital Improvement Program
  - Design requirements for new buildings in flood prone areas
  - Water efficiency and conservation indoors and outdoors
  - Requirements for highly reflective surfaces where feasible (e.g., rooftops, pavement) and urban forest management strategies to reduce heat island effects
  - Green infrastructure and adaptive design to minimize impacts from sea level rise and flood events
  - Preparedness systems for vulnerable residents
  - Development of buffer zone wetlands
  - Revise codes and processes to facilitate resilience and sustainable redevelopment and retrofits
  - Community engagement processes to develop resilient social systems and prevent housing displacement

The City will seek to identify planning projects such as new area planning processes that could serve as opportunities to pilot appropriate adaptation strategies and development requirements to help inform future adaptation planning efforts.


- Status:** In 2014, the City joined the 100RC network, an international effort to expand the consideration of resilience in cities' plans, policies, and programs. As part of its goals through 100RC, Oakland published its Resilience Playbook in 2016 to formalize its strategy for many areas of resilience, including climate change adaptation. In 2016, the City began drafting a Preliminary Sea Level Rise Roadmap to provide uniform direction to City departments on how the City will assess the effects of sea level rise in Oakland, and to develop the policies needed to reduce the effects of Sea Level Rise. The City expects to release the Roadmap in Spring 2017. Additionally, as part of the ongoing development of Plan

Downtown, a 20-year specific plan for downtown Oakland and Jack London Square, the Bureau of Planning will address the potential effects from Sea Level Rise on the shoreline between Jack London Square and the Bay Bridge terminus.

**Responsibility:** Public Works, Planning and Zoning, and other departments based on strategies

**Resource Needs:** 40 hours staff time (one time), 0.625 fellow time (one time), and 5 hours staff time per year  
Cost Total: \$21,000 plus \$1,000 annually

#### PA 51. Participate in Development of a Regional Climate Adaptation Strategy

(AD-6)  Encourage and participate actively in efforts of regional partners including BCDC to engage in the development of a regional climate adaptation strategy informed by climate impact modeling, scenario analysis and development of adaptation strategies to advance regional climate adaptation capacity and resilience. Collaborate with local partners to ensure that the actions (e.g., construction of sea walls) of neighboring jurisdictions or other agencies do not indirectly exacerbate impacts to Oakland neighborhoods.


**Description:** As part of the its Resilience efforts, the City will participate in regional discussions to develop multi-jurisdictional adaptation strategies to address impacts related to rising sea levels in San Francisco Bay. Collaboration in this area will include partners such as BCDC, Bay Area Regional Council (BARC), San Francisco Estuary Institute, and others.

**Status:** City staff participate in several regional efforts to develop climate adaptation strategies to lessen impacts from sea level rise and changing weather conditions. Oakland's Chief Resilience Officer serves on the Executive Committee of Resilient by Design: Bay Area Challenge, an effort of the nine-County region to bring integrated design solutions to waterfront challenges along the Bay. The Challenge will connect local, national, and international experts with local communities, to find creative solutions to make the Bay Area more resilient after disasters and in the face of the ongoing threat of sea level rise. Staff has also worked with the Bay Conservation and Development Commission to improve regional sea level rise mapping, integrating impacts from sea levels, storm surges, and tidal influences into projections that can better inform local planning and adaptation efforts. The City also participates in regional planning discussions with organizations focused on climate adaptation. Finally, the Bay Area passed Measure AA in 2016, creating a \$250 million revenue stream for regional adaptation projects.

**Responsibility:** City Administrator (Resilience), Planning and Building Department - Strategic Planning, Environmental Services

**Resource Needs:** 150 hours staff time per year and 50 hours fellow time per year  
Cost Total: \$30,000 annually

#### PA 52. Develop a Resilience-Based Climate Adaptation Plan

(AD-7)  Develop a climate adaptation plan for Oakland identifying strategies to improve community resilience to climate change in collaboration with state, regional and local stakeholders.

**Description:** The City has developed a draft Preliminary Sea Level Rise roadmap to prioritize next steps in designing climate adaptation strategies for Oakland. As part of its Resilience efforts, and building on the City's Local Hazard Mitigation Plan and Preliminary Sea Level Rise Roadmap, the City will create a comprehensive strategy to address climate adaptation needs. While the form and depth of the Plan are not yet determined, adaptation planning will be developed by balancing resource availability with the potential for guiding development and infrastructure investments. Additional funding needs to be



secured to study Sea Level Rise vulnerability zones and impacts in greater depth, and to integrate findings with key City planning documents, such as the General Plan.

**Status:** The City has completed its Local Hazard Mitigation Plan in 2016, and expects to complete its Preliminary Sea Level Rise Roadmap in 2017. The Adaptation Plan has not been scheduled to date.

**Responsibility:** City Administrator (Resilience), Planning and Building Department - Strategic Planning, Environmental Services

**Resource Needs:** \$125,000 of expenses  
Cost Total: \$125,000

### PA 53. Promote the Development of Oakland's Urban Forest

(AD-9) Promote the development of Oakland's urban forest



**Description:** The urban forest has numerous climate and adaptation benefits, which include carbon sequestration, stormwater mitigation, neighborhood beautification and calming, habitat restoration, and even energy conservation in cases where trees are strategically planted near buildings. Oakland was formerly home to a wide diversity of tree species, but over time the city has lost a large portion of its urban forest due to development and loss of maintenance funding. Today, some areas of Oakland – largely concentrated in neighborhoods with higher rates of poverty, poor health outcomes, and elevated pollution – have as little as 6.5 percent tree canopy coverage, while other Oakland neighborhoods have as high as 47.4 percent coverage. Growing the city's urban forest can have an immediate impact on reducing socioeconomic disparities.

The City is seeking resources to conduct an urban tree inventory and develop an urban forestry master plan outlining how the City will protect, develop, and maintain diversified and appropriate tree plantings on City rights-of-way in a manner consistent with Bay Friendly Guidelines. The urban forestry master plan will include criteria and processes for planting new trees; citywide canopy coverage goals and goals for specific disadvantaged neighborhoods; carbon sequestration goals for the urban forest; a realistic annual tree planting goal based on the results of an urban tree inventory; approved species for streetscapes and parklands; an economic analysis of the value of the urban forest; the maintenance priorities and process for existing trees; a long-term funding plan; and clear roles for the City and community partners for community engagement and education. See PA-24/TLU45.

**Status:** The City is continuing to seek funds through the Statewide Greenhouse Gas Reduction Fund and other sources to conduct a robust community engagement process and craft an urban forest master plan, as well as to restart the City's tree planting program, in partnership with local nonprofits.

**Responsibility:** Public Works, Planning and Zoning, Economic and Workforce Development, and other departments based on strategies

**Resource Needs:** See PA-24/TLU-45.

### PA 54. Promote Water Conservation and Efficiency

(AD-10) Promote indoor and outdoor water conservation and efficiency



**Description:** California experienced an historic drought between 2011 and 2016. Although the winter of 2016-2017 brought plentiful rain along the West Coast, climate scientists and meteorologists agree that as climate change increases, extreme weather events will also increase, and both flooding and droughts will become more severe and frequent. Under these conditions, the need to conserve water in all uses, and to shift the ways in which all sectors of our community use indoor and outdoor water, have become all the more critical. The ECAP highlights a number of actions to conserve water, including development and enforcement of specific policies (see Completed/Fully Underway Actions BE-1 and BE-32); ongoing marketing and outreach (see BE-33 and BE-34); and incentivizing or otherwise encouraging the

utilization of specific technologies (see BE-35 and BE-36). These and other Actions range from funded and under development, to planned and/or needing further resources, to complete or fully underway.

**Status:** See specific Action Items BE-1, BE-21, and BE-32 through BE-41.

**Responsibility:** Multiple Departments including Planning and Building Department - Strategic Planning and Environmental Services

**Resource Needs:** See BE-1, BE-21, and BE-32 through BE-41.

#### PA 55. Promote Measures to Reduce the Impact of Floods

(AD-11) Promote measures to reduce the impact of flood events by encouraging stormwater catchment and diversion through use of rain barrels, bio-swales, permeable surfaces, and green roofs.



**Description:** Flood events that become more frequent and more severe over time are expected due to climate change. Sea level has already risen eight inches in the last century, and is projected to increase an additional 36 to 66 inches by 2100. Progressively intense storms and regular tidal events will exacerbate those levels, and make flooding an increasing threat to the low-lying communities in East and West Oakland. The City will continue to seek resources to both mitigate and better prepare for these events. These efforts are encapsulated in several other ECAP actions, including encouraging the installation of cisterns and rain barrels to harvest rainwater (see BE-35 and BE-36), increasing green infrastructure in public landscaping to mitigate Stormwater and absorb flood waters (see BE-40).

**Status:** See specific Action Items BE-1, BE-21, and BE-32 through BE-41.

**Responsibility:** Planning and Building Department - Strategic Planning, Environmental Services, and Bureau of Infrastructure and Operations

**Resource Needs:** 36 hours staff time per year  
Cost Total: \$7,000 annually

#### PA 56. Encourage Recycled Water Delivery and Use

(AD-12) Encourage the efforts of the East Bay Municipal Utility District to develop infrastructure to deliver recycled water to Oakland properties for appropriate uses, reducing dependence on external water supplies.



**Description:** The U.S. lags several other countries in building out infrastructure to deliver recycled water for appropriate uses, including outdoor landscaping and toilet flushing. The East Bay Municipal Utility District (EBMUD) has begun building out its recycled water system, which the City is already using in a number of locations, including for the landscaping at Lake Merritt. The City will continue working with EBMUD to encourage the expansion of the recycled water network, and with large and small customers, particularly developers, to encourage the use of recycled water.

**Status:** This is a new Priority Action in 2017. EBMUD is creating a Recycled Water Master Plan in 2017 to guide the expansion of recycled water infrastructure investment and delivery for the next 20 years. The City is engaging EBMUD in this planning process, including in conjunction with the EcoBlock demonstration project in North Oakland.

**Responsibility:** Planning and Building Department - Strategic Planning, Environmental Services, and other departments

**Resource Needs:** 12 hours staff time per year  
Cost Total: \$2,300 annually

## Priority Actions Complete or Fully Underway

The City of Oakland and its many partners have long been recognized as climate leaders, even before the Energy and Climate Action Plan was written. By the time the ECAP was formally adopted by City Council in December 2012, implementation of key Action Items had already begun. As of early 2017, the City and its partners have completed or fully instituted 27 items of the 61 initially identified as Priority Actions, and an additional five actions that were not part of the original three-year priority list. While more work is clearly needed, these actions have provided a strong foundation for achieving a 36% reduction in GHG emissions by 2020.

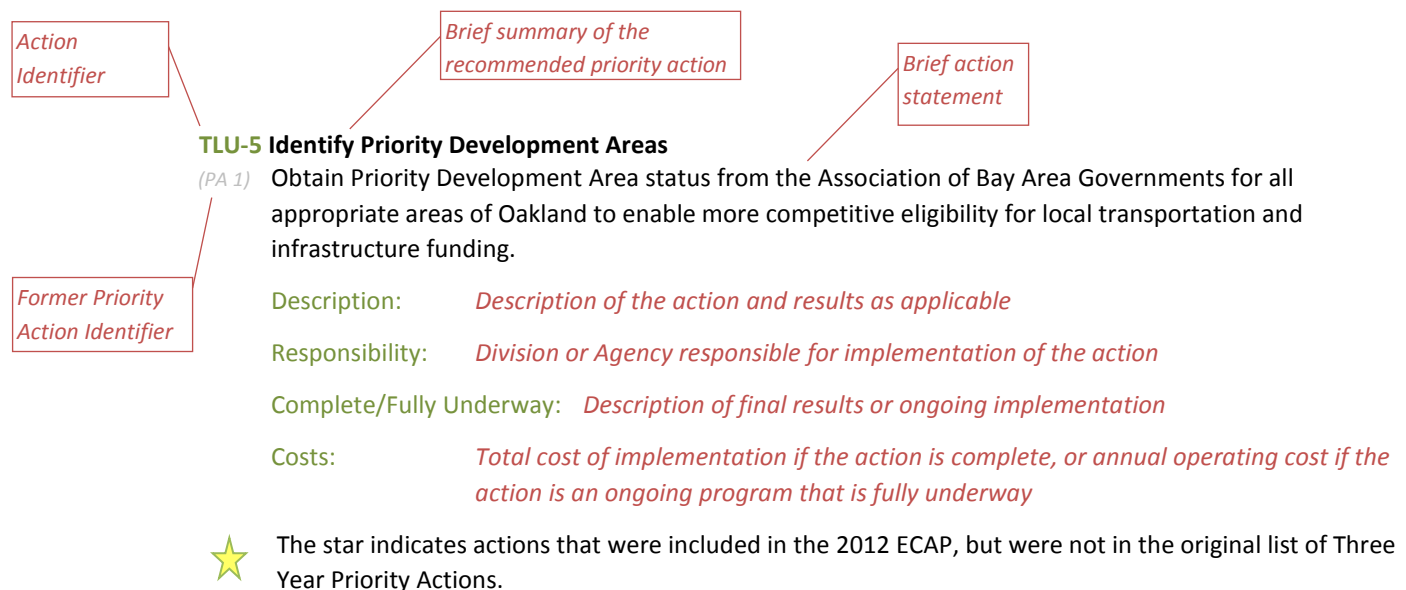
This section lists the ECAP items that have been completed or are fully underway. In many cases, the City needs to continue implementing the projects, monitoring policy, or updating strategies to build on the work completed to date. Even where items are indicated as “completed,” the implication is not to close the book on them; these items can and should be revisited to identify additional opportunities based on new technologies, financing mechanisms, and the like. For example, a building that is fully retrofitted for optimum energy efficiency today should be reassessed for energy savings potential in five or ten years, when new technologies may enable further savings.

For each item in this section, a description is provided of the work that has been completed, or the policy or program that has been institutionalized, and any next steps that are currently planned.

Community Engagement items are not included in this section; Community Engagement Priority Action items can be found in the [Supporting by Existing Resources](#) and [Requiring New Resources](#) sections, and the complete list of items is included in Chapter 5. Community engagement is considered an ongoing, imperative strategy to facilitate the achievement of the action items in the other sections. Further, given the ever-evolving nature of Oakland’s diverse community, engagement strategies must constantly be under scrutiny for relevance, broad reach, and effectiveness. As such, community engagement cannot be considered “complete” or even “fully institutionalized.”

### How to Read This Section

Each action is presented through a standard format containing each of the following elements.



## Resources Committed

Supporting resources are summarized for each Priority Action. The total resources committed to all proposed Three Year Priority Actions complete or fully underway is approximately 50 staff FTE per year, 0.1 fellows per year, and an additional \$38.86 million for related expenses (e.g., consultant support).

## Transportation and Land Use

The following Transportation and Land Use priority actions have been implemented or are fully underway. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these priority actions will cost an average of 11 FTE per year, 120 fellow hours, and \$8.30 million for expenses throughout the next three years.

### TLU-1 Participate in Quarterly SB 375 Discussions

(PA 4) Participate in development of the Bay Area Sustainable Community Strategy for reducing vehicle travel in compliance with SB 375, including defining Oakland's role in achieving regional jobs-housing balance, land use and transportation system integration, and infrastructure funding advocacy.

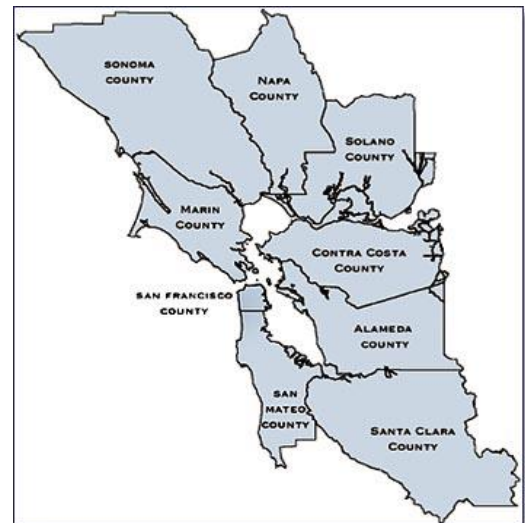
#### Description:

Senate Bill 375, adopted in 2008, established a new framework for reducing California's GHG emissions through attention to land use and transportation planning issues. SB 375 requires each metropolitan region to each develop a Sustainable Community Strategy (SCS) demonstrating how it will reduce vehicle miles traveled. The SCS also presents an opportunity to improve coordination between regional transportation and housing planning.

Under the leadership of the Metropolitan Transportation Commission (MTC) and

Association of Bay Area Governments (ABAG), a SCS for the Bay Area ("Plan Bay Area") was developed and adopted in 2013 in compliance with SB 375 mandates. After two years of public discussion and technical work, a limited and focused update of Plan Bay Area ("Plan Bay Area 2040") was recently released for public review. This document discusses how the Bay Area will grow over the next two decades and identifies transportation and land use strategies to enable a more sustainable, equitable and economically vibrant future. Starting with the current state of the region, this document describes the goals of Plan Bay Area 2040, a proposed growth pattern for land use and development, and supporting transportation investment strategy, and key actions needed to address ongoing and long-term regional challenges. Oakland's participation in this process has helped to ensure that outcomes reflect the housing and transportation needs of the city's residents and businesses, and that future regional planning and infrastructure funds are allocated in proportion to the amount of growth directed to Oakland and other regional centers.

Staff currently has the resources to participate in quarterly conference calls to stay up to date on how the process of developing the Bay Area SCS is unfolding. Further engagement or action would require additional staff resources.



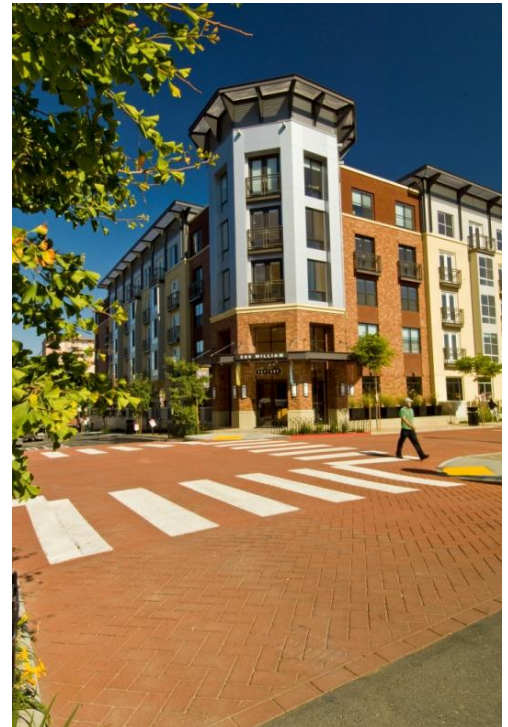


- Responsibility:** Transportation Services, Planning and Building Department - Strategic Planning, Housing and Community Development
- Fully Underway:** Staff is currently able to participate in quarterly conference calls to follow regional action related to SB 375 and development of the Bay Area Sustainable Community Strategy.
- Costs:**  
 Committed Resources: 96 hours staff time per year for four years  
 Required Resources: 48 hours staff time per year  
 Cost Total: \$83,000 plus \$11,000 annually

## **TLU-2 Develop a Comprehensive Transportation Policy Plan**

(PA 30) Prepare a comprehensive, integrated Oakland Transportation Plan in close collaboration with regional agencies, local service providers, and the community.

- Description:** The City will seek resources to prepare a comprehensive Oakland Transportation Plan in close collaboration with regional agencies and local service providers (e.g., MTC, AC Transit, BART, AMTRAK), which:
- Provides a new comprehensive vision of how transportation systems throughout Oakland will be developed to meet the needs of people and business, and addressing all modes of travel, while minimizing greenhouse gas emissions and air pollutants associated with the transportation sector;
  - Plans for transportation infrastructure management under the City's control (e.g., roadways, development around existing transit hubs, alternative transportation infrastructure) in a manner that updates and reinforces the City's existing Land Use and Transportation Element (LUTE) and "Transit First" policy; and,
  - Creates a public transit master plan that recommends process, program and policy changes designed to significantly increase transit utilization throughout the community, including establishment of transit-oriented land use planning criteria, policies that ensure safe walking and biking access to transit, transit service performance goals, and agency implementation responsibilities.



A comprehensive transportation plan will lay a critical foundation for effective transportation planning that ensures resources are allocated effectively and efficiently to ensure the best delivery of transportation options and services to all members of the community, while reducing GHG emissions and other pollutants. This plan will enhance applications for funding, increase the City's ability to work with transit agencies on planning and problem solving, and support Oakland's economic development.

**Responsibility:** Department of Transportation

**Complete:** In October 2016, the Oakland Department of Transportation released its Strategic Plan for Transportation, identifying a new comprehensive vision for mobility in Oakland, including one-year and three-year benchmarks corresponding to more than 200 actions. One action item in the Strategic Plan is to establish a transit action plan, which the Department of Transportation will be initiating in Spring 2017.

**Costs:** Committed Resources: 4 FTE for three years  
 Required Resources: None  
 Cost Total: \$2,500,000

### **TLU-3 Improve Transportation & Land Planning Integration in Every Planning Effort**

(PA 31) Require the integration of land use and transportation planning and consideration of GHG reduction opportunities in every planning, major project, and redevelopment effort undertaken by the City.

**Description:** In addition to creating a citywide comprehensive transportation plan, the City will seek resources to reduce long term vehicle miles traveled (VMT), and associated GHG emissions, by ensuring that all City planning efforts fully integrate concerns for land use and transportation. Multiple planning and policy documents (e.g., specific plans for geographic areas) affect land use, transportation and development decisions. Where appropriate, the City can ensure that each such process results in projects that encourage dense, transit-oriented, mixed-use development that includes housing, retail services and/or employment opportunities centered on transit hubs and corridors.

New development in Oakland, including transit-oriented development, has the potential both to benefit communities (e.g., via economic revitalization, reduction in VMT), and to adversely impact communities (e.g., via displacement, local environmental impacts). The City will make efforts to plan for new development with consideration of these impacts.

Integrated planning will include establishing transportation performance goals (e.g., vehicle miles traveled per service population, citywide mode share) for planning efforts and projects, consistent with citywide transportation performance goals. Other process improvements may include new requirements for analysis, reporting, and a public review process that addresses not only land use, but the transportation impacts and opportunities to reduce GHG impacts of projects. These changes can also assist the City in clarifying regional funding priorities in relationship to local projects and support evaluation of local and regional transportation planning and funding processes.

**Fully Underway:** The integrated planning of land use and transportation has been a centerpiece of all Specific and Area Plans completed to date, and will be a similar centerpiece of the Downtown Specific Plan that is currently underway.

**Responsibility:** Department of Transportation, Planning and Building Department - Strategic Planning, Economic Development

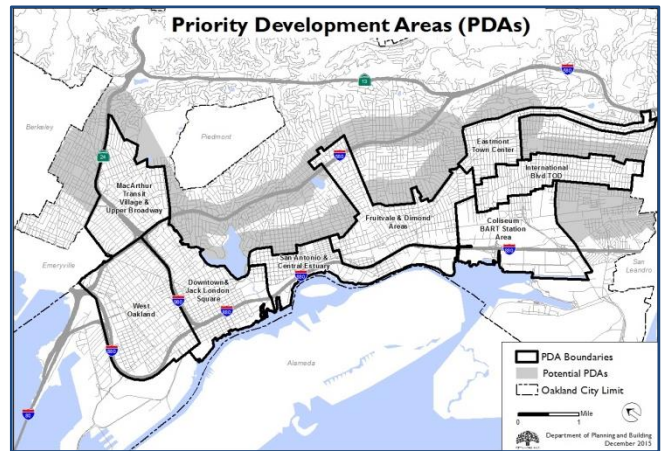
**Resource Needs:** Committed Resources: 0.35 FTE per year plus \$130,000 of expenses  
 Required Resources: None  
 Cost Total: \$66,000 annually plus \$130,000 of expenses

**TLU-6 Identify and Adopt Priority Development Areas**

(PA 1) Obtain Priority Development Area (PDA) status from the Association of Bay Area Governments for all appropriate areas of Oakland to enable more competitive sites for local transportation and infrastructure funding.

**Description:**

Identifying Priority Development Areas in Oakland will help the City secure resources for local transportation and infrastructure improvements. PDA designation is awarded through the FOCUS Program (a regional development and conservation strategy), led by four regional agencies: Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and Bay Conservation and Development Commission (BCDC). The FOCUS Program and the PDA designation have the primary goal of encouraging growth near transit, and in the existing communities that surround transit, by enhancing existing neighborhoods and providing good housing and transportation choices to all residents. This includes an explicit focus on promoting housing that will be affordable to low-income residents, and attempts to minimize the displacement of existing residents. The City should continue to plan for and approve new development in conformance with current CEQA guidelines.



Designated PDAs are eligible to receive planning and technical assistance as well as capital funding from various sources, including the Station Area Planning Grant Program, the Regional Transportation Plan (Transportation 2035), the Transportation for Livable Communities Program, Environmental Justice grants, Green Infill - Clean Storm water grants, the Proposition 1C: Transit Oriented Development Housing Program and Infill Infrastructure Grant Program, the Transportation Fund for Clean Air grant program, and other State and regional programs. Designated and planned PDAs include areas focused on infrastructure, transportation, and housing for a range of income levels for transit-oriented development areas and corridors.

An additional 0.25 FTE for a grant writing professional would augment Oakland's capacity to apply for, and chances of receiving, more above-mentioned future funding.

**Responsibility:** Department of Transportation, Planning and Building Department - Strategic Planning Division

**Complete:** City Council approved staff recommendations regarding the identification of Corridor and Station Area PDAs, which were subsequently approved by ABAG in 2015. Staff is now working to align proposals to make Oakland competitive for future transportation, infrastructure and housing funding streams, and pursuing funding to support equity advancements in PDA implementation. The City and its partners may consider incorporating the Equity Checklist, developed by a coalition of Oakland's community environmental and social justice organizations, in the designation of future PDAs and in subsequent project planning in designated PDAs.

**Costs:** Committed Resources: 150 hours staff time  
Resources Required: None  
Cost Total: \$20,000

**TLU-7 Create and Adopt a Transportation Impact Fee to Support Implementation**

(PA 32) Adopt a transportation impact fee to support new local low-carbon transportation infrastructure and planning.

**Description:** The City will seek resources to conduct the necessary research and analysis to enable the adoption of a Transportation Impact Fee (TIF) to support low-carbon transportation infrastructure and

planning. A TIF can be used to assign the costs of added vehicle trips to new development, enabling the City to enhance its existing transportation systems and support the development of key infrastructure for future systems. It can also better connect City policy to the City budget and Capital Improvement Program. Adopting a TIF can also align City policy with neighboring jurisdictions.

- Complete:** A TIF was adopted by Council in May 2016 and implemented in September 2016 as part of an impact fee program that includes a fee to support transportation, capital investments, and affordable housing. . The transportation impact fee funds improvements and expansion to city transportation infrastructure to manage the additional transportation demands generated by new developments, with a focus on infrastructure that connects residential, retail, and employment centers. The transportation impact fee applies to new housing units, new nonresidential projects, nonresidential projects with additional floor area, and nonresidential projects with an intensification of use.
- Responsibility:** Department of Transportation, Planning and Building Department - Strategic Planning, Engineering, Building Services
- Resource Needs:** Committed Resources: 1,260.5 hours staff time, \$151,468 of expenses, and 135.5 hours staff time per year  
Resources Required: None  
Cost Total: \$375,000 plus \$22,000 annually

#### **TLU-11 Increase Density near Transit to Improve Livability**



Engage the community, through the zoning update process and other appropriate mechanisms, to develop a strategy for increasing density adjacent to transit in ways that improve neighborhood livability.

- Description:** The City will seek resources to increase density adjacent to transit in ways that will benefit the whole community. For example, the City may update design review standards for high-density multi-family buildings, encouraging design that is aesthetically pleasing, highly functional, and practical. The City can also insist on the creation of vibrant, safe, and attractive public spaces as a part of every development.
- Fully Underway:** Since 2012, all the City's zoning amendment efforts have supported this action, including the City's 2016 reduction in minimum parking requirements in Downtown and along major transit corridors. Oakland's most recent Housing Element of the General Plan, adopted in 2014, lists four specific policies that will directly affect the provision of affordable housing near transit hubs and corridors: Policy 1.1, "The City will target development and marketing resources in PDAs, and in areas for which Specific Plans have been completed or are underway;" Policy 1.3, "Appropriate locations and densities for housing Policy;" 2.3; "Density Bonus Program Policy;" and Policy 7.3, "Encourage development that reduces carbon emissions." A community engagement process is ongoing for Plan Downtown, a specific plan that aims to ensure continued growth and revitalization to benefit both Downtown residents and the larger community. The plan will provide policy guidance on development, linking land use, transportation, economic development, housing, public spaces, cultural arts, and social equity. Alongside the development of Plan Downtown, the City is working with BART on a Transit-Oriented Development pilot. Finally, the City is actively working with regional and state agencies to secure funding for future housing development projects for a range of income levels (see PA-??/TLU-9) in keeping with the goals of Plan Bay Area and the City's adopted Priority Development Area map (see TLU-6). These plans specify the need to concentrate housing and new development along major transit corridors and hubs to reduce GHG emissions, among other benefits.
- Responsibility:** Planning and Building Department - Strategic Planning, Department of Transportation



**Resource Needs:** Committed Resources: 1.75 FTE for one year plus \$4,118,904 of expenses  
 Resources Required: 1.45 FTE per year  
 Cost Total: \$400,000 annually plus \$4,260,000, of expenses

#### **TLU-15 Update Local CEQA Standards to Reduce Emphasis on Congestion Impacts**

(PA 33) Update the process for evaluating local environmental impacts resulting from new development to prioritize consideration of vehicle miles traveled (VMT) impacts above congestion impacts.

**Description:** The City will seek resources to update the process for evaluating local environmental impacts resulting from new development as required under CEQA. These updates will prioritize consideration of VMT impacts above congestion impacts.

CEQA regulations that have required local jurisdictions to analyze and emphasize reductions in traffic congestion are a significant, but hidden, basis for our ever-expanding auto-oriented transportation network. When new plans or projects are required to perform an environmental review, invariably the proposed growth leads to additional auto trips. These trips then must be mitigated, if possible. Often this mitigation takes the form of road widening, expanding lanes, adding turn lanes, and finding other ways to speed up traffic and avoid delays. Mitigation actions may encourage more driving, with associated emissions and pollution.

State CEQA regulations were updated shortly before the ECAP was adopted to give local jurisdictions the option of developing new criteria for assessing trip impacts. The changes provided a money-saving incentive to developers, encouraging the design of projects to reduce auto dependence and rely on transit, bicycle and pedestrian networks. Clarification and simplification of the City's CEQA guidelines will enable a faster and more streamlined review process for economic development that is consistent with the policies of the Land Use and Transportation Element of the General Plan.

**Responsibility:** Department of Transportation, Planning and Building Department - Strategic Planning

**Complete:** In 2016, the City updated its CEQA Thresholds of Significance to reflect state guidance identifying vehicles miles traveled (VMT) as the primary measure for transportation-related environmental impacts. The City's CEQA checklist and EIR evaluations consider VMT as a primary environmental impact under transportation, as well as in air quality under GHG emissions considerations.

**Costs:** Committed Resources: 0.2 FTE for 9 months, 1 hour staff time per week for 9 months, and \$300,000 in expenses  
 Required Resources: None  
 Cost Total: \$560,000

#### **TLU-23 Promote Bicycle Safety Training, Transit System Use, and Other Non-Auto Transportation**



Partner with and promote community based organizations that provide knowledge and skills such as bicycle safety training, transit system use, etc. to help Oakland residents shift trips to non-auto modes.

**Description:** The City will establish and staff a transportation demand management (TDM) program, monitoring private development TDM commitments and engaging on citywide encouragement campaigns to shift vehicle trips to non-auto modes. The City will also conduct shared mobility campaigns to educate and solicit feedback from individuals and neighborhoods about the possibilities for using types of shared mobility, and aim to develop shared mobility financial incentives for low-income and underrepresented users of shared mobility.

**Responsibility:** Department of Transportation

**Fully Underway:** The City's Bicycle Facilities Program promotes bicycle safety training courses implemented by local advocacy organizations. The City has received grant funding to efforts to perform outreach encouraging bike share and car share use. The Department of Transportation has proposed

developing a “mobility management” team that would oversee the development and implementation of new transportation demand management programs citywide.

**Costs:** Committed Resources: 1.5 FTE per year  
Resources Required: 1.5 FTE per year  
Cost Total: \$315,000 per year

#### **TLU-24 Encourage the Creation of Local Bike Sharing Programs**



Encourage the creation of local bike sharing programs.

**Description:** Bike share is a membership-based transportation program that deploys publicly available bicycles at stations located throughout the city to facilitate short trips (less than 30 minutes), and helps solve many of the first/last mile commute problems.

**Responsibility:** Department of Transportation

**Fully Underway:** In partnership with the largest bike share operator in the US (Motive), the City announced the expansion of the Bay Area Bike Share program into Oakland, to include 850 bikes and 70 stations. The program is expected to launch in summer 2017. The bike share program in Oakland is fully funded by a title sponsorship from the Ford Motor Company, rebranding the program to Ford GoBike. The City has contributed staff time to coordinate the planning efforts around bike share including legislation and a permitting structure.

**Costs:** Committed Resources: 2 FTE for 2 years plus \$25,000 in expenses  
Resources Required: 0.5 FTE per year plus \$25,000 in expenses  
Cost Total: \$300,000 plus \$91,000 annually

#### **TLU-29 Conduct a Citywide Dynamic Parking Pricing Study**

(PA 36) Conduct a citywide dynamic parking pricing study to develop a strategy for creating adjustable parking rates at City meters and garages that can: influence drivers to reduce vehicle trips; provide adequate parking supply; encourage economic development; and fund alternative transportation improvements.

**Description:** The City secured a \$200,000 technical assistance grant from the Metropolitan Transit Commission to conduct a study of innovative parking pricing and policy approaches for public facilities (on city streets and in City-owned garages) in Downtown Oakland. More resources will be necessary in order to implement a similar study citywide.

Formerly, City policy did not recognize differential parking demand between areas of the city, and applies a uniform parking pricing system. The completed study recommended adjusting prices based on supply and demand to maximize parking performance. Pricing can be an effective tool for reducing trips and maximizing alternatives to driving, and can help to encourage economic development as well as create new revenue for alternative transportation improvements and neighborhood improvements.

**Responsibility:** Department of Transportation, Planning and Building Department - Strategic Planning, Finance

**Fully Underway:** Parking policy reform was completed in 2016 in support of these recommendations of the Downtown parking study. With initial parking policy reform completed, the City is supporting a three-year grant-funded initiative focused on downtown and the Montclair commercial district. That initiative will consider potential impacts and scalability of dynamic parking pricing in Montclair.

**Costs:** Committed Resources: 0.10 FTE for one year, 58 hours staff time, 120 hours fellow time plus \$200,000 in expenses  
Resources Required: \$2,437,000 for staff time and other expenses for demand-responsive parking and mobility management  
Cost Total: \$2,670,000

**TLU-38 Call for Port of Oakland GHG Reduction Targets and Plans**

(PA 5) Call upon the Port to establish GHG reduction goals associated with Port operations in alignment with the City's GHG reduction target of 36% below 2005 emissions by 2020, and to create plans for achieving those goals.

**Description:** The Port of Oakland can demonstrate leadership in advancing GHG reductions by establishing GHG reduction goals associated with Port operations, and developing plans for achieving those goals. The Port has developed GHG emission inventories for its own operations, and has taken a number of actions toward reducing those emissions. By establishing a comprehensive GHG reduction plan based on a goal in alignment with the City's GHG reduction target of 36% below 2005 emissions by 2020, the Port can continue to demonstrate its leadership, and provide a model of operational improvements for its tenants.

The Port of Oakland is a department of the City of Oakland. However, the Charter of the City of Oakland vests the Board of Port Commissioners with exclusive control and management of the Port Department. Port Commissioners are nominated by the Mayor and appointed by the City Council.

The City has sufficient existing resources to call upon the Port as described above. The Port would require separate resources to take the actions described here.

**Responsibility:** Elected Officials

**Fully Underway:** The Port of Oakland has accomplished a wide range of GHG reduction activities as part of its Maritime Air Quality Improvement Plan (MAQIP) implementation. These include installing shore power at 11 deep-water berths, requiring diesel particulate filters on all drayage trucks, and greening fleet operations at the sea port. These changes resulted in a 76% reduction in black carbon emissions from trucks between 2009-2013, and a 55% reduction in CO<sub>2</sub> and a 99% reduction in black carbon from berths with shorepower. While a comprehensive GHG reduction from Port improvements has not been calculated, these programs are sufficient to conclude that the effort is fully underway.

**Costs:** Committed Resources: \$4,000 in staff time  
Required Resources: \$2,000 in staff time  
Cost Total: \$6,000

**TLU-54 Discontinue Subsidizing Parking for City Employees**

(PA 41) Discontinue the practice of providing parking to City employees based in transit-served locations.

**Description:** The City will seek resources to discontinue the practice of providing parking to City employees based in transit-served locations. Granting employees parking spaces and additional parking subsidies fosters automobile reliance and use. The City can demonstrate leadership by reducing the number of employees receiving subsidized parking in transit-rich areas of the City. This action could also increase the number of parking spaces available for public use. Prior to adopting such a policy, the City would need to satisfy any obligations it may have to meet unions representing affected employees. This change is projected to save approximately \$450,000 per year in reduced parking subsidies.

**Responsibility:** Human Resources, Department of Transportation, OPW Equipment Services

**Complete:** The City discontinued parking subsidies for downtown employees in 2010, though subsidized parking is still available to elected officials.

**Costs:** Committed Resources: \$5,000 in staff time  
Resources Required: \$0  
Cost Total: \$5,000

## Building Energy Use

The following priority actions have been implemented or are fully underway. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these Building Energy Use priority actions will cost an average of 33 FTE per year, 0.05 fellow time per year, and \$26 million for expenses throughout the next three years.

### **BE-1 & BE-3 Adopt a Green Building Ordinance (GBO) for Private Development**

(PA 7) Adopt a green building ordinance for residential and commercial private development new construction projects requiring high levels of energy performance. Include all significant renovation projects in the proposed GBO for residential and commercial private development projects requiring high levels of energy performance.

**Description:** By adopting a green building ordinance for private development, Oakland has the opportunity to ensure that new construction and major renovation projects are constructed in a manner that reduces future operational energy and water use, transportation and waste disposal impacts, and associated GHG emissions. Such a policy can build from the City's existing Civic Green Building Ordinance and adopted green building standards for new affordable housing developments receiving funds through the annual housing Notice of Funding Availability.

Development of a draft green building ordinance for private development has been underway for more than a year. A number of workshops have been held to gather public and targeted industry input on the proposed ordinance, including affected building types, thresholds and requirements, and implementation process. Existing staff resources continue to be sufficient for development of the ordinance, though implementation may require additional training for select City staff, as well as the creation of new compliance guidance documents and process adjustments.



Once the ordinance is adopted, implementation tasks will include: updates to related content on the City's website (e.g., the ordinance, FAQs, links to helpful information); updates and maintenance of application forms and process documents; creation of a how-to manual for the public and training manual for City personnel; and development of compliance monitoring and enforcement procedures. All Planning and Building Department staff will need to receive additional training to supplement green building code training provided recently with ARRA funding support. Building inspectors will also receive training tailored for energy "raters" to maximize understanding of how to work with third-party raters. Refresher courses are expected to be available from third-party organizations (e.g., StopWaste.Org) at no cost to the City.

**Responsibility:** Planning, Building Services

**Complete:** The City adopted the Green Building Ordinance in October 2010. Due to continuous improvement to energy performance associated with building construction practice, a revision to the GBO should be scheduled at regular intervals. A revision is anticipated in the next three years.

**Costs:** Committed Resources: 0.75 FTE for two years plus 1,100 hours staff time  
Resources Required: 1 FTE for 1 year  
Cost Total: \$630,000



**BE-4 Offer Property-Based Energy Financing**

(PA 8) Offer property-based financing and associated outreach for energy efficiency and solar improvements to residential and commercial property owners in Oakland, supported by ARRA funding.

**Description:** Starting in 2010, Oakland building owners will have a new way to pay for energy and water efficiency and solar energy improvements to their commercial and residential properties. Property owners who enroll in the voluntary CaliforniaFIRST program will be able to receive upfront financing for authorized energy upgrades through a loan that stays with the property. Participants will repay the loan over a 10-to-20 year period as a line item on their property tax bill. By choosing cost-effective energy upgrades, property owners may be able to reduce their utility bills by an amount greater than the loan repayment obligation, creating a net positive cash flow while greening their facilities.

The California FIRST financing program will help to enhance the effectiveness of other commercial and residential energy efficiency and solar programs. Property-based financing is anticipated to expand the number of retrofit projects and to encourage many projects to seek deeper levels of energy savings. California FIRST will be augmented during the next three years by an anticipated grant from the California Energy Commission's (CEC) State Energy Program. This grant will cover program setup costs and buy down interest rates to make the financing more attractive to property owners.

The City has no formal role in the administration of the CaliforniaFIRST financing program. City staff will however continue to advise development of the program and will assist in marketing and outreach with partner agencies.

**Responsibility:** Environmental Services, Planning, Building Services

**Complete:** Following approval by the State of California for PACE programs to operate, City Council approved the operation of five PACE programs in Oakland in September 2015. The City markets these programs to the community through available channels including the City website, targeted marketing campaigns, and through contractors.

**Costs:** Committed Resources: 150 hours staff time plus 0.05 fellow time  
Resources Required: None  
Cost Total: \$30,000

**BE-5 Encourage the Creation of On-Bill Financing for Energy Retrofits**

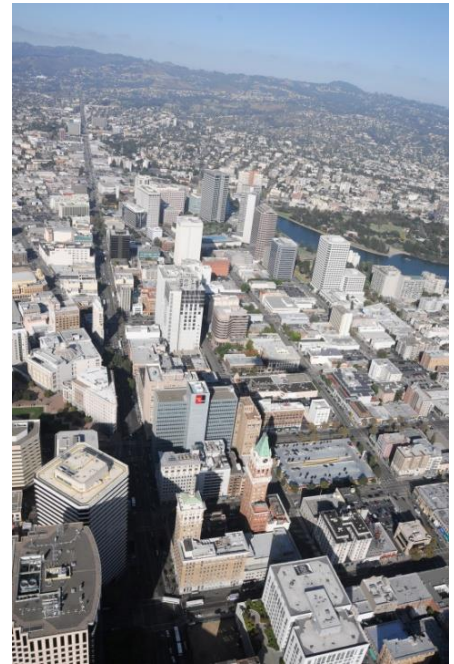
(PA 47) Engage local utilities (e.g., PG&E, EBMUD) to develop on-bill financing options for energy efficiency improvements to increase energy retrofits in tenant-occupied and other properties.

**Description:** The City will seek resources to participate in collaborative efforts aimed at encouraging local utilities to offer on-bill financing for building energy improvements. An effective on-bill financing option is critical to facilitating energy retrofits in large numbers of renter-occupied properties that comprise approximately half of Oakland's housing. On-bill financing may also be a valuable tool for accelerating and deepening energy retrofits in owner-occupied properties throughout the city.

**Responsibility:** Environmental Services

**Complete:** With City encouragement, PG&E began offering on-bill financing for commercial properties and municipal facilities, with plans to extend to residential buildings.

**Costs:** Committed Resources: 30 hours staff time per year  
Resources Required: 30 hours staff time per year  
Cost Total: \$5,600 annually

**BE-12 Launch a Downtown Commercial Retrofit Program**

(PA 9) Offer enhanced incentives and technical assistance through the "Oakland Shines" program to help downtown commercial property owners improve energy efficiency, supported by ARRA funding.

**Description:** Oakland's 120-block downtown area is targeted for energy upgrades through concentrated outreach, technical assistance and hefty rebates for energy efficiency improvements. "Oakland Shines" will emphasize improvements to Class B buildings as part of its goal to reach 80% of businesses in downtown Oakland. Energy efficiency upgrades can help building owners reduce energy use and costs, and make their buildings more attractive to tenants.

"Oakland Shines" is funded by a \$5.1 million ARRA grant. It will be administered by a team of local energy consulting firms.

**Responsibility:** Economic Development, Environmental Services

**Complete:** Completed in 2012, Oakland Shines leveraged Stimulus funding to perform more than 600 free energy audits and complete energy upgrades in nearly 200 commercial buildings, achieving annual energy savings of more than 4.5 million kWh and 55,000 therms.

**Costs:** Committed Resources: \$5,102,180 in staff time, grant funding, and other expenses  
Resources Required: None  
Cost Total: \$5,105,000

**BE-13 Encourage Participation in Local Energy Efficiency Programs**

(PA 10) Encourage local small businesses and residents to participate in local energy efficiency programs offered through the East Bay Energy Watch regional collaboration between PG&E and East Bay cities and by the Bay Area Regional Energy Network.

**Description:** The City is encouraging businesses to improve building energy performance by an average of 20% by enrolling in local energy efficiency programs such as the East Bay Energy Watch (EBEW) and

taking advantage of other PG&E programs and incentives for energy improvements. EBEW is a collaborative partnership program offered by PG&E and the cities of Alameda and Contra Costa counties. It's Direct Installation and technical assistance programs facilitate cost-effective lighting and other efficiency improvements for retail and small businesses in Oakland, offering expert advice and coordinating retrofit implementation.

EBEW also supports youth training in energy efficiency and offers entry-level residential energy efficiency services through its work with California Youth Energy Services.

The Bay Area Regional Energy Network (BayREN) is a collaboration among the nine Bay Area Counties, PG&E, and the Association of Bay Area Governments, delivering innovative and targeted energy efficiency services such as Advanced Home Upgrade and the Bay Area Multifamily Building Enhancements (BAMBE) program. The City of Oakland was instrumental in successfully advocating for the BayREN program to launch and now supports the program through enhanced local outreach and additional coordination.

**Responsibility:** Environmental Services

**Fully Underway:** The City collaborates with East Bay Energy Watch and BayREN, working directly with program implementers and PG&E to enhance local program delivery, and participates on the East Bay Energy Watch Strategic Advisory Committee. The City works directly with CYES each year to provide Oakland youth vocational building energy training, and to ensure that at least 200 Oakland homes receive energy efficiency and conservation measures. The City encourages residents and businesses to participate in energy efficiency programs offered through EBEW, PG&E, BayREN, and other special opportunities.

**Costs:** Committed Resources: 12 hours staff time per year  
Resources Required: 12 hours staff time per year  
Cost Total: \$2,000 annually

### **BE-13 Market Energy Retrofit Opportunities to All Oakland Businesses**

(PA-43) Develop a marketing campaign to encourage 30% of businesses to improve building energy performance by 20% and reduce water consumption by enrolling in programs and taking advantage of incentives offered by PG&E and other organizations.

**Description:** The City will seek resources to create a marketing campaign and offer technical assistance to encourage 30% of Oakland's businesses to implement energy retrofits achieving 20% energy efficiency improvements. Businesses will be encouraged to participate in all applicable programs offered by PG&E and others to receive further assistance and rebates.

**Responsibility:** Business Development

**Fully Underway:** The City has created or participated in multiple small business programs, including Oakland Shines, SmartLights, PG&E small and medium business programs, and other campaigns through the East Bay Energy Watch. As part of the EBEW leadership, Oakland has been instrumental in arguing for improved data from PG&E on small business incentive programs. In 2017, EBEW restructured its small business programs to more efficiently serve customers and to maximize customer incentives. The new program will continue providing high-quality energy audits, direct installations of energy efficiency hardware, and financial incentives and rebates through the existing local providers (DNV GL and Community Energy Services



Corporation). The City works to enhance EBEW's outreach through Oakland-focused campaigns and by connecting EBEW service providers to local business outlets, such as the Chamber of Commerce and the Business Improvement Districts.

**Costs:** Committed Resources: 12 hours staff time per year  
Resources Required: 12 hours staff time per year  
Cost Total: \$2,000 annually

## **BE-22 Conduct a Multi-Family Affordable Housing Retrofit Pilot**

(PA 12) Create an energy retrofit pilot program targeting multi-family affordable housing by providing funds to reduce risk and enable the acquisition of private investment capital to implement energy savings projects, supported by ARRA funding.

**Description:** This innovative pilot program will provide forgivable loan funds to be repaid from anticipated energy savings to reduce risk and encourage investment of private capital in multi-family affordable housing energy retrofits. Reduced risk is expected to encourage private capital investment which, when combined with other existing incentives, will support new energy retrofits of multi-family affordable housing properties.

This pilot program will move forward with anticipated funding from a CEC State Energy Program grant. Oakland partnered on a proposal with the San Francisco Mayor's Office of Housing to develop and launch this pilot program. The program will foster energy retrofits of an estimated 400 units in Oakland by the close of 2012, improving average energy efficiency of participating units by approximately 20%. In the process, the City will participate in State and regional efforts to develop programs and protocols for implementing and evaluating energy retrofits in multi-family housing.

**Responsibility:** Housing and Community Development, Environmental Services

**Fully Underway:** The pilot Bay Area Multifamily Fund, an energy upgrade and lending program, was carried out in San Francisco and Oakland in 2010-2012. The program was designed to work in conjunction with the ARRA WAP programs in both cities (see BE-23) and was successful in establishing the state's first multifamily performance-based energy efficiency program. It identified significant energy efficiency upgrade opportunities in affordable multifamily properties in both cities. However, only one Oakland property (comprising 98 units) participated in the full program, and the pilot was not continued. The participating property received nearly \$400,000 in funding through the pilot, and retrofits were expected to yield an annual energy utility bill savings of \$65,469.

The City is a participant in the Bay Area Multifamily Building Enhancements Program (BAMBE), a BayREN program that has served a total of 166 buildings as of February 2017. BAMBE provides incentives of \$750 per unit for multifamily buildings (with no income requirements) that complete energy upgrades yielding at least 10% overall energy savings. A related pilot, the Bay Area Multifamily Capital Advance Program (BAMCAP), provides low-cost financing for multifamily building upgrades. Implemented locally by StopWaste, BAMCAP launched in 2014 and engages local lenders to test whether loan buy-downs can expand the scope of planned but limited energy upgrade projects or facilitate projects that otherwise would not occur. The program provides up to \$5,000/unit or \$500,000/project. To date, the pilot has five participating lenders; four multifamily projects have closed, and another two are in the pipeline. Finally, the California Youth Energy Services program (CYES), offered to Oaklanders every summer through the East Bay Energy Watch program, focuses on energy efficiency and water conservation services, and serves primarily low-income residents and renters, including those in multifamily buildings.

**Costs:** Committed Resources: 20 hours staff time per year  
Resources Required: 20 hours staff time per year  
Cost Total: \$3,000 annually



**BE-23. Expand Weatherization Program Delivery**

(PA 13) Augment delivery of the existing federal Weatherization Assistance Program with supplemental ARRA funds designated for retrofitting additional homes in Oakland over the next three years.

**Description:** The City will expand the number of homes in Oakland receiving energy- and cost-saving weatherization services during the next three years. Several hundred low-income homes already receive Program (WAP) as well as targeted PG&E programs. The American Recovery and Reinvestment Act has recently made approximately \$1.6 million of additional funding available to Oakland through 2012 for weatherization services. These funds will be used to enhance and expand delivery of weatherization services to implement energy retrofits of approximately 250 multi-family and single family homes occupied by low-income households.

Weatherization services currently offered through existing WAP programs administered by Spectrum Community Services, Inc. and the Low Income Energy Efficiency program administered by PG&E will also continue to operate.

**Responsibility:** Housing and Community Development

**Complete:** In 2010, the City received over \$4 million in ARRA Weatherization Assistance Program (WAP) funding to provide weatherization to low-income households in Alameda County. When the program concluded in 2012, 1,146 housing units occupied by low-income households had been weatherized and an additional 414 households had received diagnostic testing and client education, for a total of 1,560 households served countywide; 74 percent of these, or 1,154 units, were in Oakland. The City ultimately completed nearly 3 times the number of units originally projected, and the program created 55,000 job hours for local residents. The 13 multifamily weatherization projects completed in Oakland alone are projected to reduce carbon dioxide emissions by over 600 metric tons per year. Over the lifetime of the improvements, the projected reduction is 8,000 metric tons of CO<sub>2</sub> emissions, the equivalent of taking 1,571 cars off the road for a year.

**Costs:** Committed Resources: \$4,000,000  
Resources Required: None  
Cost Total: \$4,000,000

**BE-29 Encourage PG&E to Offer Green Power Options**

(PA 51) Negotiate with PG&E to offer green power options to local customers.

**Description:** The City will seek resources to participate in collaborative efforts aimed at encouraging PG&E to offer green power options to local customers. The City will engage directly with PG&E and encourage PG&E to make meaningful local green power offerings available on a voluntary basis. In addition, the City will participate in the public comment process of the California Public Utilities Commission (CPUC), encouraging California utilities to offer green power options to all of their customers.

**Responsibility:** Environmental Services

**Complete:** The City is participating in the Alameda County's Community Choice Aggregation program, known as East Bay Community Energy, which is expected to launch in Spring 2018. That program will increase the green power options for local residents. The City continues to be supportive of proposals to increase the renewable mix in PG&E energy.

**Costs:** Committed Resources: 10 hours staff time  
Resources Required: None  
Cost Total: \$2,000

**BE-30 Monitor Community Choice Energy**

(PA 52) Continue to monitor the feasibility and utility of implementing community choice energy aggregation (CCA) in Oakland.

- Description:** The City will continue to monitor the feasibility and utility of implementing a CCA program in Oakland, and will seek resources to enable additional analysis of CCA if warranted. CCA may offer a powerful tool for increasing the renewable energy content of electricity consumed in Oakland. However, a number of technical, financial, legal and political issues must be addressed before moving any CCA proposal forward. New information is likely to be gained from observing early CCA efforts underway in Marin County and San Francisco. If CCA is demonstrated as a successful model, the City will revisit program design and needed resources under revised objectives. The City encourages continued study of this issue by other partners.
- Responsibility:** Environmental Services, Finance
- Complete:** The City is participating in the Alameda County's Community Choice Aggregation program, known as East Bay Community Energy, expected to launch in Spring 2018.
- Costs:** Committed Resources: 1,000 hours staff time  
Resources Required: 0.10 FTE per year  
Cost Total: \$200,000 plus \$30,000 annually

**BE-32 Create an Oakland-Specific Water-Efficient Landscaping Ordinance**

(PA 15) Create an Oakland-specific Water Efficient Landscape Ordinance (WELO) to address water conservation.

- Description:** Oakland City Council passed the Civic Bay Friendly Landscape Ordinance in 2009 to require water efficiency in all public landscaping projects. The ordinance provides citywide standards for public space that ensure stormwater retention and water conservation features are incorporated into landscaping. The Oakland-specific WELO will be designed to implement California's new model WELO and align with Bay Friendly Landscaping Guidelines.
- Responsibility:** Planning and Building Department - Strategic Planning
- Fully Underway:** The City follows the State WELO for private developments, reports regularly on compliance and progress directly to the State.
- Costs:** Committed Resources: 100 hours staff time plus 4 hours per year  
Resources Required: None  
Cost Total: \$13,000 plus \$550 annually

**BE-43 Improve Energy Performance of New City Facilities**

(PA 17) Modify the City's Civic Green Building Ordinance to increase energy efficiency standards for new construction and major renovation of City facilities.

- Description:** The City will modify energy efficiency requirements within the Civic Green Building Ordinance to increase energy efficiency for new construction and major renovations of municipal facilities. Enhanced requirements may include controls for limiting demand for electricity and natural gas during periods of high pricing or low power availability.
- Responsibility:** Environmental Services
- Fully Underway:** The Civic Green Building Ordinance requires higher levels of energy efficiency in all new construction. Additional projects occur as opportunities arise to improve performance. The City has also created a Standard Operating Procedure (SOP) for all city facilities, which includes a requirement to either construct new facilities as zero-net energy, or to explicitly justify why zero-net energy cannot be achieved. In 2016, Oakland voters passed Measure KK, which provided an

additional \$20 million for improvements to seismic, water, and energy systems in municipal buildings.

**Costs:** Committed Resources: 1.5 FTE per year plus \$150,000 per year  
Resources Required: None  
Cost Total: \$465,000 annually

**BE-46 Upgrade to Energy-Efficient Streetlights**



Replace streetlights with energy-efficient advanced technology models in all appropriate locations during the course of normal technology replacement schedules.

**Description:** The City will replace all cobra-head streetlights with advanced technologies where feasible and as funds are available improve energy efficiency, reduce operating costs, and improve light quality.

**Responsibility:** Oakland Public Works - Electrical Services Division

**Complete:** Approved by Council in 2013, the City finished converting all 30,500 high-pressure sodium cobra-head street lights to more energy-efficient, US-made LEDs in June of 2014. The new streetlights save the City an estimated \$1.4 million in annual energy costs. With a total project cost of \$15 million, project financing is being repaid entirely through PG&E rebates and energy savings. In addition to enhancing public safety with better light quality, the new fixtures use half the energy and have a longer lifespan than the old technology, thereby reducing maintenance and utility costs. The change eliminated over 400 metric tons of CO2 per year through energy efficiency alone.

**Costs:** Committed Resources: \$15,700,000  
Resources Required: None  
Cost Total: \$15,700,000

**BE-47 Provide City Employee Staff Training on Climate Issues.**



Develop and provide training to City employees on targeted energy and climate issues.

**Description:** To extend the benefits of the City's climate efforts and improve cross-departmental coordinate on sustainability issues, the City will continue to provide staff with cutting-edge trainings through the Environmental Lecture Series (ELS) to assist staff in better recognizing and understanding that the choices they make impact the quality of our environment, including climate change. The lectures will combine forty-five minute presentations and fifteen minute discussions about various sustainability issues including climate protection. Presentations will be provided by sustainability experts including staff and outside experts.

**Responsibility:** Environmental Services Division

**Fully Underway:** The City has conducted the ELS since 1998 on the first Wednesday of each month from October through June. Over 100 lectures have been provided to date. Topics addressed have include water and energy efficiency, and pollution, alternative vehicle technologies, policy and planning issues, and waste reduction. The target audience is City and Port staff, and average lecture attendance is 50-60 participants per month.

**Costs:** 132 hours staff time per year plus \$5,000 in materials  
Cost Total: \$23,000 annually

## Material Consumption and Waste

The following priority actions have been implemented or are fully underway. Some were completed as one-time actions, while others will require ongoing investment. Although funds have already been allocated, implementation of these Material Consumption and Waste priority actions will cost an average of 6 FTE per year and \$4.52 million for expenses throughout the next three years.

### MW-1 Restructure Solid Waste Management System

(PA 19) Restructure Oakland's municipal code, garbage franchise agreement, and residential recycling service contracts and rates structure to provide comprehensive incentives for residents, businesses, and collections service providers to reduce waste.

**Description:** The City has the ability to foster significant progress toward its Zero Waste goals and reduce GHG emissions in how it structures Oakland's solid waste management system, which includes the municipal code, rate structure, and agreements for collection, processing, and landfill. The system it designs can provide comprehensive incentives for residents, businesses, and collection service providers to compost and recycle more and reduce waste. These changes will help Oakland comply with anticipated future statewide mandatory recycling requirements.

**Responsibility:** Environmental Services

**Complete:** On July 1, 2015, Oakland launched new trash, compost, and recycling collection services for residents and businesses under new contracts with Waste Management of Alameda County (WMAC) and California Waste Solutions. New services include compost collection at multi-family buildings, bulky item collection and recycling for all residents, illegal dumping cleanup, more choices of compost and recycling cart sizes, and ongoing zero waste outreach. The contracts advance Oakland each year toward its Zero Waste goal to keep all recyclable and compostable material out of landfills through progressive annual diversion requirements. New recycling and material processing facilities, including a composting facility at the Altamont Landfill in Livermore to be completed and operational in 2017, will divert discards from landfill. With this new facility, the first in Alameda County, Oakland's organic materials will be locally composted for the first time. All diesel-powered collection trucks used in Oakland under the former contracts, approximately 140 vehicles, have been replaced by low-emissions natural gas-powered trucks. Most of these trucks use locally produced natural gas made from landfill methane.

Continuous promotion of participation in the bulky pick-up services provided under the franchise agreement with WMAC and in residential and commercial waste diversion services is still needed.

**Costs:** Committed Resources: 3.8 FTE per year for 4 years plus \$1,700,000 of expenses  
Resources Required: 4.5 FTE per year plus \$225,000  
Cost Total: \$4,235,000 plus \$690,000 annually



## MW-2 Refine Implementation of C&D Recycling Ordinance

(PA 20) Refine implementation of Oakland’s Construction and Demolition (C&D) Debris Waste Reduction & Recycling Ordinance (OMC 15.34) to capture greater amounts of materials for reuse, recycling, and composting.

**Description:** Following an exercise to identify opportunities for improving implementation of the City’s C&D Debris Recycling Ordinance, City staff implemented enhanced online submission of data, tracking, and evaluation. More effective implementation helps to capture greater amounts of materials for reuse, recycling, and composting. Potential adjustments include improving administrative procedures, creating new or enhanced data management systems, and increasing internal training and outreach. Additional improvements may be aimed at broadening the definition of “affected projects,” raising the diversion requirements for affected projects, and identifying and implementing creative incentive programs.



Photo: Matt Southworth

**Responsibility:** Building Services and Permit Center, Environmental Services

**Fully Underway:** The City has successfully improved administrative procedures, enhanced data management systems, and increased internal training and outreach to affected projects. Additionally, the Residential Green Building Ordinance (see Completed Action BE-1) includes verification requirements for proper C&D recycling. The City continues to make database modifications to improve program analysis of C&D Debris Recycling Ordinance implementation.

**Costs:**  
Committed Resources: 0.05 FTE per year for 4 years  
Resources Required: 0.15 FTE per year  
Cost Total: \$60,000 plus \$45,000 annually

## MW-3 Promote Waste Reduction at Community Events

(PA 21) Require development and implementation of waste reduction and recycling plans for all large venues and public events.

**Description:** The City will require waste reduction and recycling/composting plans as part of the event permitting process, and require recycling in agreements for City facility rentals. The City will develop and implement waste reduction and recycling plans for City-sponsored events. The City uses an event recycling guide and model contract to assist event producers and venue managers in complying with State law on large event/venue recycling, and provides technical assistance for compliance and event recycling equipment where appropriate. The City requires waste reduction and recycling/composting plans as part of event permitting.



**Responsibility:** Environmental Services

**Fully Underway:** The City coordinates zero-waste, City-sponsored events, including the annual Art & Soul Festival and Bike-to-Work Day events. The City uses its event permitting system to require recycling and composting at permitted events, provides technical assistance to event producers on request, and lends collection containers for recycling and compost collection.

**Costs:** Committed Resources: 0.10 FTE per year  
Resources Required: 0.10 FTE per year  
Cost Total: \$17,000 annually

#### **MW-4 Enforce Mandatory Recycling**

(PA 53) Enforce mandatory recycling and/or bans on the use, sale, or disposal of certain product types.

**Description:** The City will seek funds as necessary to enforce future mandatory recycling requirements or bans on the use, sale, or disposal of certain product types. It is anticipated that the State of California may mandate commercial recycling in the future, and that local governments would have a role in the enforcement of such mandates.

**Fully Underway:** The trash, compost, and recycling collection services for residents and businesses, under new contracts with Waste Management of Alameda County and California Waste Solutions, launched in July 2015 and now provide services ensuring that businesses and multi-family residential properties have the services necessary to meet current and anticipated future Alameda County and State of California recycling mandates. The City requires recycling space calculations to be completed for development projects. The City banned restaurants from using expanded polystyrene take-out containers in 2006. Alameda County banned the use of single-use plastic carry-out bags by retailers in 2013, and will extend the ban to restaurants on May 1, 2017.

**Responsibility:** Environmental Services, Building Services (Code Compliance)

**Resource Needs:** Committed Resources: 0.1 FTE per year  
Resources Required: 0.2 FTE per year  
Cost Total: \$43,000 annually

#### **MW-5 Conduct Residential Social Marketing Campaigns and Business Outreach**

(PA 54) Conduct new residential social marketing campaigns and increased outreach to businesses and other institutions regarding waste reduction and recycling programs.

**Description:** The City will seek resources to conduct new residential social marketing campaigns and increased outreach to businesses and other institutions to improve participation in available waste reduction and recycling programs. Reduction of material consumption and waste requires long-term behavioral change in purchasing and discard decisions. Outreach and marketing efforts to that end will require a sustained effort to connect participants to the social good of recycling and waste reduction. The City will coordinate with StopWaste.Org to leverage resources.

**Responsibility:** Environmental Services

**Fully Underway:** The City and its contractors have undertaken residential and commercial social marketing campaigns to promote recycling, compost, and bulky collection services, as well as in energy efficiency and renewable energy, led by the City's Environmental Services Division. The recycling and compost campaigns are conducted regularly as part of the City's Zero Waste efforts. Energy-related campaigns have been carried out in conjunction with specific programs including the City's ARRA-funded Oakland Shines program (see BE-12), and as part of regional programs such as SunShares, a regional solar power and electric vehicle group purchasing campaign, and the Bay Area Multifamily Building Enhancements Program (see BE-22).

**Costs:** Committed Resources: 1.5 FTE per year for 4 years  
Resources Required: 3.5 FTE per year

Cost Total: \$1,200,000 plus \$690,000 annually

### **MW-17 Develop Regulations Enabling Urban Food Production**

(PA 22) Develop regulations that allow for the use of urban land for food production.

**Description:** The City will study options and develop new regulations to better allow for and regulate urban agriculture in small scale forms, civic/community gardens, and industrial forms on urban land. This analysis will explore a variety of mechanisms to enable increased local food production. Consideration will be given to issues such as soil toxicity, water access and security. The City will collaborate with the Alameda County Health Department on this effort.



**Responsibility:** Planning and Building Department - Strategic Planning, Economic Development

**Complete:** Revised Urban Food provisions were added to the City's Zoning Ordinance in 2014, expanding opportunities for food production on urban lands. The regulations allow limited seasonal sales of produce from community gardens while prohibiting heavy machinery. The code amendments created two new land use designations: "Limited Agriculture" and "Extensive Agriculture" to replace the "Crop and Animal Raising" designation. The areas within "Limited Agriculture" zones may cultivate produce and keep three or fewer bee hives, allowing small-scale commercial crop growing and bee keeping. The areas within the "Extensive Agriculture" zone are permitted to keep animals and to keep more than three bee hives. The definition of a "Home Occupation," an area that shares the same lot as a living space, was also changed to allow small-scale beekeeping.

**Costs:** Committed Resources: 750 hours staff time  
Resources Required: None  
Cost Total: \$100,000

## Chapter 5

# Achieving a 36% Reduction in GHG Emissions: The 2020 Plan

Over 150 separate actions are recommended for implementation by the City by 2020. These actions will help to put Oakland in position to achieve a 36% reduction in GHG emissions from 2005 levels in each of the three primary GHG reduction categories (Transportation & Land Use, Building Energy Use, and Material Consumption & Waste) by 2020, and build resilience and climate equity throughout Oakland's diverse community. Most of the actions in the ECAP will require new resources to move forward.

**This chapter includes all actions recommended for implementation to achieve a 36% reduction in GHG emissions. Actions recommended for priority implementation in Chapter 4 are included here, along with remaining actions needed to achieve the 2020 target.**

As in Chapter 4, recommended actions are grouped into the three primary GHG reduction categories, along with a set of highlighted community engagement recommendations, and steps to assist Oakland in adapting to climate change, in the following order:

- Transportation & Land Use
- Building Energy Use
- Material Consumption & Waste
- Community Engagement
- Climate Adaptation & Increasing Resilience

In this chapter, the full list of actions recommended for implementation by 2020 is organized by thematic strategy. Targets have also been identified for key performance metrics, translating the 36% GHG reduction goal into a series of performance targets.

Further information regarding implementation coordination, monitoring, reporting, and evaluation is included in Chapter 2.

# Actions to Achieve a 36% GHG Reduction

Many actions beyond those considered Priority (see Chapter 4) will need to be implemented to achieve a 36% reduction in GHG emissions by 2020.

The following pages summarize the actions envisioned for implementation by 2020 to achieve Oakland's GHG reduction goal. This list was updated in 2017 concurrent with the final 3 Year Priority Implementation Plan.

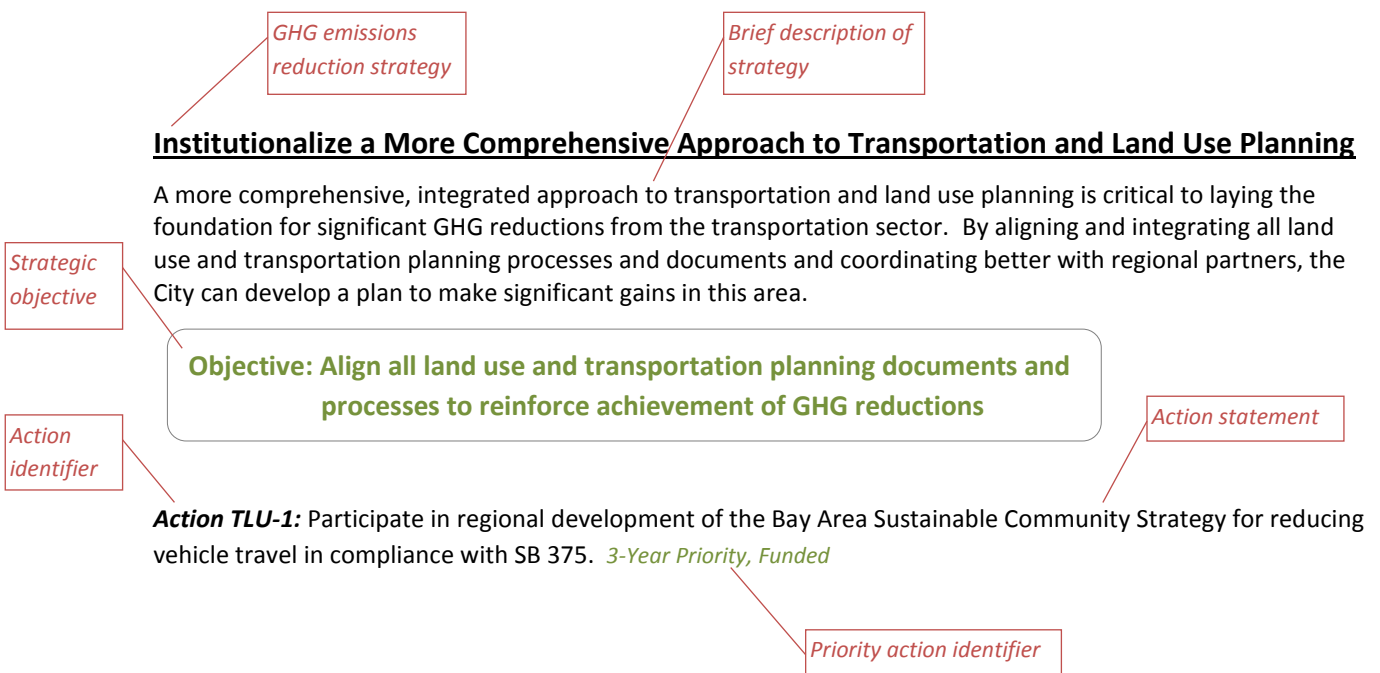
As is the case for actions recommended for priority implementation, existing resources are likely to be sufficient to enable implementation of some of the remaining actions on the 2020 list during the period of 2014-2020. Most actions in this chapter, however, will require new resources to move forward.

The City has benefitted from observing actions implemented during the first years of ECAP implementation, and will have the opportunity to learn more to improve plans going forward. Successful programs might be continued and expanded, while unsuccessful actions might be dropped or reconfigured for success. Other unforeseen changes in the world (e.g., technological advancements, energy price changes, economic growth rates, new climate models) also have the potential to spur adjustment of ongoing plans.

Actions listed in this chapter are expected to help Oakland achieve a 36% reduction in GHG emissions by 2020 and put Oakland on a strong path toward achieving strong climate action post 2020.

## How to Read This Chapter

Each action below is presented through a standard format containing each of the following elements.





## Transportation and Land Use

Combustion of fossil fuels, as well as biofuels, for transportation is a major source of GHG emissions. Transportation includes people moving to and from home, work, school, shopping, recreation, and other destinations, as well as the transport of goods. Other local air pollutants linked to increased incidence of health problems such as asthma, heart disease, and cancer, many of which disproportionately affect Oakland's low income and vulnerable populations, are attributable use of transportation fuels.

Addressing transportation emissions presents a tremendous opportunity to simultaneously reduce GHG emissions, and improve the health and safety of Oakland residents, while reducing dependence on foreign oil and local vulnerability to energy price fluctuations. Efforts to reduce GHG emissions from the transportation sector also present opportunities to create a more equitable, sustainable, affordable, and healthy Oakland, by addressing the interconnections between land use and transportation. How and where housing, jobs, shopping, and other land uses and activities are located has a fundamental effect on both GHG emissions and the options people have for meeting their daily needs.



Achieving a 36% reduction in GHG emissions associated with Transportation and Land Use will require unprecedented local action, including **reducing citywide driving by 20% and improving citywide vehicle fuel efficiency**. A number of strategies are available through which the City can help to reduce GHG emissions associated with Transportation and Land Use.

### Key GHG Reduction Strategies:

- Institutionalize a More Comprehensive Approach to Transportation & Land Use Planning
- Advance Infill, Mixed-Use, and Transit-Oriented Development
- Advance the Use of Alternative Transportation
- Refine Parking Policies to Encourage Low-Carbon Mobility
- Foster the Use of Low-Carbon Vehicles and Fuels
- Engage the Port of Oakland and Related Industry in Reducing GHG Emissions
- Reduce Emissions Associated with City Operations

### Develop Oakland's Urban Forest

Achieving the 2020 goal of reducing GHG emissions associated with Transportation and Land Use by 36% will require significant action in all of these areas. All members of the Oakland community, including residents, businesses, visitors, and the City, will need to make daily decisions to reduce the need for automobile trips. When purchasing new vehicles, members of the community will also need to prioritize fuel efficiency in their decisions wherever possible.

#### Transportation and Land Use 2020 Goals:

- 20 % reduction in vehicle miles traveled
- 24 million gallons of gasoline and diesel saved on local roads
- Fully integrated transportation and land use planning

## Strategies to Achieve 2020 Goals

### **Institutionalize a More Comprehensive Approach to Transportation and Land Use Planning**

A more comprehensive approach to transportation and land use planning is critical to laying the foundation for significant GHG reductions from the transportation sector. Because transit infrastructure can require substantial investment and have a profound impact on other land use and development decisions, proactive and integrated planning is key to creating the infrastructure and guiding development in a manner that will reduce the need to drive in Oakland. By aligning and integrating all land use and transportation planning processes and documents, and increasing coordination with regional partners, the City can develop a plan to make significant gains in this area.

**Objective: Align all land use and transportation planning documents and processes to reinforce achievement of GHG reductions**

**Action TLU-1:** Participate in regional development of the Bay Area Sustainable Community Strategy for reducing vehicle travel in compliance with SB 375, including defining Oakland’s role in achieving regional jobs-housing balance and land use and transportation system integration, and advocate for infrastructure funding to be provided. *Complete/ Fully Underway*

**Action TLU-2:** Prepare a comprehensive, integrated Oakland Transportation Plan in close collaboration with regional agencies, local service providers, and the community. *3-Year Priority, Resources Needed*

**Action TLU-3:** Require the integration of land use and transportation planning and consideration of GHG reduction opportunities in every planning, major project, and redevelopment effort undertaken by the City. *3-Year Priority, Resources Needed*

**Action TLU-4:** Identify opportunities to adjust the structure, function, and/or composition of the Planning Commission to advance integrated consideration of transportation and land use planning issues.

**Action TLU-5:** Prioritize GHG reduction opportunities in the City’s ongoing Zoning Update process.

### **Advance Infill, Mixed-Use and Transit-Oriented Development**

Well designed, transit-oriented, dense, mixed-use, development providing access to goods and services can significantly reduce the use of fossil-fuel powered transportation. Reducing automobile trips can significantly reduce GHG emissions, local air pollution, and related health impacts, and improve neighborhood quality of life.

**Objective: Plan new development to minimize dependence on fossil fuel-powered transportation**

**Action TLU-6:** Obtain Priority Development Area status from the Association of Bay Area Governments for all appropriate areas of Oakland to enable more competitive eligibility for local transportation and infrastructure funding. *3-Year Priority, Funded*

**Action TLU-7:** Adopt a transportation impact fee to support new local low-carbon transportation infrastructure and planning. *3-Year Priority, Resources Needed*

**Action TLU-8:** Develop and require transit-oriented development performance criteria for all major new development plans and projects throughout the city, addressing vehicle miles traveled and mode share and emphasizing development proximate to transit hubs and corridors of all modes.

**Action TLU-9:** Actively promote the construction of housing at a range of price levels near transit hubs and corridors in balance with local employment opportunities to meet the needs of Oakland’s workforce, and study adoption of a transit-oriented development affordability policy, including preservation of existing affordability. *3-Year Priority, Resources Needed*

**Action TLU-10:** Develop a comprehensive infrastructure plan (e.g., utilities, sewer, water, storm drains) to support Oakland’s capacity to absorb planned infill development and to enable new green infrastructure and climate-related improvement (e.g., vegetated swales, recycled water, solar technology installation).

**Action TLU-11:** Engage the community, through the zoning update process and other appropriate mechanisms, to develop a strategy for increasing density adjacent to transit in ways that improve neighborhood livability. For example, update design review standards for high-density multi-family buildings, encouraging design that is aesthetically pleasing, highly functional, and practical. Insist on the creation of vibrant, safe, and attractive public spaces as a part of every development. *3-Year Priority, Resources Needed*

**Action TLU-12:** Engage the lending community on a shared strategy to improve the financial attractiveness of infill development in Oakland.

## **Advance the Use of Low-Carbon Transportation Modes**

To achieve significant GHG reductions, transportation modes such as transit, bicycling and walking must increasingly become the preferred mode of moving about the city. To be effective, these modes must be available, accessible, safe, cost-competitive, and desirable relative to private automobiles.

### **Objective: Make transit, biking, and walking the preferred modes for local trips**

**Action TLU-13:** Launch and sustain a downtown free shuttle to increase the ease of transit use in the downtown area. Explore options to expand the shuttle route along the Broadway corridor. *3-Year Priority, Funded*

**Action TLU-14:** Support bus rapid transit in Oakland along the Telegraph Avenue and International Boulevard corridors while minimizing short-term potential impacts to neighborhoods and businesses. *3-Year Priority, Funded*

**Action TLU-15:** Update the process for evaluating local environmental impacts resulting from new development (as required by the California Environmental Quality Act) to prioritize consideration of vehicle miles traveled impacts above congestion impacts. *Complete / Fully Underway*

**Action TLU-16:** Accelerate the completion of bicycle and pedestrian networks as described in the Bicycle and Pedestrian Master Plans and other General Plan policies to provide safe, healthy transportation choices for all residents. *3-Year Priority, Resources Needed*

**Action TLU-17:** Optimize the design of streets to support transit, bicycling and walking (e.g., via bulb outs, traffic signal synchronization, transit and emergency signal priority). *3-Year Priority, Resources Needed*

**Action TLU-18:** Encourage and assist employers and transportation funding agencies to offer support for alternative transportation strategies that can help reduce the need to drive. These strategies may include transit incentive programs (e.g., AC Transit Easy Pass), enabling telecommuting, flexible schedules, rideshare and car share programs, fuel-efficient workplace vehicles, youth bus passes, and enhanced bicycle access in order to reduce the need for employees to drive.

**Action TLU-19:** Collaborate with regional partners (e.g., AC Transit, BART, shuttles, train, taxis, ferry) to expand and enhance public transit service, interconnections, vehicle amenities, and associated facilities (e.g., smaller transit shuttles to



underserved areas of the community, connection timing). *3-Year Priority, Resources Needed*

**Action TLU-20:** Explore opportunities to implement major transit investments (e.g., streetcar) on the primary trunk lines of the city to improve the availability and reliability of transit service in areas where urban densities and activity centers exist.

**Action TLU-21:** Collaborate with community partners in developing and providing sustained community outreach and marketing about all available alternative transportation options (e.g., walking, biking, Safe Routes to School, car share programs, “Translink”).

**Action TLU-22:** Partner with 511.org and the city's largest employers, event venues, and other destinations to ensure that employees and visitors to Oakland have full information about the transportation choices.

**Action TLU-23:** Partner with and promote community based organizations that provide knowledge and skills such as bicycle safety training, transit system use, etc. to help Oakland residents shift trips to non-auto modes. *Complete / Fully Underway*

**Action TLU-24:** Encourage the creation of local bike sharing programs. *Complete / Fully Underway*

**Action TLU-25:** Explore potential strategies for increasing the availability of car share vehicles throughout the city (e.g., consider providing priority car share locations in high trafficked areas to car share companies willing to make car share vehicles available and accessible in less trafficked or underserved areas). *3-Year Priority, Resources Needed*

**Action TLU-26:** Enforce transportation demand management measures that are physically built into projects (e.g., car sharing spots, bike parking and showers, pedestrian-oriented elements).

**Action TLU-27:** Explore and revise City policies that make transit service difficult (e.g., analyze the true effect of transit on commercial districts, provide potential parking meter revenue if meters are removed), and consider transit-only lanes and amenities on significant thoroughfares.



## **Refine Parking Policies to Encourage Low-Carbon Mobility**

Parking policies and pricing can have a significant impact on local transportation choices, especially in areas served by other transportation options such as public transit. Parking policies and pricing can be tailored to meet the needs of the Oakland community while fostering shifts from automobile use to other transportation modes. Parking pricing can also be used to support the development of alternative transportation options and other community benefits.

### **Objective: Meet parking needs while creating disincentives to drive**

**Action TLU-28:** Develop regulations that would permit parking requirements to be met through alternative approaches demonstrated to reduce parking demand and GHG emissions (e.g., on-site car-sharing, bicycle parking, transit passes). *3-Year Priority, Funded*

**Action TLU-29:** Conduct a citywide dynamic parking pricing study and develop a strategy to set parking rates at City meters and garages that can reduce trips, favor transit, provide adequate parking supply, encourage economic development, and fund alternative transportation and neighborhood streetscape improvements. *Complete / Fully Underway*



**Action TLU-30:** Impose parking maximums on new development and assist developers, lenders, property owners, and tenants in preparing strategies to minimize parking demand and encourage shifts to transit and other transportation modes. *3-Year Priority, Resources Needed*

**Action TLU-31:** Develop a strategy to facilitate unbundling of the costs of renting parking from renting building space, where appropriate, to more explicitly charge for parking.

**Action TLU-32:** Review the process of establishing residential permit parking and consider opportunities to expand this program in appropriate locations.

### **Foster the Use of Low Carbon Vehicles and Fuels**

A portion of transportation in the city will continue to be accomplished through the use of gasoline and diesel-powered automobiles. Improving vehicle fuel efficiency through purchasing decisions and maintenance activities and utilizing low carbon fuels (e.g., biodiesel from waste oils) can help to reduce GHG emissions associated with these vehicle trips.

**Objective: Increase representation of low-carbon fuels and vehicles in the citywide fleet**

**Action TLU-33:** Participate in regional electric vehicle infrastructure planning and develop new processes to support local use of electric vehicles. *3-Year Priority, Funded*

**Action TLU-34:** Collaborate with community partners to develop and provide sustained community outreach and marketing about fuel-efficient vehicles and low carbon fuels (e.g., biodiesels from waste oils).

**Action TLU-35:** Encourage the responsible local manufacture and production of low-carbon fuels (e.g., biofuels produced from recycled waste oil) through incentives and/or promotional support.

**Action TLU-36:** Work with large fleet operators such as taxi companies, along with the City's own fleet, to establish minimum GHG performance criteria for all new fleet vehicles and fleet-wide GHG performance goals.

**Action TLU-37:** Consider regulating the use of certain fuel-powered leaf blowers.



### **Engage the Port of Oakland and Related Industry in Reducing GHG Emissions**

As a primary hub of goods movement, activities associated with the Port of Oakland and its tenants are a significant source of GHG emissions and other local air pollution. Oakland is fortunate to reap economic and employment benefits from its Port, but is also troubled with high levels of local air pollution and other problems created by this concentration of goods movement.

GHG emissions associated with the Port and its tenants include emissions associated with building energy consumption, Port-owned vehicles and equipment, harbor craft, cargo handling equipment, berthed vessels, trucks and





trains operating within Port property and within Oakland’s boundaries, and other stationary sources. Tenant activities create additional GHG emissions outside of Oakland in the form of fuel used to power airplanes, trucks, trains, and marine vessels. Emissions associated with these planes and vessels generally fall under the regulatory authority of the Federal Aviation Administration, the International Maritime Association, or State and Federal government. However, Oakland can help to reduce emissions associated with these sources through actions that reduce material consumption and waste, as described in Chapters 4 and 5. See the ECAP Appendix for further information on GHG emission sources related to the Port and its tenants.

Short of incorporating GHG reduction actions and/or performance requirements applicable to the Port of Oakland within the City’s General Plan, the City’s ability to influence these emission sources is generally limited. However, it is in the collective best interests of the City and the Port to continue collaborating to explore opportunities to reduce emissions associated with the Port and its tenants. The Port has a significant opportunity to play a leadership role in addressing local sources of GHG emissions and other air pollutants.

The Port has taken a number of steps in recent years to reduce emissions associated with Port operations and on-site tenant activities, including installing infrastructure for alternative fuel vehicles, advancing shoreside electrification for tenant vessels, retrofitting facilities, and installing solar energy systems. Many opportunities for additional progress remain, as indicated by measures contained in the Port’s Maritime Air Quality Improvement Plan that would reduce GHG emissions.

**Objective: Reduce GHG emissions associated with the Port of Oakland and its tenants**

**Action TLU-38:** Call upon the Port to establish GHG reduction goals associated with Port operations in alignment with the City’s GHG reduction target of 36% below 2005 emissions by 2020, and plans for achieving those goals. *Complete / Fully Underway*

**Action TLU-39:** Call upon the Port to establish GHG inventories and reduction goals associated with tenant activities, and plans for achieving those goals with appropriate tenant commitments, potentially including requiring specific high-impact GHG reduction measures (e.g., electrification of land-based, aviation and maritime vessels). *3-Year Priority, Resources needed*

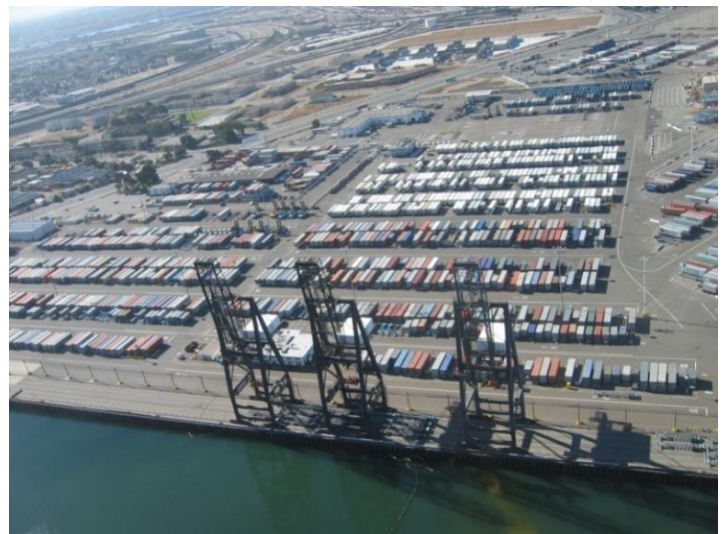
**Action TLU-40:** Offer to partner with the Port, where appropriate, in evaluating and developing GHG reduction strategies.

**Action TLU-41:** Collaborate with the Port to advocate that Port tenants be required to implement actions at Oakland’s ports in demonstrating compliance with statewide fleet emissions reduction targets (e.g., through electrification of docked vessels).

**Action TLU-42:** Conduct a study of potential options to implement truck re-routing in Oakland to reduce driving and parking of diesel trucks near residential neighborhoods, as well as increased enforcement of anti-idling restrictions.

**Action TLU-43:** Make land use and planning decisions (e.g., plans for the former Army Base) in a manner that minimizes GHG emissions and other air pollutants associated with the Port and related activities and travel without unduly compromising the economic value of the Port.

**Action TLU-44:** Identify opportunities to incorporate GHG reduction actions and/or performance requirements applicable to the Port of Oakland within updates to the City’s General Plan.



## **Grow Oakland's Urban Forest**

Urban forestry can be both an effective GHG mitigation and climate adaptation strategy. Trees provide important benefits in helping to directly and indirectly cool nearby buildings, reducing energy demand. Tree canopies also help to reduce the urban heat island effect, reducing temperatures throughout the city and helping to mitigate air quality and health problems caused by extreme heat events. Urban forests can also help to provide animal habitat, create economic development benefits in commercial districts, and improve quality of life. However, urban forests require thoughtful and resourced management. Trees must be planted carefully with consideration of infrastructure, public safety and maintenance and other sustainability impacts. The development and maintenance of the urban forest requires an effective public-private partnership.



### **Objective: Develop Oakland's urban forest throughout the city**

**Action TLU-45:** Develop an urban forestry master plan outlining how the City will protect, develop and maintain diversified and appropriate tree plantings on City right-of-ways. *3-Year Priority, Resources Needed*

**Action TLU-46:** Develop a robust urban tree inventory of all trees in proximity to sidewalks, medians, public buildings, parks and other public right-of-ways. *3-Year Priority, Resources Needed*

**Action TLU-47:** Revise the City Street Trees and Shrubs Ordinance (Municipal Code 12.32) and the Protected Trees Ordinance (Municipal Code 12.36) to : include the provision of preventative maintenance and management of trees in City right-of-ways, ensure the continued health of all parks and forested land within the city, encourage tree planting on private land throughout the community, and include effective enforcement provisions. *3-Year Priority, Resources Needed*

**Action TLU-48:** Implement a street tree planting pilot project with local partners utilizing advanced planting techniques. *3-Year Priority, Resources Needed*

**Action TLU-49:** Develop a plan to ensure the continued health of all parks and forested land within the city and encourage tree planting on private land throughout the community.

**Action TLU-50:** Convene community workshops to educate community members on proper tree maintenance.

**Action TLU-51:** Collaborate with local organizations where appropriate to advance local urban forestry efforts.

## **Reduce Transportation Impacts of City Operations**

The City adopted a Green Fleets policy in 2003, committing to purchase vehicles powered by alternative fuels whenever possible. While efforts in accordance with this policy have been made since, many opportunities remain to improve fleet fuel efficiency and shift to alternative fuel vehicles. Fleet replacement has been significantly underfunded in recent years, resulting in an aging and fuel-inefficient fleet requiring significant maintenance investment. A number of City fleet vehicles now operate on compressed natural gas (CNG), but opportunities exist to convert hundreds of non-emergency vehicles to CNG and other fuel efficient alternatives (e.g., plug-in hybrid electric vehicles). Vehicle replacement with more fuel efficient vehicles continues to represent the largest opportunity to decrease GHG emissions associated with the City's fleet.

**Objective: Achieve a 36% reduction in City-related fuel consumption by 2020**

**Action TLU-52:** Increase the rate of fleet vehicle replacement to retire older inefficient vehicles and continue to replace vehicles with fuel efficient and alternative fuel models (e.g., CNG, electric and plug-in hybrid vehicles, trucks with anti-idling controls). *3-Year Priority, Resources Needed*

**Action TLU-53:** Provide subsidized transit passes (e.g., participate in the AC Transit Easy Pass program) and bicycle or shoe commuter allowances to all City employees. *3-Year Priority, Resources Needed*

**Action TLU-54:** Discontinue the practice of providing parking to City employees based in transit-rich locations. *Complete / Fully Underway*

**Action TLU-55:** Support employee commute trip reduction by enabling flexible work schedules and encouraging telecommuting where possible.

**Action TLU-56:** Explore opportunities to enable access to more City services online to reduce the need for customers to drive to City offices.

**Action TLU-57:** Continue efforts to reduce the size of the City's vehicle fleet by utilizing pool cars and car share programs and eliminating underutilized inefficient vehicles.

**Action TLU-58:** Perform regular preventive maintenance (e.g., tire inflation) of the City's vehicle fleet to ensure optimum fuel efficiency performance.

**Action TLU-59:** Expand employee education programs training staff on how to reserve pool cars and car share vehicles, planning practices for optimizing and reducing trips, and vehicle maintenance and driving habits that promote optimum fuel efficiency.

**Action TLU-60:** Expand the City's capacity to support the use of alternative fuel vehicles, such as through the installation of new electric vehicle charging infrastructure.

**Action TLU-61:** Integrate fuel-efficient and zero emission specialized vehicles (e.g., cargo trikes for park maintenance) into the City's fleet where appropriate.

## Building Energy Use

Building Energy Use, including energy used to heat, light, and power Oakland's buildings and other stationary devices such as streetlights, as well as to pump and treat water consumed in Oakland, is a major direct source of greenhouse gas emissions.

Natural gas consumption represents the majority of GHG emissions from this sector, followed closely by electricity use. The combustion of natural gas, primarily to heat buildings, heat water and cook, results directly in GHG emissions. Electricity consumption results in the creation of GHG emissions at the power plant(s) generating and providing the electricity. Most electricity generation occurs outside of Oakland's boundaries, but those GHG emissions are included here given the direct relationship to electricity consumption occurring in Oakland.



Many strategies are available through which the City can help to reduce GHG emissions associated with Building Energy Use.

### Key GHG Reduction Strategies:

- Optimize energy efficiency in new buildings
- Retrofit existing buildings to reduce energy consumption
- Promote energy and water conservation and efficiency
- Advance the use of renewable energy
- Improve the energy performance of municipal facilities

Achieving the 2020 goal of reducing GHG emissions associated with Building Energy Use by 36% will require significant action in all of these areas. Improving energy performance in existing buildings is especially important. A community-wide movement will be needed to reach all businesses and guide 30% of them through energy efficiency programs, encourage property owners to retrofit 30% of Oakland's homes, and foster dedicated energy conservation behaviors on the part of every member of the Oakland community.

#### Building Energy Use 2020 Goals:

- Construct all new buildings citywide to high energy standards
- Retrofit 30% of commercial space and homes between 2010 and 2020
- Achieve 32% electricity savings across all sectors
- Achieve 14% natural gas savings across all sectors
- Achieve a 33% renewable portfolio standard for grid electricity
- Generate 3% of building energy consumption from new local renewable energy



## Strategies to Achieve 2020 Goals

### Optimize Energy Efficiency & Consumption in New Buildings

Every year, new buildings continue to be constructed in Oakland. Achieving long term energy reduction starts by ensuring that all new buildings are constructed to high performance energy standards. Recent updates to the State's Title 24 building energy code and CALGreen, the statewide green building code, have raised the energy performance bar in California, but new buildings in Oakland can achieve even higher levels of energy efficiency.

**Objective: Achieve 10% better energy performance than Title 24 in all new building stock**

**Action BE-1:** Adopt a green building ordinance for residential and commercial private development new construction projects requiring high levels of energy performance and water efficiency. *Complete / Fully Underway*

**Action BE-2:** Ensure enforcement of building energy codes in accordance with all code requirements.

### Retrofit Oakland's Existing Building Stock to Reduce Energy Consumption

There are more than 100,000 residential and commercial buildings in Oakland, built over many decades, many of which offer significant opportunities for improved energy performance. Reducing citywide energy consumption will require retrofitting all of these buildings to improve energy efficiency. Many energy efficiency improvements offer significant cost savings opportunities, and can also improve indoor occupant health, comfort, productivity and quality of life. Energy retrofits can reduce energy consumption and energy costs as much as 25-35% per building, often creating a net positive cash flow from day one. With a large and experienced pool of energy contractors, Oakland is well-positioned to become the energy retrofit capital of America.

#### All Building Types

**Action BE-3:** Include all significant renovation projects in the proposed green building ordinance for residential and commercial private development projects requiring high levels of energy performance.

*Complete / Fully Underway*

**Action BE-4:** Offer property-based financing and associated outreach for energy efficiency and solar improvements to residential and commercial property owners in Oakland. *Complete / Fully Underway*

**Action BE-5:** Engage local utilities (e.g., PG&E, EBMUD) to develop on-bill financing options for energy efficiency improvements to increase energy retrofits in tenant-occupied and other properties. *Complete / Fully Underway*

**Action BE-6:** Pursue funding to augment existing and create new residential and commercial energy programs to reduce energy consumption throughout the community. *3-Year Priority, Resources Needed*

**Action BE-7:** Encourage all businesses and households to use 16% less energy through conservation actions such as turning off unnecessary equipment and right-sizing the use of energized equipment. *3-Year Priority, Resources Needed*

**Action BE-8:** Coordinate with other jurisdictions in our region to explore the potential benefits, consequences and opportunities of enhancing local influence and control over public goods funding from the CPUC for energy efficiency





programs, and request an accounting of current guidelines, revenues, and expenditures from the public goods surcharge with intent to petition the CPUC for use of public goods surcharge funds.

**Action BE-9:** Engage the lending community in discussions about developing energy-related financing offerings, including an on-bill financing program.

**Action BE-10:** Develop and promote a suite of energy efficient upgrades specifically for historic buildings so that these buildings can be made energy efficient while retaining their historic status. Encourage energy retrofit training programs to include training on issues specific to historically significant older buildings.

**Action BE-11:** Promote the benefits of investing in energy efficiency in existing properties and provide guidance on getting started to property owners and tenants through a targeted marketing and outreach campaign in collaboration with local partners.

## Commercial/Industrial Buildings

**Objective: Perform efficiency retrofits in 30% of Oakland’s commercial building stock by 2020, resulting in 20% less building-related electricity and natural gas consumption**

**Action BE-12:** Offer enhanced incentives and technical assistance to help downtown commercial property owners improve energy efficiency. *Complete / Fully Underway*

**Action BE-13:** Encourage businesses to participate in local energy efficiency programs offered through the East Bay Energy Watch regional collaboration between PG&E and East Bay cities. *Complete / Fully Underway*

**Action BE-14:** Launch a program offering technical assistance to help Oakland’s most energy intensive businesses to develop and implement energy efficiency and conservation strategies. *3-Year Priority, Resources Needed*

**Action BE-15 & BE-16:** Adopt an ordinance requiring energy benchmarking and/or energy-related improvements at time of lease or sale, or under other appropriate conditions of commercial sector buildings by a certain date, based on analysis of existing commercial retrofit programs. *3-Year Priority, Resources Needed*

**Action BE-17:** Develop analytical tools and invest in strategic planning to identify energy improvement opportunities and new initiatives to reduce energy use in commercial buildings.

**Action BE-18:** Encourage the use of building feedback systems to assist local building owners in identifying, implementing, tracking, and reporting on energy efficiency improvements over time.

**Action BE-19:** Enhance and expand existing small commercial energy retrofit assistance programs to help existing owner-occupied and rented small commercial properties reduce energy use and save money via energy audits, technical assistance, retrofit incentives, and/or continuous commissioning support.

**Action BE-20:** Create a community “Kilowatt Crackdown” challenge program in collaboration with BOMA and other partners pushing commercial office buildings to reduce energy use while competing for recognition based on energy performance and progress.



## Residential Buildings

**Objective: Retrofit 30% of Oakland’s residential building stock by 2020, resulting in 10% less building-related electricity and natural gas consumption**

**Action BE-21:** Launch a new energy retrofit program to improve energy efficiency of existing single-family and multi-family residential properties via promoting green improvements, providing green construction specs, certifying green contractors, connecting homeowners, landlords and tenants with financing options (e.g., new property-based financing), and providing quality assurance support. *3-Year Priority, Funded*

**Action BE-22:** Create an energy retrofit pilot program targeting multi-family affordable housing by providing funds to reduce risk and enable the acquisition of private investment capital to implement energy savings projects. *Complete/ Fully Underway*

**Action BE-23:** Expand, enhance, and promote delivery of weatherization and energy retrofit assistance services to help low-to-moderate income residents improve energy efficiency and reduce energy costs. *3-Year Priority, Funded*

**Action BE-24:** Develop new energy retrofit programs to facilitate energy efficiency improvements of existing renter-occupied residential properties by supporting outreach as well as assistance designing tenant-landlord agreements so that all parties equitably share the costs and benefits of energy efficiency. *3-Year Priority, Resources Needed*

**Action BE-25:** Adopt an ordinance requiring cost-effective residential energy-and water-related improvements at time of sale, or under other appropriate conditions with consideration of affordability and equity. *3-Year Priority, Resources Needed*

**Action BE-26:** Support local programs delivering entry-level residential energy efficiency services to Oakland neighborhoods (e.g., California Youth Energy Services).

**Action BE-27:** Support do-it-yourself home energy improvements by providing appropriate tools for home energy evaluation and improvement through Oakland's Tool Lending Library.



## **Increase the Use of Clean Energy**

Even after conservation and significant improvements in energy efficiency, remaining energy consumption will need to be supported by more clean, renewable energy sources. In 2015, California extended its renewable portfolio standard (RPS), from 33% by 2020 to 50% by 2030. Oakland can go further toward achieving higher rates of renewable energy use through additional action to increase local renewable energy generation from solar, wind and other sources.

**Objective: Achieve a minimum of 33% renewable energy on the electricity grid, along with new local renewable systems generating an additional 3% of Oakland's energy for buildings, by 2020**

**Action BE-28:** Encourage and collaborate with local partners to launch a community solar program to increase local use of renewable energy, including solar-thermal energy to produce heat and hot water. *3-Year Priority, Resources Needed*

**Action BE-29:** Negotiate with PG&E to offer local green power options to Oakland customers. *Complete / Fully Underway*

**Action BE-30:** Continue to monitor the feasibility and utility of implementing community choice energy aggregation (CCA) in Oakland. *Complete / Fully Underway*

**Action BE-31:** Study potential local solar, wind, wave, combined heat and power, and anaerobic digestion opportunities, and develop strategic plans for increased clean energy use in Oakland.



## Promote Water Conservation and Efficiency

The treatment and transport of water is energy and carbon intensive. By reducing potable water consumption, we can conserve a precious and limited resource, and reduce associated emissions from this activity. The City can continue collaborating with the EBMUD, StopWaste, and community organizations to promote water conservation and efficiency.

**Objective: Reduce water use through water conservation and efficiency in buildings and infrastructure.**

**Action BE-32:** Create an Oakland-specific Water Efficient Landscape Ordinance (WELO) to address water conservation. *Complete / Fully Underway*

**Action BE-33:** Expand promotion of water conservation and efficiency practices such as water-efficient landscaping and irrigation and lawn replacement. Continue promoting StopWaste publications titled “Bay Friendly Landscaping Guidelines: Sustainable Practices for the Landscape Professional” and “Bay Friendly Gardening: From Your Backyard to the Bay” through targeted outreach campaigns in partnership with local organizations.

**Action BE-34:** Participate in outreach campaigns by EBMUD, StopWaste, and others to encourage water monitoring, conservation, and efficiency by Oakland’s largest water consumers.

**Action BE-35:** Encourage the installation of rainwater harvesting through water collecting cisterns in new development to capture water during the rainy season for outdoor uses and/or indoor uses. *3-Year Priority, Resources Needed*

**Action BE-36:** Encourage the installation of rainwater and greywater systems where appropriate in accordance with State and local codes.

**Action BE-37:** Advocate for enhancing water metering practices (e.g., installation of smart meters, sub-meters for tenant-occupied spaces) to enable monitoring and evaluation of consumption patterns.

**Action BE-38:** Support the efforts of EBMUD to provide incentives and support to encourage water conservation and efficiency.

**Action BE-39:** Encourage the installation of water efficient fixtures and plumbing in private development, including products labeled under the EPA’s WaterSense program.

**Action BE-40:** Increase the amount of public space landscaped with drought-resistant plants and trees meeting Bay Friendly Landscaping Guidelines. *3-Year Priority, Resources Needed*

**Action BE-41:** Create standard operating procedures for installing water efficient fixtures and equipment in municipal buildings, landscapes, ballfields and swimming pools at regular replacement schedules, and proactively when cost-effective. *3-Year Priority, Resources Needed*



## Optimize Energy Efficiency & Consumption in City Facilities

The City has built in energy efficiency or performed energy retrofits in over 100 of its largest buildings during the last twenty years. However, significant potential remains to reduce energy use and improve performance in existing City facilities.

**Objective: Reduce GHG emissions from energy consumption in City buildings and streetlights by 36% by 2020, achieving 10% through conservation**

**Action BE-42:** Enhance and implement standard operating procedures to improve energy conservation and efficiency in ongoing City facility operations. Require City facilities over a certain age to participate with the LEED O&M program.

*3-Year Priority, Funded*

**Action BE-43:** Modify the City's Civic Green Building Ordinance to increase energy efficiency standards for new construction and major renovation of City facilities. *Complete / Fully Underway*

**Action BE-44:** Perform energy efficiency upgrades to City facilities and operations. *3-Year Priority, Funded*

**Action BE-45:** Explore opportunities to install alternative energy technologies (e.g., via solar power purchase agreements) or purchase grid-based renewable energy for City facilities.

**Action BE-46:** Replace streetlights with energy-efficient advanced technology models in all appropriate locations during the course of normal technology replacement schedules. *Complete / Fully Underway*

**Action BE-47:** Develop and provide training to City employees on targeted energy and climate issues. *Complete / Fully Underway*



# Material Consumption and Waste

Material production, consumption, and waste are major contributors to greenhouse gas emissions. In the City's 2013 consumption-based emissions inventory, emissions from this sector were shown to comprise 43% of the City's total emissions profile. The Oakland City Council adopted a Zero Waste goal in 2006, calling for a 90% reduction in waste sent to landfill by 2020. The City's Zero Waste Strategic Plan outlines strategies for meeting this goal, which prioritize "systems" solutions to reduce landfilled waste, and expand waste reduction, recycling, and composting programs. By pursuing the City's adopted Zero Waste strategies and addressing the entire lifecycle of consumption and waste, Oakland is creating GHG reductions on the same order of magnitude as those related to transportation and building energy use.



While many lifecycle emissions of consumption – GHG impacts associated with the manufacture, transport, use and disposal of material goods and food – do not occur within Oakland's geographic boundaries, consumption and disposal choices in Oakland can help to reduce GHG emissions across the globe.

A number of strategies are available through which the City can help to reduce GHG emissions associated with Material Consumption & Waste Reduction.

## Key GHG Reduction Strategies:

- Expand and Improve Waste Reduction, Reuse, Recycling, and Composting
- Encourage Sustainable Consumption
- Promote Local Food

Achieving Oakland's adopted Zero Waste goal will require significant action in each of these areas.

The City can position Oakland to keep many more materials out of landfills by restructuring elements of Oakland's solid waste management system. This may include changes to Oakland's municipal code, garbage franchise agreement, residential recycling service contracts, and rate structure. Expanding and refining implementation of the City's Construction and Demolition Debris Recycling Ordinance can foster reuse and keep materials out of landfill. Other actions described in this section can also play important roles in reducing waste. All members of the community will need to make individual purchasing, consumption and disposal choices to help Oakland reach Zero Waste goals.

### Material Consumption & Waste Goals:

- Achieve a 90% reduction (~375,000 tons) in waste sent to landfill by 2020
- Increase local food production

## Strategies to Achieve 2020 Goals

### Expand and Improve Waste Reduction, Reuse, Recycling, and Composting

Achieving Zero Waste will require expanded and improved waste reduction reuse, recycling, and composting systems. By structuring these systems to better reward behaviors that keep waste out of landfills, the City can foster significant GHG reductions associated with the lifecycle impacts of materials.

**Objective: Reduce community-wide waste sent to landfill to 40,000 tons by 2020**

#### **Action MW-1:** Restructure

Oakland's solid waste management system (municipal code, garbage franchise agreement, and residential recycling service contracts and rate structure) to provide comprehensive incentives for residents, businesses, and collection service providers to reduce waste and recycle more. These changes will help Oakland comply with statewide mandatory recycling requirements, including for multi-family residential properties. The outcome of this restructuring

exercise may recommend adjustments to the types of recycling, compost, and garbage services offered, collection frequency, and container sizes, and the implementation of mandatory recycling participation and/or disposal bans.

*Complete / Fully Underway*

**Action MW-2:** Refine implementation of Oakland's Construction and Demolition (C&D) Debris Recycling Ordinance to capture greater amounts of materials for reuse, recycling, and composting, and consider opportunities to expand the ordinance to include a broader range of projects with potential incentives for deconstruction and salvage. *Complete / Fully Underway*

**Action MW-3:** Require development and implementation of waste reduction and recycling plans for all large venues and public events. *Complete / Fully Underway*

**Action MW-4:** Enforce mandatory statewide and countywide bans on sale, use, or disposal of material types, and implement selected local bans. *Complete / Fully Underway*

**Action MW-5:** Conduct new residential social marketing campaigns and increased outreach to businesses and other institutions to improve the effectiveness of waste reduction and recycling programs. *Complete / Fully Underway*

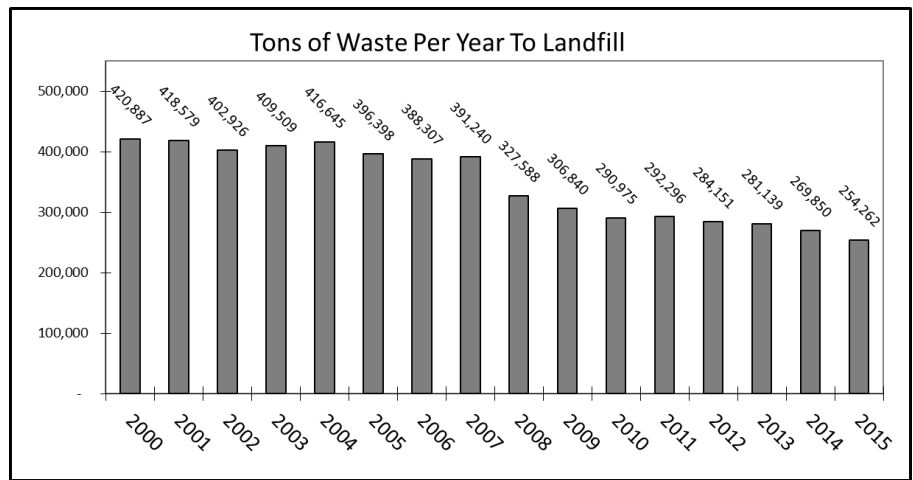
**Action MW-6:** Study options for advancing the next level of waste reduction activities to help achieve the City's adopted Zero Waste Goal, including consideration of commercial food scraps. *3-Year Priority, Resources Needed*

**Action MW-7:** Identify and retain sufficient industrially zoned lands through zoning and specific plans to support Zero Waste business development and infrastructure, and associated green jobs. Provide appropriate locations for new and existing recycling facilities.

**Action MW-8:** Adopt Zero Waste practices in City operations, facilities, capital improvement and maintenance practices.

**Action MW-9:** Require reporting on implementation of the City's Environmentally Preferable Purchasing Policy.

**Figure 7. Oakland Citywide Waste Sent to Landfill**



**Action MW-10:** Require reporting from state-recognized institutions in Oakland that are exempt from local waste reduction rules (e.g., public school systems, State/Federal offices, the Port, Oakland Housing Authority) to increase waste reduction and recycling at their facilities.

**Action MW-11:** Facilitate easier recycling of organic materials in multi-family buildings through revised design requirements.

**Action MW-12:** Promote Bay Friendly Landscaping practices to reduce excess plant debris from being sent to landfill and the need for nitrogen-based synthetic fertilizers.



## **Encourage Sustainable Consumption**

Achieving Zero Waste begins with purchasing and material consumption choices that reduce the potential for waste generation, and that minimize the carbon-intensive processes that go into material extraction, manufacturing, and transporting of goods in the first place. By placing emphasis on reuse and repair opportunities, and purchasing new materials only when necessary, it is possible to reduce upstream GHG impacts associated with the manufacture and transport of goods, as well as downstream impact such as landfill gas creation.

### **Objective: Support Oakland's waste reduction goals through sustainable consumption practices**

**Action MW-13:** Promote reduction of product waste and better management of hard-to-recycle and toxic products through producer responsibility. Support statewide producer responsibility legislation. Support the creation of convenient and cost-effective product take-back opportunities for the public through existing retail distribution systems. *3-Year Priority, Resources Needed*

**Action MW-14:** Promote members of the Alameda County Green Business Program and support program efforts to expand to include additional business types.

**Action MW-15:** Foster local reuse and repair opportunities, including through expanded community outreach efforts promoting re-use of buildings and materials, and "buy local" programs focusing on goods made from recycled materials. *3-Year Priority, Resources Needed*

**Action MW-16:** Encourage businesses capable of manufacturing needed products from existing waste streams and businesses utilizing low impact packaging techniques to locate in Oakland.

## **Promote Local Food**

Globally, up to 32% of GHG emissions are related to food system activities including production, transportation, processing, and storage. A low-carbon food system emphasizes food that is produced with efficient use of resources, and food that is produced, processed and distributed near where it is consumed. Significant opportunities to reduce GHG emissions associated with the food system exist in decreasing consumption of meat and foods grown with intensive use of manufactured fertilizers. A local food system can help to reduce transportation-related GHG emissions and upstream use of GHG-intensive fertilizers, while creating local green jobs and strengthening the local economy.



The City recognizes that local food production can also create adverse impacts related to issues such as noise, trucking, lighting, odors, and air quality. Efforts to expand local food production should include consideration of both beneficial and adverse potential impacts.

Oakland is home to a range of innovative food system initiatives, including the Oakland Food Policy Council (OFPC). The OFPC was launched in 2009 to develop recommendations to support the development of Oakland's local food sector and increase community access to healthy foods. The City has an opportunity to promote, integrate, and build upon existing local food initiatives distinguishing Oakland.

**Objective: Increase opportunities for urban agriculture in Oakland**

**Foster More Local Food Production**

**Action MW-17:** Develop regulations that allow for the use of urban land for food production. *Complete / Fully Underway*

**Action MW-18:** Encourage local utilities, public agencies and other large land owners to offer commercial leases to local organizations for local food production and/or foraging. *3-Year Priority, Funded*

**Action MW-19:** Evaluate the potential of creating additional community gardens on City-controlled public land.

**Action MW-20:** Encourage the inclusion of food-producing gardens, including rooftop gardens, in private development where appropriate, with consideration of Bay Friendly principles.

**Action MW-21:** Provide information maintained by the City on brownfield sites to members of the public interested in exploring the potential for urban agriculture.

**Action MW-22:** Promote the efforts of local organizations that provide training on gardening and composting.

**Action MW-23:** Provide a portion of compost generated through the City's residential recycling program back to the community.

**Action MW-24:** Include a preference for inclusion of community gardens and sustainable local food production in evaluating applications for City funds and contracts.

**Action MW-25:** Encourage partnerships among private and non-profit sector organizations to create shared commercial kitchens in underserved areas of Oakland to stimulate local food microenterprises.



**Develop Markets for Local Food**

**Action MW-26:** Integrate consideration of local food procurement and food related impacts into processes for selecting food for City sponsored events and contracts.

**Action MW-27:** Work with partners to add consideration of local food procurement and food related impacts to green business certification criteria.

**Action MW-28:** Encourage efforts of local organizations to promote local food procurement and consideration of food related impacts to the community, focusing on large employers and other targeted venues.

**Action MW-29:** Advance economic development strategies that promote sustainable food production in Oakland.

**Action MW-30:** Review and align permit and other requirements for farmers markets, community supported agriculture programs and other local food distribution efforts.



## Community Engagement

Oakland's success in meeting its GHG reduction goals will ultimately depend largely on the day-to-day decisions of all members of the Oakland community, including residents, businesses, and other institutions.

The City has an important role to play in educating and motivating all members of the Oakland community to join in the effort to reduce energy use and GHG emissions. By leveraging its leadership and existing communication channels, the City will help to spur the high levels of community participation needed to solve these challenges, and provide opportunities for new ideas from the community to further strengthen local efforts. In addition, the City will monitor and report on Oakland's progress in reducing energy use and GHG emissions, and promote local examples of leadership throughout the community.



The City can implement a number of strategies to engage the community to increase citywide climate action.

### **Key GHG Reduction Strategies:**

- Encourage Community Energy and Climate Action
- Create New Opportunities for Community Engagement
- Track and Promote Community Action

Achieving Oakland's GHG reduction goals across Transportation & Land Use, Building Energy Use, and Material Consumption & Waste will require significant action in each of these areas. By collaborating with local organizations, the City can help to motivate local action that will be needed to reduce driving citywide by 20%, retrofit 30% of Oakland's housing stock with energy improvements, enroll 30% of businesses in local energy efficiency programs, and reduce waste sent to landfill by 90% by 2020. Actions to reach these goals can in turn help to create new local green job opportunities for Oakland residents.

Local organizations, including community-based organizations, business, labor, educational institutions, and others, can educate, motivate, and empower the Oakland community to participate in and benefit from local climate action. As champions connected throughout the Oakland community, these organizations can help to build a movement around local climate action.

## Community Engagement Strategies

### Encourage Community Energy and Climate Action

Working in collaboration with local organizations, the City can help to educate and motivate all members of the Oakland community to take individual action on energy and climate issues.

**Action CE-1:** Expand the City’s website, Green Building Resource Center, and other outreach channels to report annually on Oakland’s progress in reducing energy use and GHG emissions and provide more comprehensive and action-oriented information regarding opportunities to reduce energy use and GHG emissions. *3-Year Priority, Funded*

**Action CE-2:** Partner with community-based organizations, neighborhood associations, business associations, and others to promote local climate action throughout the community through new and traditional channels. *3-Year Priority, Funded*

**Action CE-3:** Develop and distribute a community climate action guide and targeted educational materials in collaboration with local organizations to inspire all members of the Oakland community to take action to reduce GHG emissions. *3-Year Priority, Resources Needed*

**Action CE-4:** Provide support to local organizations to convene neighborhood-scale or issue-based community climate action workshops. *3-Year Priority, Resources Needed*

**Action CE-5:** Create citywide and neighborhood scale opt in electronic listservs and other information sharing opportunities focused on targeted climate protection topics (e.g., community gardening, installing rooftop solar) to help interested residents and other parties connect with each other, share wisdom, etc.

**Action CE-6:** Promote climate-related volunteer events throughout the community in partnership with local organizations.

**Action CE-7:** Create a community climate challenge campaign and work with local business partners to identify and provide incentives for participation and achievement.

**Action CE-8:** Encourage OUSD and other organizations to provide educational opportunities on energy and climate issues to local youth, and to integrate energy and climate action within operational practices where possible (e.g., safe routes to school and green schools programs). *3-Year Priority, Funded*

**Action CE-9:** Engage the local philanthropic community to provide support for model projects with potential for replication throughout the community, especially in areas with the least resources and/or least engagement in local climate actions.



### Create New Opportunities for Community Engagement

The City will provide ongoing opportunities for new community ideas on energy and climate action to further strengthen local efforts.

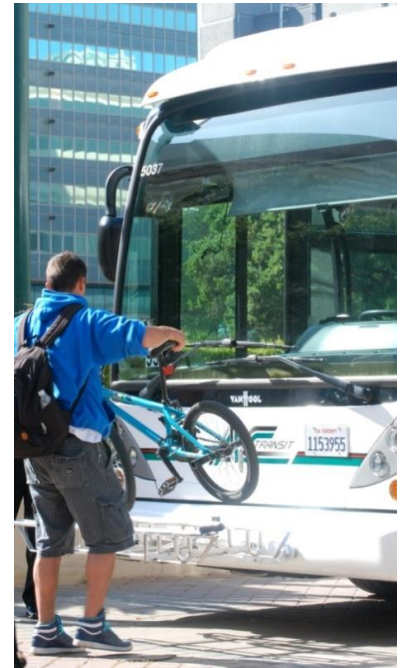
**Action CE-10:** Convene community climate forums to provide informal opportunities for members of the public and local community organizations to learn about local climate protection progress and opportunities, network, and provide suggestions. *3-Year Priority, Funded*

**Action CE-11:** Establish and highlight opportunities for members of the community to provide suggestions to City staff and policy makers regarding how the City can further augment its climate protection efforts through adjustments to local planning, policies and programs. *3-Year Priority, Resources Needed*

**Action CE-12:** Provide information through local organizations, community information channels, and the City’s website to assist the Oakland community in identifying opportunities to advance local climate action through planned updates to City planning documents, policies, and programs.

**Action CE-13:** Include content in regular community surveys conducted by the City to help inform future energy and climate action planning decisions, and engage local partners in additional surveying efforts where appropriate.

**Action CE-14:** Engage the community in visioning Oakland in 2050 to help identify steps toward achieving significant GHG reductions in the process of realizing that vision.



### **Track and Promote Community Action**

The City will monitor and report on Oakland’s progress in reducing energy use and GHG emissions, and promote local examples of model practices throughout the community.

**Action CE-16:** Develop a local climate action model practices campaign collaborating with local organizations to document and promote examples of local climate actions to the community. *3-Year Priority, Resources Needed*

**Action CE-17:** Expand energy and climate content on the City’s website and other outreach tools to track progress and promote the GHG reduction achievements of the City and the Oakland community, as well as tools to support local action and opportunities to get involved. *3-Year Priority, Funded*

**Action CE-18:** Create a community climate leaders recognition program and promote model actions and performance through an annual recognition program.

**Action CE-19:** Promote green community events throughout the city.

### **Develop the Local Green Workforce to Support Local Green Businesses**

The emerging green economy will continue to create new demand for trained professionals capable of delivering work such as building energy retrofits, development of bikeways, product repair, installation of solar panels, and construction debris collection for reuse. Oakland has an opportunity to build on its investment in local green jobs training programs to develop a local green workforce while providing employment opportunities for disadvantaged residents.

#### **Objective: Train workers for new green jobs to support energy and climate actions**

**Action CE-20:** Engage with local green jobs training providers to coordinate strategic planning and encourage programs to develop local workforce capacity and assess, train, and place local residents in jobs to perform energy retrofits and other green improvements. *3-Year Priority, Funded*

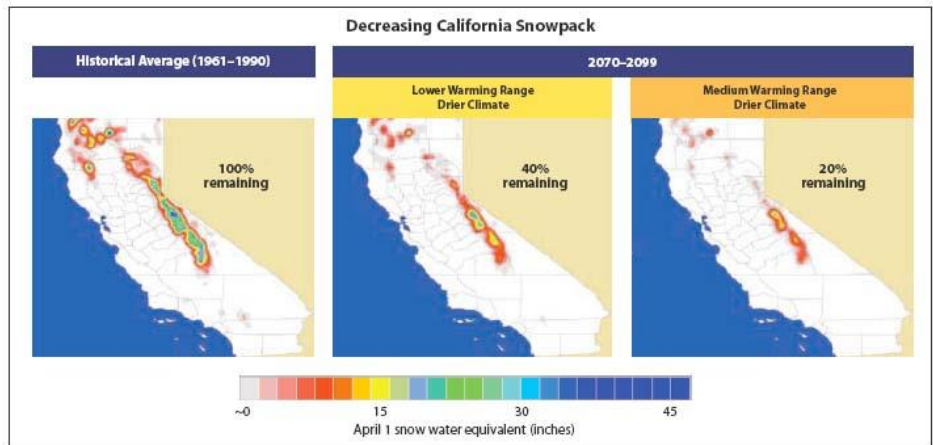
**Action CE-21:** Facilitate the hiring of green jobs program graduates through promotion and subsidized internship placement with local employers.

**Action CE-22:** Work with local partners to develop a community green jobs electronic bulletin board promoting local green job opportunities.



## Adapting and Increasing Resilience to Climate Change

Some impacts of climate change are readily observed, while others remain likely to be part of Oakland's future. Additional impacts projected to occur during this century have the potential to significantly affect our community. In addition to taking action to reduce GHG emissions that cause climate change, Oakland must take simultaneous action to adapt to unavoidable local climate impacts.



Source: State Climate Action Team Report

Oakland is a large and diverse community; climate impacts will be experienced in many areas. Due to its location, Oakland is vulnerable to a number of climate impacts, including sea level rise, reductions in water supply due to shrinking snowpack in the Sierra Mountains, wildfires, extreme heat, flooding, added stress on infrastructure, ecological impacts, and other potential pricing and quality of life impacts. For example, a set of climate scenarios prepared for the California Energy Commission project that mean sea level along the California coast could rise by as much as 4.5 feet by 2100.<sup>xv</sup> Many low-elevation areas of Oakland would be vulnerable to flood events under these scenarios.<sup>xvi</sup> 2017 Reports from the State of California Ocean Protection Council present scenarios in which water levels in San Francisco Bay could rise by up to 10 feet by 2100, due to increased rates of ice melting in the Arctic and Greenland. While scenario projections continue to be refined with more data and measurements, it is clear that action is required to minimize Oakland's contribution to climate change, and to prepare for additional impacts that will impact the community and its people.

### Key Adaptation Strategies:

- Study Potential Local Climate Impacts
- Communicate Climate Impacts to the Community
- Identify and Act on Opportunities to Improve Resilience

Adapting to future climate impacts will likely require significant action in each of these areas. Some adaptation measures, such as water conservation and urban forestry, can serve to minimize existing vulnerabilities and provide social, economic and environmental benefits regardless of the extent of potential climate impacts. A number of these actions also create mitigation benefits (e.g., water efficiency reduces energy needed to provide and treat water, urban trees reduce heat island effect and associated building cooling needs) and have been discussed elsewhere in the ECAP. Other adaptation measures can be more capital-intensive, including:

- Protecting and restoring Oakland's creeks and estuary;
- Upgrading sewer and stormwater infrastructure to accommodate sea-level rise and increased stormwater volumes;
- Augmenting water supply with seawater desalination;
- Armoring the coast against sea-level rise through levees and seawalls; and,
- Updating peak electrical transmission capacity for summer cooling to help reduce human health impacts.

The City will continue to develop its internal capacity around these issues and will work with local partners to explore adaptation strategies concurrently with efforts to reduce GHG emissions to ensure that climate impacts are minimized.



## Strategies to Achieve 2020 Goals

### Study Potential Local Climate Impacts

The first step in addressing climate adaptation is to study projected climate impacts and develop an understanding of how those impacts may affect important local issues such as land use, infrastructure, public health, the local economy and other quality of life issues. Opportunities exist to leverage the work of local partners and State agencies that have begun to study these impacts.

**Action AD-1:** Participate in discussions on climate adaptation and resilience issues with local governments and other experts. *3-Year Priority, Funded*

**Action AD-2:** Conduct a study of all local climate impacts in collaboration with local partners including the Bay Conservation and Development Commission, the Pacific Institute, and UC Berkeley. *3-Year Priority, Resources Needed*

### Communicate Climate Impacts to the Community

As projected climate impacts are better understood, it is increasingly important to educate the Oakland community about these impacts to lay the foundation for public discussion of future planning decisions and adaptation strategies. Developing a greater shared understanding of potential impacts will be critical to generating the will for personal and collective action that may be needed to implement future adaptation strategies.

**Action AD-3:** Communicate information about local climate impacts to the Oakland community to develop shared understanding, the will for personal and collective action, and local capacity to participate in the development of climate adaptation strategies. *3-Year Priority, Resources Needed*



**Figure 10.** Projected area in danger of 100-year flood event based on 4.5 foot sea level rise. Courtesy of Pacific Institute

### Identify and Act on Opportunities to Improve Resilience

Taking action to adapt to projected climate impacts will help to increase community resilience in Oakland, minimize vulnerabilities, and encourage sustainable development.

**Action AD-4:** Integrate climate adaptation strategies into City planning and policy documents and processes where appropriate. *3-Year Priority, Resources Needed*

**Action AD-5:** Update community emergency preparedness and recovery plans, infrastructure (e.g., consider community cooling centers), and communication networks as appropriate based on projected climate impact scenarios with consideration for vulnerable communities.

**Action AD-6:** Encourage and participate actively in efforts of regional partners including BCDC to engage in the development of a regional climate adaptation strategy informed by climate impact modeling, scenario analysis and development of adaptation strategies to advance regional climate adaptation capacity and resilience. Collaborate with local partners to ensure that the actions (e.g., construction of sea walls) of neighboring jurisdictions or other agencies do not indirectly exacerbate impacts to Oakland neighborhoods. *3-Year Priority, Resources Needed*

**Action AD-7:** Develop a climate adaptation plan for Oakland identifying strategies to improve community resilience to climate change in collaboration with State, regional and local stakeholders. *3-Year Priority, Resources Needed*

**Action AD-8:** Update planning documents and building codes to include requirements for high albedo (reflective) surfaces where possible (e.g., rooftops, pavement) to reduce the urban heat island effect and mitigate public health impacts of extreme heat events. *3-Year Priority, Funded*

**Action AD-9:** Promote the development of Oakland's urban forest (see pages PA 38, page 46). *3-Year Priority, Resources Needed*

**Action AD-10:** Promote indoor and outdoor water conservation and efficiency (see page 100). *3-Year Priority, Resources Needed*

**Action AD-11:** Promote measures to reduce the impact of flood events by encouraging stormwater catchment and diversion through use of rain barrels, bio-swales, permeable surfaces, and green roofs. *3-Year Priority, Resources Needed*

**Action AD-12:** Encourage the efforts of the East Bay Municipal Utility District to develop infrastructure to deliver recycled water to Oakland properties for appropriate uses, reducing dependence on external water supplies. *3-Year Priority, Resources Needed*

**Action AD-13:** Consider opportunities to raise revenue to support local climate impact modeling and planning at the local or regional level (e.g., water use fees, development impact fees).

**Action AD-14:** Provide training for City staff on projected climate impacts, vulnerability issues, and adaptation strategies. *3-Year Priority, Funded*

**Action AD-15:** Explore how the City can achieve dedicated land for urban agriculture within Oakland city limits.

# Advocacy Recommendations

Achieving Oakland’s GHG reduction goals requires ongoing climate action at all levels by multiple partners. These include Federal, State and County government; regional agencies such as the Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (Air District), Bay Conservation and Development Commission (BCDC), Joint Policy Committee (JPC), and StopWaste.Org; and other partners such as the California Public Utilities Commission (CPUC), Pacific Gas & Electric (PG&E) and the East Bay Municipal Utility District (EBMUD). Energy and climate are gaining attention from each of these organizations.

Many actions that can help to reduce energy use and GHG emissions in Oakland would be most efficiently, effectively and appropriately implemented at a regional or State level by these partners. Local governments will continue to lack the resources to solve the climate challenge without policy, financial and other support from these partners. The City will seek to advocate for further action by these agencies that will help achieve Oakland’s GHG reduction goals. Examples of advocacy opportunities include:

## Transportation and Land Use

- Increasing funding for local transit projects, and prioritizing transit relative to highway projects (MTC, State, Federal govt)
- Adopting indirect source rules to place fees on new development to support low carbon transportation (CARB)
- Imposing new revenue generating fees (e.g., gas tax, mileage tax) to fund regional transit upgrades (JPC, MTC, Air District)
- Developing better models to help local and regional planners quantify GHG impacts of land use and transportation scenarios (State, MTC, ABAG, CARB)
- Providing support for infrastructure upgrades needed to absorb additional development in urban areas (Federal govt, State, CPUC, ABAG)
- Requiring Port tenants to implement actions at Oakland’s ports in demonstrating compliance with statewide fleet emissions reduction targets (e.g., through electrification of docked vessels) (Federal govt, State)
- Providing support and requiring monitoring devices to reduce idling in trucks serving the Port (CARB)
- Placing a moratorium on regional freeway capacity expansion (State, Federal govt)
- Enforcing speed limits and anti-idling rules (State, CARB)

## Building Energy Use

- Increasing the percentage of grid electricity that must be supplied from renewable energy sources, including applying this to all direct access contracts (State, CPUC)
- Improving feed-in tariff and net metering policies (e.g., single solar power systems serving multiple tenants) (State, CPUC)
- Increasing investment in developing advanced renewable energy technologies (Federal govt, State)
- Requiring utilities to offer on-bill financing programs, either directly or through third-party collaborations (State, CPUC)
- Authorizing utilities to provide better data to local governments for energy program strategic planning (State, CPUC)
- Revising California’s Building Energy Efficiency Standards to continue progress to zero net energy construction (State)
- Continuing an effective and equitable cap-and-trade system for reducing GHG emissions (State, Federal govt)

## Material Consumption and Waste Reduction

- Imposing revenue generating fees (e.g., on GHG-intensive or non-durable goods) to support GHG reductions (State, JPC)
- Requiring manufacturer product responsibility for reducing product waste and problem materials (State)
- Requiring mandatory product impact labeling, commercial recycling and other waste reduction measures (State)
- Conducting regional social marketing campaigns to increase recycling and waste reduction (StopWaste.Org)

## Adaptation and Resilience

- Advancing climate impacts modeling and developing local climate adaptation strategies (State, BCDC)

# City of Oakland

## Energy and Climate Action Plan

### Appendix

This appendix contains supporting information related to the Energy and Climate Action Plan for Oakland, California.

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Updates and Additional Information:

[www.sustainableoakland.com](http://www.sustainableoakland.com)



## Developing the Oakland Energy and Climate Action Plan

Oakland has a long legacy of leadership on reducing energy use and greenhouse gas (GHG) emissions. Through the Oakland Energy and Climate Action Plan (ECAP), the City of Oakland (City) is developing a comprehensive, prioritized plan of action to enable Oakland to achieve aggressive and important GHG emissions reduction targets.



Development of the ECAP began in fall 2008 with the first of several public workshops held to gather community ideas on potential climate targets, actions, and the process to be used for developing the ECAP. Approximately 200 people attended these workshops, representing a variety of interests, including local nonprofit and advocacy organizations, government agencies, utilities, interest groups, private companies, and individual citizens.

The first two workshops (held in December 2008 and January 2009) provided an overview of the planned ECAP development process, gathered initial input on potential ways of reducing GHG emissions, and discussed issues to consider in the process of developing the ECAP. With assistance from ICLEI – Local Governments for Sustainability and CirclePoint, Inc., staff used input gathered at the workshops to identify and evaluate potential greenhouse gas (GHG) emissions reduction targets, and strategies for hitting those targets.

The next two workshops (held in April 2009) were used to gather input on target setting and GHG reduction actions to evaluate for potential inclusion in the ECAP. Input from these workshops also helped to inform the ECAP development process and the evaluative criteria used in considering actions for inclusion in the ECAP. Information from all four of these workshops, along with other project information, has been posted to the City's website at [www.sustainableoakland.com](http://www.sustainableoakland.com). Additional public input was also gathered through this website, and at other meetings.

On July 7, 2009, the Oakland City Council directed staff to develop the ECAP using a preliminary planning target equivalent to achieving a 36% reduction from 2005 GHG emissions by 2020, and annual benchmarks for meeting the target. The target-setting staff report and accompanying City Council resolution are available on the City's website.

From summer 2009 through spring 2010, the City continued to identify and analyze potential GHG reduction actions through which the City could position Oakland to achieve a 36% reduction in GHG emissions. Ideas for GHG reduction actions were gathered from public input, existing City policy documents, adopted climate action plans from other jurisdictions, and various other sources (e.g., Oil Independent Oakland Action Plan, The 21st Century Energy Greenprint for the East Bay). The evaluative criteria outlined in Table 1 were used to inspire ideas for GHG reduction opportunities and to evaluate potential actions to help guide future planning and budgeting discussions. These nine evaluative criteria capture the range of issues expressed by the community at the first four public workshops held between December 2008 and April 2009. Based on this analysis, staff developed recommendations for a prioritized set of GHG reduction actions best suited to helping the City advance Oakland's GHG reduction efforts and achieve the identified target.

Following a special City Council workshop on energy and climate action issues, the first Draft Energy and Climate Action Plan was released on April 22<sup>nd</sup>, 2010 (Earth Day). Two more public workshops were held in May 2010 to provide an overview of the ECAP and gather community input. Public comments were also

accepted for several weeks via the City’s website. Local organizations helped to spread the word about the ECAP and to generate public review and comment.

From summer 2010 through fall 2010, staff proceeded to consider public input received about opportunities to improve the ECAP. A revised ECAP, accompanied by this appendix, was then developed for consideration of the Oakland City Council.



**Table 1. Evaluative Criteria for Considering Potential Energy and Climate Actions**

<b>Evaluative Criteria</b>	<b>Issues to Consider</b>
GHG Reduction Potential	<ul style="list-style-type: none"> <li>• Magnitude of GHG reductions</li> <li>• Measurability of reductions</li> </ul>
Implementation Cost and Access to Funding	<ul style="list-style-type: none"> <li>• Cost to City budget</li> <li>• Cost to other stakeholders</li> <li>• Access to funding</li> </ul>
Financial Rate of Return	<ul style="list-style-type: none"> <li>• Return on investment to City and/or stakeholders implementing the action</li> <li>• Protection from future costs</li> </ul>
GHG Reduction Cost Effectiveness	<ul style="list-style-type: none"> <li>• Relative cost/benefit assessment in terms of estimated GHG reductions</li> </ul>
Economic Development Potential	<ul style="list-style-type: none"> <li>• Job creation potential</li> <li>• Business development and retention potential</li> <li>• Workforce development potential</li> <li>• Cost savings to community</li> <li>• Education benefits for community</li> </ul>
Creation of Significant Social Equity Benefits	<ul style="list-style-type: none"> <li>• Benefits to disadvantaged residents in the form of jobs, cost savings, and other opportunities</li> <li>• Reduction of pollution in heavily impacted neighborhoods</li> <li>• Equity in protection from impacts of climate change</li> </ul>
Feasibility & Speed of Implementation	<ul style="list-style-type: none"> <li>• Degree of City control to implement the action</li> <li>• Level of staff effort required</li> <li>• Resources required</li> <li>• Degree of stakeholder support</li> <li>• Amount of time needed to complete implementation</li> <li>• Time period during which implementation can begin</li> </ul>
Leveraging Partnerships	<ul style="list-style-type: none"> <li>• Leverage partnerships with community stakeholders</li> <li>• Leverage partnerships on a regional, state or national level</li> <li>• Facilitate replication in other communities</li> </ul>
Longevity of Benefits	<ul style="list-style-type: none"> <li>• Persistence of benefits over time</li> <li>• Opportunity to support future additional benefits</li> </ul>

## 2017-18 ECAP Update

Beginning in 2016, staff initiated an update to the ECAP, consistent with the direction provided in Chapter 1. This Update included targeted engagement and outreach to community groups, as well as staff level review of the progress in implementing the 175 Action Items in the Plan. The Update was completed in 2017, and included changes based on progress in implementing actions, new technologies that may render some strategies obsolete and others newly feasible, changing community prioritization, and the identification of new resources to support particular actions.

Table 2. Changes in Priority Action Status in the 2017-18 ECAP Update

2012 Priority Action Designation	ID	Description	2017 Designation / Status
			<div>  = Supported by Existing Resources              = Requiring New Resources         </div>
PA 1	TLU-6	Identify and Adopt Priority Development Areas	Complete
PA 2	TLU-13	Launch and Develop a Funding Plan for the Downtown Shuttle	PA 1
PA 3	TLU-14	Advance Bus Rapid Transit in Oakland	PA 2
PA 4	TLU-1	Participate in Quarterly SB 375 Discussions	Fully Underway
PA 5	TLU-38	Call for Port of Oakland GHG Reduction Targets and Plans	Fully Underway
PA 6	TLU-39	Call for Climate Action by Port Tenants	PA 23
PA 7	BE-1 & BE-3	Adopt a Green Building Ordinance for Private Development	Complete
PA 8	BE-4	Offer Property-Based Energy Financing	Complete
PA 9	BE-12	Launch a Downtown Commercial Retrofit Program	Complete
PA 10	BE-13	Encourage Participation in Local Energy Efficiency Programs	Fully Underway
PA 11	BE-21	Launch a Residential Green Retrofit Program	PA 5
PA 12	BE-22	Conduct a Multi-family Affordable Housing Retrofit Pilot	Fully Underway
PA 13	BE-23	Expand Weatherization Program Delivery	Complete
PA 14	BE-23	Launch the Weatherization and Energy Retrofit Loan Program	PA 34
PA 15	BE-32	Create an Oakland-Specific Water-Efficient Landscaping Ordinance	Fully Underway
PA 16	BE-42	Implement Advanced Operating Procedures for City Facilities	PA 6
PA 17	BE-43	Improve Energy Performance of New City Facilities	Fully Underway
PA 18	BE-44	Retrofit City Facilities to Improve Energy Performance	PA 7
PA 19	MW-1	Restructure Solid Waste Management System	Complete
PA 20	MW-2	Refine Implementation of C&D Recycling Ordinance	Fully Underway
PA 21	MW-3	Promote Waste Reduction at Community Events	Fully Underway
PA 22	MW-17	Develop Regulations Enabling Urban Food Production	Complete
PA 23	MW-18	Encourage Land Owners to Lease Space for Food Production	PA 8
PA 24	CE-1	Provide Additional Information on Energy and Climate Issues through Existing City Channels	PA 9 (merged with CE-15 and CE-17)
PA 25	CE-2	Expand Outreach on Energy and Climate Issues through Partnerships with Local Organizations	PA 10
PA 26	CE-10	Convene Community Climate Forums	PA 12
PA 27	CE-15	Report on Energy and GHG Reduction Progress	PA 9 (merged with CE-1 and CE-17)
PA 28	CE-20	Support Local Green Jobs Programs	PA 13
PA 29	AD-1	Participate in Regional Climate Adaptation Discussions	PA 14
PA 30	TLU-2	Develop a Comprehensive Transportation Policy Plan	Fully Underway
PA 31	TLU-3	Improve Transportation & Land Planning Integration in Every Planning Effort	Fully Underway
PA 32	TLU-7	Create and Adopt a Transportation Impact Fee to Support Implementation	Complete
PA 33	TLU-15	Update Local CEQA Standards to Reduce Emphasis on Congestion Impacts	Complete
PA 34	TLU-16	Accelerate Completion of Bicycle and Pedestrian Plans	PA 18
PA 35	TLU-28	Establish Alternative Mechanisms for Meeting Parking Requirements	PA 3
PA 36	TLU-29	Conduct a Citywide Dynamic Parking Pricing Study	Fully Underway

2012 Priority Action Designation	ID	Description	2017 Designation / Status
			<div>  = Supported by Existing Resources   = Requiring New Resources </div>
PA 37	TLU-33	Plan for Electric Vehicle Infrastructure	PA 4
PA 38	TLU-45	Develop an Urban Forestry Master Plan	PA 24
PA 39	TLU-52	Accelerate City Fleet Vehicle Replacement	PA 28
PA 40	TLU-53	Subsidize Transit and Transportation Alternatives for City Employees	PA 29
PA 41	TLU-54	Discontinue Subsidizing Parking for City Employees	Complete
PA 42	BE-14	Engage Largest Electricity Consumers in Energy Retrofits	PA 32
PA 43	BE-13	Market Energy Retrofit Opportunities to All Oakland Businesses	Fully Underway
PA 44	BE-24	Create a Renter-Occupied Residential Energy Retrofit Program	PA 35
PA 45	BE-25	Adopt and Implement a Residential Energy Conservation Ordinance	PA 36
PA 46	BE-15	Consider Energy Benchmarking Requirements for Commercial Buildings	PA 33 ( <i>merged with BE-16</i> )
PA 47	BE-5	Encourage the Creation of On-Bill Financing for Energy Retrofits	Complete
PA 48	BE-6	Seek Resources to Support Energy Programs	PA 30
PA 49	BE-7	Encourage Citywide Energy Conservation and Efficient Product Purchasing	PA 31
PA 50	BE-28	Facilitate Community Solar Programs	PA 37
PA 51	BE-29	Encourage PG&E to Offer Green Power Options	Complete
PA 52	BE-30	Monitor Community Choice Energy	Complete
PA 53	MW-4	Enforce Mandatory Recycling	Fully Underway
PA 54	MW-5	Conduct Zero Waste Residential Social Marketing Campaigns and Business Outreach	Fully Underway
PA 55	MW-6	Study Options for Advancing Next-Level Waste Reduction	PA 41
PA 56	CE-16	Develop an Oakland Climate Action Model Practices Campaign	PA 47
PA 57	CE-3	Community Climate Action Guide	PA 44
PA 58	CE-4	Support Local Climate Workshops	PA 45
PA 59	AD-2	Study Potential Local Climate Impacts	PA 48
PA 60	AD-3	Communicate Climate Impacts to the Community	PA 49
PA 61	AD-4	Identify and Act on Opportunities to Improve Resilience in City Plans and Policies	PA 50
	TLU-9	Increase Multi-Income Housing near Transit Hubs	PA 17
	TLU-11	Increase Density near Transit to Improve Livability	Fully Underway
	TLU-17	Optimize Street Design to Support Transit, Bicycling, and Walking	PA 19
	TLU-19	Expand and Enhance Public Transit Service and Amenities	PA 20
	TLU-23	Promote Bicycle Safety Training, Transit System Use, and Other Non-Auto Transportation	Fully Underway
	TLU-24	Encourage the Creation of Local Bike Sharing Programs	Fully Underway
	TLU-25	Expand Car Sharing	PA 21
	TLU-30	Impose Parking Maximums and Develop Strategies to Minimize Parking Need	PA 22
	TLU-46	Conduct a Robust Urban Tree Inventory	PA 25
	TLU-47	Update City Tree Ordinances	PA 26



2012 Priority Action Designation	ID	Description	2017 Designation / Status
			<div> <div></div> = Supported by Existing Resources           <div></div> = Requiring New Resources         </div>
	TLU-48	Implement Street Tree Planting Pilot	PA 27
	BE-16	Consider Energy Benchmarking Requirements for Commercial Buildings	PA 33 (merged with BE-15)
	BE-35	Encourage Rainwater Harvesting	PA 38
	BE-40	Increase Public Landscaping with Drought-Resistant Plants and Trees	PA 39
	BE-41	Install water Efficient Fixtures and Equipment in Municipal Facilities	PA 40
	BE-46	Upgrade to Energy-Efficient Streetlights	Complete
	BE-47	Provide City Employee Staff Training on Climate Issues.	Fully Underway
	MW-13	Promote Waste Reduction through Enhanced Producer Responsibility	PA 42
	MW-15	Encourage Local Reuse and Repair	PA 43
	CE-8	Promote Climate-Related Educational Opportunities	PA 11
	CE-11	Facilitate Community Input on Climate Issues	PA 46
	CE-17	Provide Additional Information on Energy and Climate Issues Including Energy and GHG Reduction Progress through Existing City Channels	PA 9 (merged with CE-1 and CE-15)
	AD-6	Participate in Development of a Regional Climate Adaptation Strategy	PA 51
	AD-7	Develop a Resilience-Based Climate Adaptation Plan	PA 52
	AD-8	Include Measures to Reduce the Urban Heat Island Effect in Planning Documents	PA 15
	AD-9	Promote the Development of Oakland's Urban Forest	PA 53
	AD-10	Promote Water Conservation and Efficiency	PA 54
	AD-11	Promote Measures to Reduce the Impact of Floods	PA 55
	AD-12	Encourage Recycled Water Delivery and Use	PA 56
	AD-14	Provide Staff Training on Climate Impacts and Adaptation	PA 16

# Oakland's Greenhouse Gas Emissions

## GHG Emissions Baseline and Inventory Frequency

In 2009, City Council adopted Resolution No. 82129 C.M.S., establishing GHG reduction targets for Oakland, and establishing 2005 as the baseline year for comparisons. While many cities across California and around the world inventory their GHG emissions and monitor progress towards a reduction goal, the baseline year for comparison varies widely. Most American cities have established a baseline year between 1990 and 2005. This is important to consider when comparing GHG reductions among cities.

The GHG Emissions Inventory approach has evolved since the City's first inventory, created in 2009 and evaluating the baseline year 2005 emissions. The City has completed inventories for the years 2005, 2010, and 2013, and intends to create inventories for each odd numbered year going forward. The inventory of 2015 emissions is expected to be completed in 2017. It is important to note that it typically takes 12-18 months for sufficient information to become available to complete an inventory, hence the two-year delay from the time period evaluated and the year in which an inventory is conducted.

## Approach to Calculating Oakland's Greenhouse Gas Emissions

The traditional method for calculating emissions associated with a City is to aggregate all emissions associated with activities within the boundaries of the City, usually referred to as an in-boundary or core emissions analysis. This approach is defined in protocols established by ICLEI – Local Governments for Sustainability, and serves to ensure that cities create inventories that can be compared to one another. Its strengths include a well understood and developed methodology for how to conduct the analysis, tools that can accurately measure emissions, and reporting standards to ensure that information is shared both nationally and internationally.

By contrast, leading edge cities are beginning to conduct emissions inventories using a consumption model, referred to as Consumption-Based Emissions Inventories (CBEIs) or lifecycle emissions analysis. This approach seeks to quantify the total emissions associated with the Oakland residents and businesses, regardless of where the emissions occur. A convenient way to understand the difference between these approaches is to consider a person driving 10 miles in Oakland. A core inventory would include only the emissions associated with the use of gasoline for 10 miles. A consumption inventory would also include the emissions associated with the extraction, refinement, and transport of that gasoline to Oakland, as well as a percentage of the emissions associated with the manufacture of the vehicle. The benefit of a consumption inventory is that it more accurately characterizes the emissions for which Oakland is responsible, and offers a more information on which to base policy decisions to reduce the carbon footprint of the community. On average, consumption based inventories document 2.5 to 3.0 times the emissions of a core inventory.

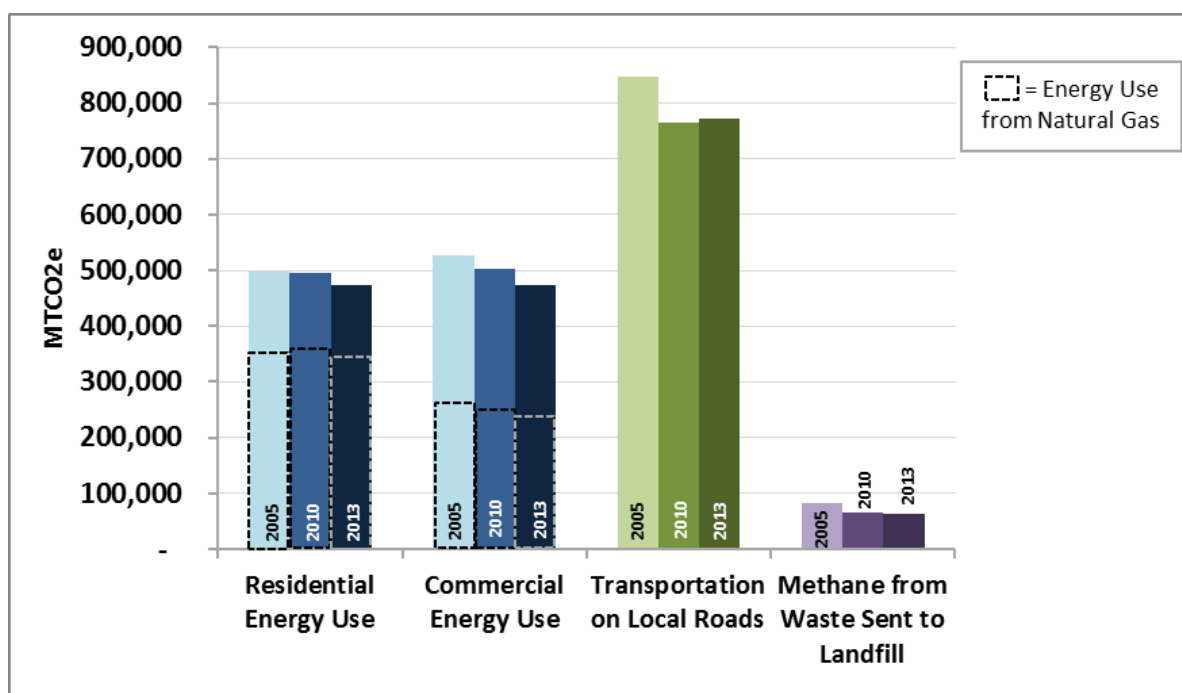
The City produces both a core and consumption based emissions inventory for each of its reporting years. In doing so, the City seeks to provide the most comprehensive and accurate information to City Council for consideration in determining which policies to pursue to reduce overall greenhouse gas emissions, and to best inform both government and community decisions that impact carbon emissions.

## Oakland's GHG Emissions: 2005 - 2013

### City Action Focus Areas

To date, the City has focused its GHG reduction actions on emission sources that the City has a relatively high degree of influence over and the ability to measure over time. These sources (transportation on local roads; electricity and natural gas consumption in residential, commercial and industrial buildings; and landfilled solid waste) are the primary focus of the ECAP. These sources are grouped into categories for the ease of tracking and reporting. The ECAP is designed to identify energy and GHG reduction actions that enable Oakland to achieve its GHG reduction targets for these sources. Emissions associated with natural gas are highlighted within the energy section to illustrate their significance in these categories. Figure 1 provides a summary of 2005 GHG emissions associated with these categories, and the corresponding changes in these sectors in 2010 and 2013. Additional detail on these sources is provided in Tables 2 – 5 below.

**Figure 1. Oakland's GHG Emissions from Focus Area Sources from 2005-2013**

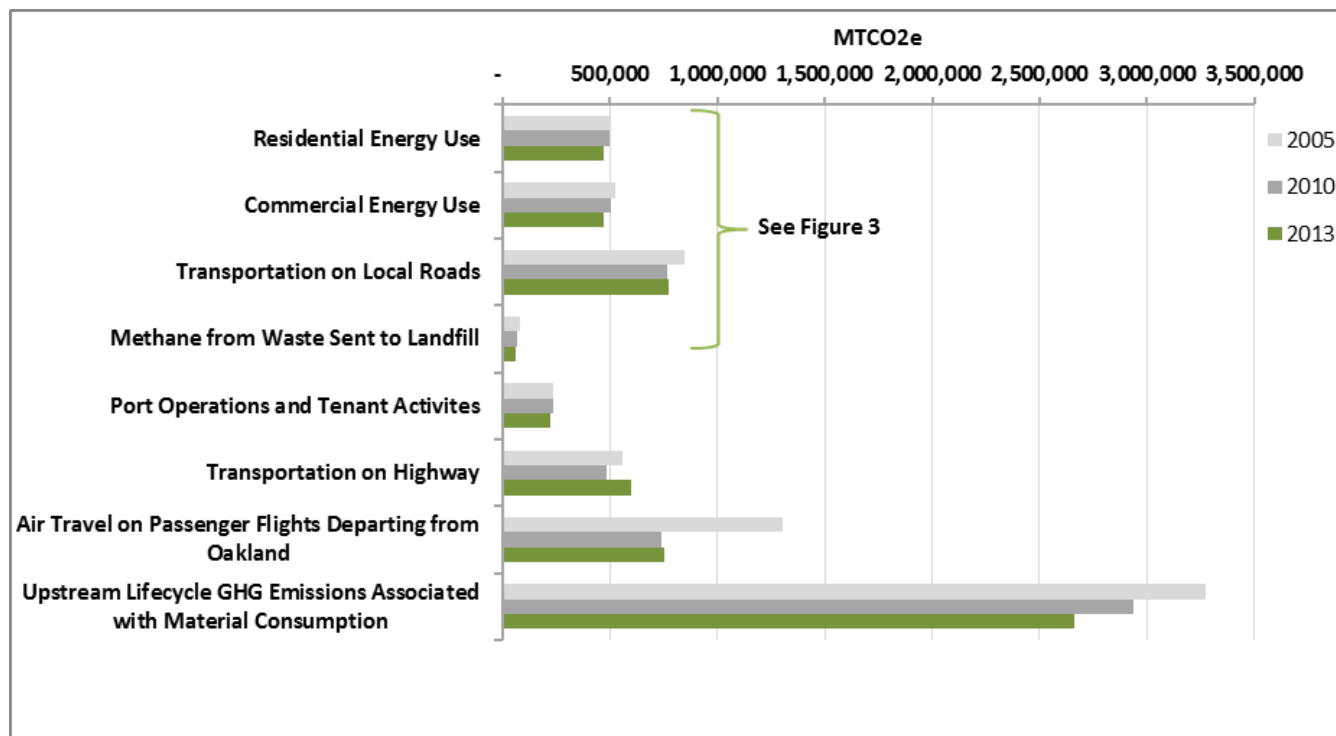


### Recognizing All Relevant GHG Emission Sources

Beyond the ECAP focus areas, there are a number of significant GHG emission sources that, while City influence might be relatively limited, can be reduced through local and regional community action (e.g., passenger air travel associated with the Oakland International Airport, pass-through travel on local highways, lifecycle impacts of material consumption choices of residents and businesses).

This more comprehensive set of GHG emission sources associated with Oakland is identified in Tables 3 – 6 and summarized in Figure 2. Estimates of GHG emissions associated with each source are included where possible. The ECAP includes actions aimed at reducing GHG emissions outside of the City's primary focus areas identified above. Figure 2 shows the same core areas of emissions as Figure 1, but adds areas in which the City has less regulatory influence on emissions, including Port of Oakland operations, transportation on State and Federal highways, and lifecycle emissions of goods and services consumed in Oakland. The City will continue to report on all of these GHG emission sources, to the extent feasible, in future progress reports and updates to the ECAP.

Figure 2. GHG Emissions Associated with Oakland from Select Quantified Sources



Information provided in Tables 3a and 3b is intended to summarize all relevant sources to the extent possible, and to enable the City and other interested community stakeholders to report on and consider GHG emissions associated with Oakland in a variety of manners. For example, local organizations may wish to help educate community members about the importance of reducing lifecycle GHG emissions by changing material consumption choices.

The Emissions Inventory delves deeper into these categories, providing additional details to help inform the reader of the sources of each of the emissions. Table 3a shows the core emissions in Oakland from 2005 – 2013 broken down into greater detail. As described earlier, these core emissions reflect only those GHGs produced within Oakland’s municipal boundaries. Table 3b, by contrast, shows the consumption emissions for the same categories. To understand the scope of each of these categories, the following descriptions are offered:

- **Buildings and Energy Use**

Residential Electricity: Electricity supplied by the grid, via Pacific Gas & Electric Company, for single and multifamily homes in Oakland.

Residential Natural Gas: Natural Gas supplied by Pacific Gas & Electric Company for on-site combustion in single and multifamily homes in Oakland.

Commercial Electricity: Electricity supplied by the grid, via Pacific Gas & Electric Company, for commercial buildings in Oakland. This is inclusive of retail, office, hospital, and other specialty commercial uses.

Commercial Natural Gas: Natural Gas supplied by Pacific Gas & Electric Company for on-site combustion in commercial buildings in Oakland. This is inclusive of retail, office, hospital, and other specialty commercial uses.

Water and Wastewater: Emissions associated with the operation of water and wastewater treatment and conveyance facilities in Oakland.



- **Transportation and Mobile Sources**

Airport: The departing passenger and freight flights attributed to Oaklanders.

Public Transit: Emissions from fuel use from BART, AC Transit, Union Pacific Rail, and Amtrak.

State Highway Gasoline: Emissions from gasoline used for vehicle traffic on State highways.

State Highway Diesel: Emissions from diesel used for vehicle traffic on State highways.

On-Road Gasoline: Emissions from gasoline used for vehicle traffic on local roads.

On-Road Diesel: Emissions from diesel used for vehicle traffic on local roads.

Port of Oakland: Emissions from the sea port as reported by the Port. This does not include airplanes or maritime vessels, but rather land operations of buildings, vehicles, and other equipment operating at the Port.

- **Materials Use & Waste**

Solid Waste: Landfill methane emissions for core and lifecycle emissions from materials to landfill, recycling, and compost in consumption

Upstream of Goods & Food: Emissions from the consumption of non-disposed goods found through economic indicators in the Cool Climate Calculator. No emissions are shown in this category in the core inventory (Table 3a) as all emissions occur beyond the boundaries of Oakland, but do appear in the consumption inventory (Table 3b).

Construction Upstream Emissions: Pre-disposal emissions from the manufacturing and transportation of building materials used to construct buildings in Oakland. No emissions are shown in this category in the core inventory as all emissions occur beyond the boundaries of Oakland, but do appear in the consumption inventory (Table 3b).

- **Local Government Emissions**

Municipal Buildings and Facilities: All buildings owned and operated by the City.

Streetlight and Traffic Controllers: All streetlights and traffic controllers, including traffic lights, pedestrian signals, and associated lighting.

Municipal Vehicle Fleet: All vehicles owned and operated by the City, including its light duty fleet, maintenance vehicles, street sweepers, and specialty vehicles.

Municipal Waste Generation: All discarded materials from City facilities, including recycling, compost, and solid waste.

**Table 3a. Oakland GHG Emissions by Source – Core Emissions**

	CORE				
	2005 (MTCO <sub>2</sub> e)	2010 (MTCO <sub>2</sub> e)	2013 (MTCO <sub>2</sub> e)	% Change Since Baseline	MT Change Since Baseline
<b>Community Emissions</b>					
<b>Buildings &amp; Energy Use</b>	<b>1,034,747</b>	<b>1,010,526</b>	<b>957,951</b>	<b>-7%</b>	<b>(76,796)</b>
Residential Electricity	149,696	143,079	136,588	-9%	(13,108)
Residential Natural Gas	347,019	352,942	336,395	-3%	(10,624)
Commercial Electricity	258,614	248,991	231,431	-11%	(27,183)
Commercial Natural Gas	268,058	254,291	242,165	-10%	(25,893)
Water and Wastewater	11,360	11,223	11,372	0%	12
<b>Transportation &amp; Mobile Sources</b>	<b>1,832,674</b>	<b>1,609,328</b>	<b>1,712,508</b>	<b>-7%</b>	<b>(120,166)</b>
Airport	146,618	76,781	78,270	-47%	(68,348)
Public Transit	45,126	43,391	41,261	-9%	(3,865)
State Highway Gasoline	538,168	468,930	574,370	7%	36,202
State Highway Diesel	21,122	19,436	24,196	15%	3,074
On-Road Gasoline	598,518	562,175	556,044	-7%	(42,474)
On-Road Diesel	248,122	203,615	215,348	-13%	(32,774)
Port of Oakland	235,000	235,000	223,020	-5%	(11,980)
<b>Materials Use &amp; Waste</b>	<b>82,977</b>	<b>65,898</b>	<b>63,205</b>	<b>-24%</b>	<b>(19,772)</b>
Solid Waste	82,977	65,898	63,205	-24%	(19,772)
Upstream of Goods & Food	--	--	--	--	--
Construction Upstream Emissions	--	--	--	--	--
<b>Total Community</b>	<b>2,950,398</b>	<b>2,685,752</b>	<b>2,733,664</b>	<b>-7%</b>	<b>(216,734)</b>
<b>Local Government Emissions</b>					
Municipal Buildings & Facilities	21,998	23,324	22,386	2%	388
Streetlight & Traffic Controllers	5,927	5,912	5,127	-13%	(800)
Municipal Vehicle Fleet	10,169	6,184	4,669	-54%	(5,500)
Municipal Waste Generation	4,243	1,753	2,305	-46%	(1,938)
<b>Total Local Government</b>	<b>42,337</b>	<b>37,173</b>	<b>34,486</b>	<b>-19%</b>	<b>(7,851)</b>
<b>Total Community and Local Government</b>	<b>2,992,735</b>	<b>2,722,925</b>	<b>2,768,150</b>	<b>-8%</b>	<b>(224,585)</b>

**Table 3b. Oakland GHG Emissions by Source – Consumption Emissions**

	CONSUMPTION				
	2005 (MTCO2e)	2010 (MTCO2e)	2013 (MTCO2e)	% Change Since Baseline	MT Change Since Baseline
<b>Community Emissions</b>					
<b>Buildings &amp; Energy Use</b>	<b>1,341,782</b>	<b>1,454,119</b>	<b>1,395,010</b>	<b>4%</b>	<b>53,227</b>
Residential Electricity	211,070	254,712	249,915	18%	38,844
Residential Natural Gas	425,707	432,973	412,674	-3%	(13,033)
Commercial Electricity	364,803	443,258	423,972	16%	59,169
Commercial Natural Gas	328,841	311,953	297,077	-10%	(31,764)
Water and Wastewater	11,360	11,223	11,372	0%	12
<b>Transportation &amp; Mobile Sources</b>	<b>3,707,148</b>	<b>2,815,383</b>	<b>2,940,762</b>	<b>-21%</b>	<b>(766,387)</b>
Airport	1,671,027	972,592	967,450	-42%	(703,577)
Public Transit	45,126	43,391	41,261	-9%	(3,865)
State Highway Gasoline	679,219	590,440	723,156	6%	43,937
State Highway Diesel	25,211	23,189	28,865	14%	3,654
On-Road Gasoline	755,392	707,847	700,094	-7%	(55,298)
On-Road Diesel	296,174	242,924	256,916	-13%	(39,258)
Port of Oakland	235,000	235,000	223,020	-5%	(11,980)
<b>Materials Use &amp; Waste</b>	<b>3,815,248</b>	<b>3,543,252</b>	<b>3,252,819</b>	<b>-15%</b>	<b>(562,429)</b>
Solid Waste	1,408,762	1,303,664	1,245,812	-12%	(162,950)
Upstream of Goods & Food	2,241,486	2,193,788	1,947,907	-13%	(293,579)
Construction Upstream Emissions	165,000	45,800	59,100	-64%	(105,900)
<b>Total Community</b>	<b>8,864,178</b>	<b>7,812,754</b>	<b>7,588,590</b>	<b>-14%</b>	<b>(1,275,588)</b>
<b>Local Government Emissions</b>					
Municipal Buildings & Facilities	28,005	27,231	26,904	-4%	(1,101)
Streetlight & Traffic Controllers	5,927	5,912	5,127	-13%	(800)
Municipal Vehicle Fleet	10,319	7,493	5,626	-45%	(4,693)
Municipal Waste Generation	4,243	1,753	2,305	-46%	(1,938)
<b>Total Local Government</b>	<b>48,494</b>	<b>42,389</b>	<b>39,962</b>	<b>-18%</b>	<b>(8,532)</b>
<b>Total Community and Local Government</b>	<b>8,912,672</b>	<b>7,855,143</b>	<b>7,628,552</b>	<b>-14%</b>	<b>(1,284,121)</b>

**Table 4. Oakland GHG Emissions Data Sources**

Activity	Core Sources	Upstream Sources
<b>Buildings and Energy Use</b>		
Residential Energy	Pacific Gas & Electric	ICLEI, Pacific Gas & Electric
Commercial Energy	Pacific Gas & Electric	ICLEI, Pacific Gas & Electric
Industrial Energy	Unable to Include - CPUC 15/15 Rule*	Unable to Include - CPUC 15/15 Rule*
Water and Wastewater	East Bay Municipal Utility District	---
<b>Transportation and Mobile Sources</b>		
State Highway Gasoline	Highway Performance Monitoring system, Air Resources Board EMFAC Database	REET - Argonne National Laboratory
State Highway Diesel	Highway Performance Monitoring system, Air Resources Board EMFAC Database, Onthemap Census	REET - Argonne National Laboratory
On-Road Gasoline	Metropolitan Transportation Commission	REET - Argonne National Laboratory
On-Road Diesel	Metropolitan Transportation Commission	REET - Argonne National Laboratory
Airport & Sea Port	Oakland Airport Monthly Reports, Port of Oakland GHG Inventory	REET - Argonne National Laboratory <i>Sea Port: Unable to include</i>
Public Transit	Union Pacific Railroad GHG Inventory, National Transit Database, Bay Area Rapid Transit, Alameda-Contra Costa Transit, Water Emergency Transportation Authority, Amtrak, Onthemap Census	---
<b>Materials Use &amp; Waste</b>		
Solid Waste	CalRecycle, StopWaste, Alameda County Waste Characterization	EPA WARM Model
Upstream Goods & Services	---	Cool Climate Calculator, UC Berkeley
Construction Upstream	---	Census Building Permit Data, EIO-LCA

\* The 15/15 Rule states that an aggregation sample must have more than 15 customers and no single customers data may comprise more than 15% of the total aggregated data in order for the data to be released. Oakland's industrial energy load is believed to have one customer that accounts for more than 15% of the total energy load.

## Oakland's GHG Reduction Target

### Overview of Oakland's GHG Reduction Target

In July 2009, the Oakland City Council approved a preliminary planning GHG emissions reduction target for the year 2020 at 36% below 2005 levels, on a path toward reducing GHG emissions by more than 80% below 2005 levels by 2050.

This planning target was developed based on publications of the Intergovernmental Panel on Climate Change (IPCC), widely recognized as the world's leading body of climate scientists. According to a 2009 IPCC report<sup>xvii</sup>, achieving this level of GHG reductions throughout the industrial world will help to achieve a level of climate stabilization that would avoid the worst future climate impact scenarios.<sup>xviii</sup> Subsequent reports from the IPCC have continued to validate this goal as appropriate for local and national level targets.

Oakland has an opportunity to demonstrate leadership by striving to achieve this level of GHG emissions reductions, reinforcing the City's commitment to local climate action.

### Identifying an Oakland Preliminary Planning Target for GHG Reduction

A clear scientific near-consensus has emerged regarding the dangers of escalating concentrations of greenhouse gases in the Earth's atmosphere and the significant role that anthropogenic (human caused) sources of GHG emissions are playing in increasing those concentrations. Tremendous collective action will be necessary in the near term on a global scale to reduce GHG emissions to levels that avoid the worst impacts.

Projected local impacts of climate change include rising Bay and delta waters, decreased potable water supply, increased fire danger, added stress on infrastructure, pricing and quality of life burdens, ecological degradation, and others. The Bay Conservation and Development Commission (BCDC) has conducted Oakland-specific analysis of anticipated impacts to ocean levels resulting from climate change, and has predicted that sea levels may rise up to 55 inches by the end of this century.<sup>xix</sup> Preliminary analysis shows that low-elevation portions of Oakland, including the airport, Coliseum area, and portions of West Oakland, could be vulnerable to more frequent flooding from moderate levels of sea rise, and regular inundation from a 55-inch rise in sea levels.<sup>xx</sup>

### Scientific Perspective on Needed GHG Reduction Goals

Significant reductions in global anthropogenic GHG emissions are projected to be necessary to reverse present trends and restore a stabilized atmospheric GHG concentration level similar to that of recent history. According to climate scientist James Hansen, "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that."<sup>xxi</sup> Since that statement, the level of CO<sub>2</sub> in the atmosphere has continued to rise, and has reached 406 PPM as of 2017. Achieving an atmospheric GHG concentration of 350 ppm CO<sub>2</sub> would roughly correlate to a concentration of approximately 450 ppm in total CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) terms, a metric often used to express the total equivalent warming potential of CO<sub>2</sub> and other relatively minor but also significant greenhouse gases in the atmosphere.<sup>xxii</sup>

According to the Intergovernmental Panel on Climate Change (IPCC), a body of the world's most authoritative climate scientists, achieving even an atmospheric GHG concentration of 450 ppm CO<sub>2</sub>e will yield some negative climate impacts, including some deglaciation, species extinction, and changes in frequency and severity of flooding, droughts, fires and other impacts. However, this target is frequently framed in the literature near the best-case scenario end of the future range of projections, requiring highly aggressive GHG reductions.<sup>xxiii</sup>



The IPCC's Fourth Assessment Report (FAR) suggests that industrialized countries would need to reduce GHG emissions to levels 25-40% below 1990 levels by 2020 and 80-95% below 1990 levels by 2050 to achieve a stabilized atmospheric GHG concentration of 450 ppm CO<sub>2</sub>-equivalent (CO<sub>2</sub>e).

### Applying Current Global Climate Science in the Context of Oakland

Data for Oakland's 1990 GHG emissions are not available, but a 2005 GHG inventory was developed for Oakland to serve as the baseline comparison point for future GHG reduction assessments. Using Oakland's 2005 GHG emissions inventory as a baseline allows progress to be measured and demonstrated in an accurate and comprehensive manner. In addition to the 2005 baseline inventory, the City has completed GHG emissions inventories for the years 2010 and 2013. The City expects to be able to complete GHG inventories in all odd-numbered years to track progress towards the City's goal.

Based on information provided by the California Air Resources Board, achieving a statewide GHG reduction of 25% below 1990 levels would correlate to a statewide reduction target of approximately 36% below 2005 GHG levels. Achieving statewide reductions of 80% below 1990 levels would be roughly equivalent to an 83% reduction relative to 2005 levels.

Faced with a lack of data for 1990, staff assumes GHG emissions growth that has occurred in Oakland is similar to the State average during the time period from 1990 to 2005. For Oakland to meet the IPCC-suggested GHG reduction targets for industrialized countries, Oakland's GHG emissions would need to be reduced by at least 36% below 2005 levels by 2020, and 83% below 2005 levels by 2050. Oakland City Council adopted these targets in 2009.

### State Perspective on Role of Local Governments in Reducing GHG Emissions

Below is an excerpt from the California Air Resources Board (CARB) adopted Climate Change Scoping Plan describing CARB's perspective on the role of local governments in reducing GHG emissions in California.<sup>xxiv</sup>

#### The Role of Local Government: Essential Partners

Local governments are essential partners in achieving California's goals to reduce greenhouse gas emissions. They have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect greenhouse gas emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce greenhouse gas emissions rely on local government actions.

Over 120 California cities have already signed on to the U.S. Conference of Mayors Climate Protection Agreement. In addition, over 30 California cities and counties have committed to developing and implementing Climate Action Plans. Many local governments and related organizations have already begun educating Californians on the benefits of energy efficiency measures, public transportation, solar homes, and recycling. These communities have not only demonstrated courageous leadership in taking initiative to reduce greenhouse gas emissions, they are also reaping important co-benefits, including local economic benefits, more sustainable communities, and improved quality of life.

Land use planning and urban growth decisions are also areas where successful implementation of the Scoping Plan relies on local government. Local governments have primary authority to plan, zone, approve, and permit how and where land is developed to accommodate population growth and the changing needs of their jurisdictions. Decisions on how land is used will have large impacts on the greenhouse gas emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas sectors.

To provide local governments guidance on how to inventory and report greenhouse gas emissions from government buildings, facilities, vehicles, wastewater and potable water treatment facilities, landfill and composting facilities, and other government operations, ARB recently adopted the Local Government Operations Protocol. ARB encourages local governments to use this protocol to track their progress in

achieving reductions from municipal operations. ARB is also developing an additional protocol for community emissions. This protocol will go beyond just municipal operations and include emissions from the community as a whole, including residential and commercial activity. These local protocols will play a key role in ensuring that strategies that are developed and implemented at the local level, like urban forestry and greening projects, water and energy efficiency projects, and others, can be appropriately quantified and credited toward California's efforts to reduce greenhouse gas emissions.

In addition to tracking emissions using these protocols, ARB encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020. To consolidate climate action resources and aid local governments in their emission reduction efforts, the ARB is developing various tools and guidance for use by local governments, including the next generation of best practices, case studies, a calculator to help calculate local greenhouse gas emissions, and other decision support tools.

The recent passage of SB 375 (Steinberg, Chapter 728, Statutes of 2008) creates a process whereby local governments and other stakeholders work together within their region to achieve reduction of greenhouse gas emissions through integrated development patterns, improved transportation planning, and other transportation measures and policies. The implementation of regional transportation-related greenhouse gas emissions targets and SB 375 are discussed in more detail in Section C.

### Considering GHG Reduction Targets in the Context of Recent State Policy Action

Climate policies adopted at the State level in California (e.g., AB 32, SB 375) aim to reduce statewide GHG emissions to 1990 levels by 2020.<sup>xxv</sup> This correlates to a reduction of approximately 15% below current levels by 2020. Executive Order S-3-05 issued by Governor Schwarzenegger calls for statewide GHG reductions of 80% below 1990 levels by 2050.<sup>xxvi</sup>

As documented in the Climate Change Scoping Plan adopted by the California Air Resources Board (CARB) in December 2008, scheduled for update in 2017, a variety of State-driven strategies are being developed and implemented to help achieve these statewide goals. Additional and complementary local actions will be needed to help reach these goals and make additional progress. Table 5 summarizes these State-driven strategies outlined in the CARB Scoping Plan.

**Table 5. Recommended Greenhouse Gas Reduction Measures from CARB Climate Change Scoping Plan<sup>xxvii</sup>**

<b>Recommended Reduction Measures</b>
California Light-Duty Vehicle Greenhouse Gas Standards <ul style="list-style-type: none"> <li>• Implement Pavley standards</li> <li>• Develop Pavley II light-duty vehicle standards</li> </ul>
Energy Efficiency <ul style="list-style-type: none"> <li>• Building/appliance efficiency, new programs, etc.</li> <li>• Increase CHP generation by 30,000 GWh</li> <li>• Solar Water Heating (AB 1470 goal)</li> </ul>
Renewables Portfolio Standard (33% by 2020)
Low Carbon Fuel Standard
Regional Transportation-Related GHG Targets
Vehicle Efficiency Measures
Goods Movement <ul style="list-style-type: none"> <li>• Ship Electrification at Ports</li> <li>• System-Wide Efficiency Improvements</li> </ul>
Million Solar Roofs
Medium/Heavy Duty Vehicles <ul style="list-style-type: none"> <li>• Heavy-Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic Efficiency)</li> <li>• Medium- and Heavy-Duty Vehicle Hybridization</li> </ul>
High Speed Rail
Industrial Measures (for sources covered under cap-and-trade program) <ul style="list-style-type: none"> <li>• Refinery Measures</li> <li>• Energy Efficiency &amp; Co-Benefits Audits</li> </ul>
Additional Reductions Necessary to Achieve the Cap
High Global Warming Potential Gas Measures
Sustainable Forests
Industrial Measures (for sources not covered under cap and trade program) <ul style="list-style-type: none"> <li>• Oil and Gas Extraction and Transmission</li> </ul>
Recycling and Waste (landfill methane capture)
<b>Other Recommended Measures</b>
State Government Operations
Local Government Operations
Green Buildings
Recycling and Waste (other measures)
Water Sector Measures
Methane Capture at Large Dairies

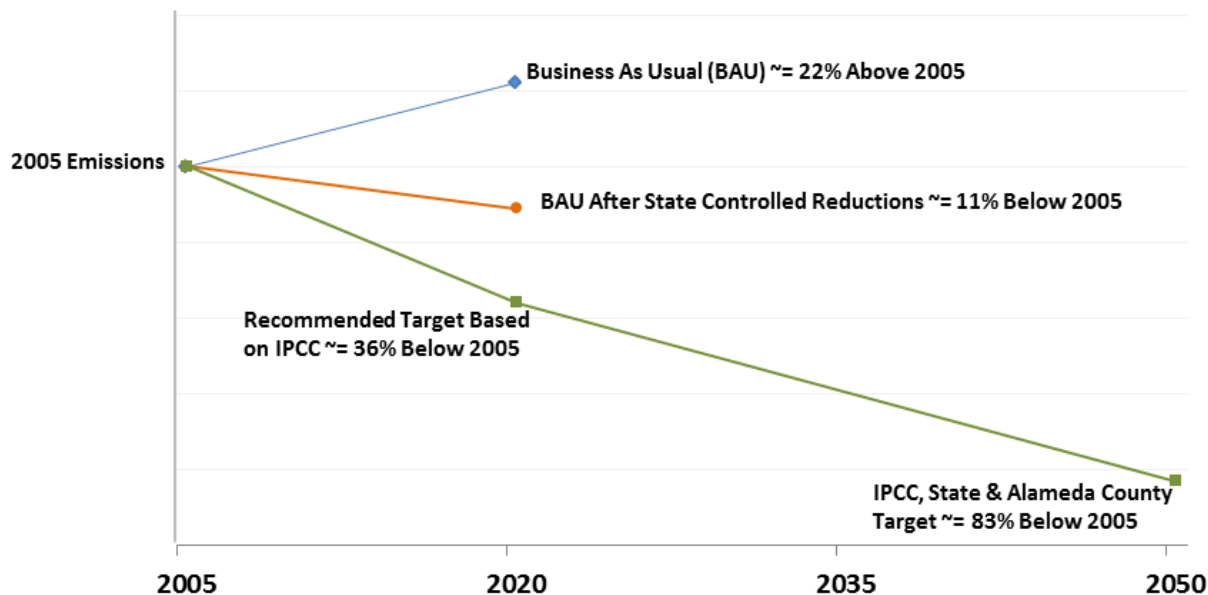
While some of these strategies may not affect Oakland significantly, most will have some impact in Oakland and should be considered when developing local GHG reduction targets and plans for meeting those targets.

Some of these State-driven strategies will affect future GHG emissions in Oakland irrespective of additional local action. For example, strategies such as requiring the sale of low carbon fuels and more fuel efficient vehicles on a statewide basis may create GHG reductions in Oakland without relying on local government implementation. Projections of future GHG emissions in Oakland are based on the assumed implementation of these State-driven strategies.

Other State-driven strategies identify goals for creating GHG reductions that can be translated to Oakland, but which will only be met if supported by new local action. For example, achieving statewide and regional goals related to reducing the number of vehicle miles traveled on local roads will require planning, policy and programmatic action at the local government level. To avoid any double-counting of GHG reductions, achievement of these goals is not assumed in business-as-usual projections of future GHG emissions in Oakland, as potential actions under consideration in the development of the ECAP will be needed to achieve these goals.

For the purpose of quantifying GHG reductions associated with a preliminary planning target, Oakland’s business-as-usual 2020 GHG projections have been adjusted based on these factors. These projections are also based on projected increases in population and economic activity provided by the Association of Bay Area Governments and vehicle miles traveled provided by the California Energy Commission.

**Figure 3. Oakland GHG Emissions and Targets**



Under business-as-usual conditions without implementation of the strategies outlined in the CARB Climate Change Scoping Plan, GHG emissions in Oakland were projected to increase by approximately 22% above 2005 levels by 2020. Assuming implementation of State-driven strategies as described above, Oakland’s GHG emissions in 2020 are projected to be approximately 11% below 2005 levels in the absence of additional local action.

#### Review of GHG Reduction Targets Established by Other Jurisdictions

Other jurisdictions within and outside of California have adopted a wide range of community-scale GHG reduction targets. These targets reference a variety of baseline years and target years, influenced by the date at which each target was adopted, local data availability, and other factors. These variables make direct comparison of adopted GHG reduction targets difficult. Table 6 below shows a summary of selected GHG reduction targets adopted by other institutions.

**Table 6. Example GHG Reduction Targets Established by Other Jurisdictions**

<b>Jurisdiction</b>	<b>Community-Scale GHG Reduction Target</b>
<b>State</b>	
California Assembly Bill 32	1990 levels by 2020 <sup>xxviii</sup>
Executive Order S-3-05	80% below 1990 levels by 2050 <sup>xxix</sup>
California Air Resources Board	Encourages local governments to adopt GHG reduction targets of 15% below current levels by 2020 <sup>xxx</sup>
<b>California Cities</b>	
Berkeley	80% below 2000 levels by 2050, on a path to reduce GHG emissions by ~25% from 2005 levels by 2020
Chula Vista	20% below 1990 levels by 2010
Hayward	12% below 2005 levels by 2020, 83% below 2005 level by 2050
Los Angeles	35% below 1990 levels by 2030
Palo Alto	5% below 2005 levels by 2012 and 15% below 2005 levels by 2020
San Diego	15% below 1990 levels by 2010
<b>Bay-Area Counties</b>	
Alameda County	80% below ~2007 levels by 2050
Marin County	15% below 2000 levels by 2020
San Francisco	20% below 1990 levels by 2012
Sonoma County & Cities	25% below 1990 levels by 2015 (all nine cities in Sonoma County have adopted targets at least as aggressive)
<b>National, International</b>	
Denmark	21% below 1990 levels by 2012
European Union	20% below 1990 levels by 2020
Germany	21% below 1990 levels by 2012
Luxembourg	28% below 1990 levels by 2010
Sweden	25% below 1990 levels by 2020
United Kingdom	20% below 1990 levels by 2010
Kyoto Protocol (and U.S. Mayors' Climate Protection Agreement)	7% below 1990 levels by 2012



## Applying Oakland's GHG Reduction Target

### Identification of Sub-Targets

There are many ways to report and evaluate community-scale GHG emissions data. In the absence of a standard protocol for community-scale GHG emissions accounting and reporting, it is currently up to each community to identify its preferred method.

It is recommended that each community apply its GHG reduction target to each category of GHG emission sources separately (e.g., transportation on local roads, building energy use). This method will help to avoid potential problems associated with double-counting of GHG reductions by multiple communities and increase the likelihood that collective action is producing the expected results.

Staff recommends that Oakland's target of reducing GHG emissions by 36% from 2005 levels by 2020 be separately applied to each GHG emission source category. GHG emissions reduction progress will be reported with respect to each emissions source category and sub-category (as illustrated in Tables 3a and 3b) as data and resources allow. Progress will be analyzed on both an absolute basis and per capita basis to enable future reflection on GHG reduction process, irrespective of population migration patterns.

### Consideration of Regional Context

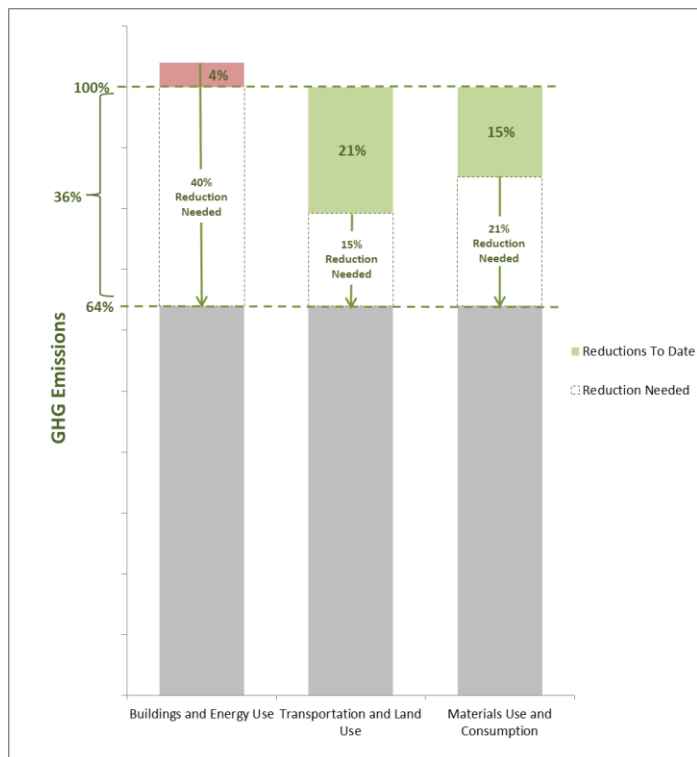
As regional and statewide action on climate protection grows, Oakland may be asked to adjust future growth plans to accommodate more or less residential, commercial, or industrial development than is currently planned. In some cases, increasing development in Oakland near comparatively transit-rich infrastructure may help the region to achieve bigger overall success toward energy and climate goals. Future updates to the ECAP will require reflection on regional plans and consideration of refinements to Oakland's targets, planned actions and reporting metrics to ensure that Oakland is able to meet its own goals, contribute effectively to regional GHG reduction progress and track its contribution toward mitigating this global problem.

### Considering Actions Reducing GHG Emissions Outside of Oakland

Some policies and actions that could be undertaken by the Oakland City government might result in significant GHG reductions in other geographic communities, or in the future, in ways that are difficult to represent in a traditional inventory of Oakland citywide GHG emissions. These types of actions are reflected in the consumption-based inventory approach, and are an evolving area of focus for cities in targeting GHG reductions. For example:

- Fostering population movement to dense, transit-served urban centers like Oakland may lead to big overall statewide reductions in vehicle miles traveled and associated GHG emissions (while possibly increasing vehicle use and GHG emissions within Oakland).

Figure 4. Applying the 36% GHG Reduction Goal in Each Emissions Source Category



- Fostering decreased consumption of material resources can help to conserve fossil fuel energy used for production and transportation of goods outside of Oakland.
- Fostering decreased generation of waste sent to landfill may lead to reductions in landfill methane in another geographic location where Oakland's waste is sent.

In many cases these 'lifecycle' benefits occur elsewhere in time and/or space and can be difficult to quantify accurately. In situations where the GHG reduction benefits from these kinds of actions can be estimated at a sufficient level of accuracy, they will be reported as part of the story of Oakland's progress in fostering GHG emissions reductions, specifically in the consumption inventories. As of yet, no specific goals or targets have been established for consumption or lifecycle emissions, so comparisons of these inventories are for perspective only.

### **Revisiting Climate Targets and Plans**

It is reasonable to assume that climate science will continue to evolve in the coming years and revisions to the target and actions recommended in this report may be appropriate. The ECAP outlines a process by which the City will periodically revisit GHG reduction targets to consider ongoing scientific, policy and technological developments, as well as progress toward the goal. A 2016-2017 Update to the ECAP was conducted consistent with this direction.

# Achieving Oakland's 36% GHG Reduction Target

## Oakland's Citywide Target: 36% Reduction in All GHG Emission Source Areas

Achieving Oakland's 36% GHG reduction target across all sources of GHG emissions will require significant action in many areas by all members of the Oakland community. In some areas (e.g., local land use planning, building codes), the City has significant opportunities to influence GHG emission sources and foster GHG reductions. In others areas (e.g., air travel and material consumption choices by residents), achieving Oakland's GHG reduction target will rely most heavily on the choices of individuals and additional leadership from local and regional partners. The City calls upon the greater Oakland community to embrace a 36% GHG reduction target for each GHG emission source area, and to take personal action toward that target wherever feasible.

## Glossary

**ABAG:** Association of Bay Area Governments

**AC Transit:** The bus system for the East Bay

**BAAQMD:** Bay Area Air Quality Management District

**BART:** Bay Area Rapid Transit

**BCDC:** San Francisco Bay Conservation and Development Commission

**BIG:** Build It Green, an Oakland-based non-profit that provides green building assistance

**BRT:** Bus Rapid Transit

**C&D:** Construction and demolition debris

**CCA:** Community Choice Aggregation, a term used to describe an arrangement that enables a local government to supply electricity to customers within its borders and involves the local government in the purchase and sale of the energy commodity

**CEC:** California Energy Commission

**CECO:** Commercial Energy Conservation Ordinance

**CH<sub>4</sub>:** Methane, a powerful greenhouse gas

**CO<sub>2</sub>e:** Carbon dioxide equivalent units, converting all emissions to equivalent carbon dioxide units allows for the consideration of different greenhouse gases on comparable terms

**CPUC:** California Public Utilities Commission

**CYES:** California Youth Energy Services, a program that employs local youth to promote energy awareness

**EPP:** Environmentally Preferable Purchasing, a City policy designed to require purchase of products and services that minimize environmental and health impacts, toxics, pollution, and hazards to worker and community safety

**GHG:** Greenhouse Gas, the term used for gases that trap heat in the atmosphere. The principal greenhouse gases that enter the atmosphere as a result of human activity are carbon dioxide, methane, and nitrous oxide

**GPR:** GreenPoint Rated, a green building standard used in California for new residential projects

**ICLEI:** ICLEI – Local Governments for Sustainability, an international membership association of local governments focused on addressing the climate challenge

**kW:** A kilowatt, equal to 1,000 watts

**kWh:** A kilowatt hour (1,000 watts), the work performed by one kilowatt of electric power in one hour

**Kyoto Protocol:** The United Nations Treaty that targets the reduction of greenhouse gas emissions

**LBNL:** Lawrence Berkeley National Laboratory

**LED:** Light emitting diode

**LEED:** Leadership in Energy and Environmental Design, a commonly used green building standard

**MTC:** Metropolitan Transportation Commission

**Net Zero Energy Buildings:** A building that achieves maximum energy efficiency so that any remaining energy needs can be met through onsite renewable energy systems, such as solar water and space heating, solar electricity, or wind energy

**OUSD:** Oakland Unified School District

**Peak Oil:** A term used to describe the transition from many decades in which the available supply of oil grew each year to a period in which the rate of oil production enters its terminal decline

**PG&E:** Pacific Gas & Electric

**PV:** Photovoltaics, a solar power technology that converts sunlight into electricity

**RECO:** Residential Energy Conservation Ordinance

**RPP:** Residential Permit Parking

**Solar thermal:** A technology that captures solar energy for heat

**SR2S:** Safe Routes to School program

**StopWaste.Org:** The Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board serving as one agency

**TALC:** Transportation and Land Use Coalition, a local organization that advocates for alternative forms of transportation

**Therm:** 100,000 British Thermal Units (BTUs), equivalent to approximately 100 standard cubic feet of natural gas

**Title 24 Energy Code:** California's energy efficiency standards for residential and nonresidential buildings

**VMT:** Vehicle miles traveled

**Zero Waste:** The City's goal to eliminate waste sent to the landfill. All of the community's discarded material would be recycled or reused.

# Endnotes

- <sup>i</sup> Adapted from a whitepaper titled “Products, Packaging and US Greenhouse Gas Emissions” written by Joshua Stolaroff and published by the Product Policy Institute in September 2009. For the purposes of this illustration, GHG emissions associated with Products & Packaging and the Provision of Food have been combined under the heading Material Consumption & Waste, and GHG emissions associated with Infrastructure (1% of total pie) have been combined under the heading Building HVAC & Lighting.
- <sup>ii</sup> Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari, 2007: Policies, Instruments and Co-operative Arrangements. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- <sup>iii</sup> A 36% reduction in GHG emissions from 2005 levels in Oakland is projected to be approximately equivalent to a 25% reduction from 1990 levels based on analysis by City of Oakland staff using California statewide 1990 and 2005 emissions as a proxy for Oakland.
- <sup>iv</sup> The White House. “President Obama signs an Executive Order Focused on Federal Leadership in Environmental, Energy, and Economic Performance” [http://www.whitehouse.gov/the\\_press\\_office/President-Obama-signs-an-Executive-Order-Focused-on-Federal-Leadership-in-Environmental-Energy-and-Economic-Performance/](http://www.whitehouse.gov/the_press_office/President-Obama-signs-an-Executive-Order-Focused-on-Federal-Leadership-in-Environmental-Energy-and-Economic-Performance/)
- <sup>v</sup> California Air Resources Board. <http://www.arb.ca.gov/cc/cc.htm>
- <sup>vi</sup> State of California Executive Department. Executive Order S-3-05. <http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm>
- <sup>vii</sup> California Air Resources Board. “Climate Change Proposed Scoping Plan.” Oct 2008. <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>
- <sup>viii</sup> Projected changes in population and VMT are drawn from reports by the Association of Bay Area Governments and vehicle miles traveled provided by the California Energy Commission.
- <sup>ix</sup> National Research Council (NRD), 2012. “Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future.
- <sup>x</sup> Cayan, Dan, with Mary Tyree, Mike Dettinger, Hugo Hidalgo, Tapash Das, Ed Maurer, Peter Bromirski, Nicholas Graham, and Reinhard Flick. “Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment.” California Climate Change Center. Prepared for the California Energy Commission. Report CEC-500-2009-014-D. March 2009.
- <sup>xi</sup> National Oceanic and Atmospheric Administration. “Sea Level Rise and Coastal Flooding Impacts” <https://coast.noaa.gov/slr/>
- <sup>xii</sup> City of Oakland. “Bicycle Master Plan”. Page 113. December 2007.
- <sup>xiii</sup> City of Oakland. “Draft 2017 Pedestrian Master Plan.” Page 54. April 2017.
- <sup>xiv</sup> Matrix Consulting Group. “Performance Audit of the Public Works Agency.” April 29, 2009.
- <sup>xv</sup> Cayan, Dan, with Mary Tyree, Mike Dettinger, Hugo Hidalgo, Tapash Das, Ed Maurer, Peter Bromirski, Nicholas Graham, and Reinhard Flick. “Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment.” California Climate Change Center. Prepared for the California Energy Commission. Report CEC-500-2009-014-D. March 2009.
- <sup>xvi</sup> Bay Conservation and Development Commission. “San Francisco Bay Scenarios for Sea Level Rise Index Map” [http://www.bcdc.ca.gov/planning/climate\\_change/index\\_map.shtml](http://www.bcdc.ca.gov/planning/climate_change/index_map.shtml)



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## Appendix Endnotes

- <sup>xvii</sup> Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari, 2007: Policies, Instruments and Co-operative Arrangements. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- <sup>xviii</sup> A 36% reduction in GHG emissions from 2005 levels in Oakland is projected to be approximately equivalent to a 25% reduction from 1990 levels based on analysis by City of Oakland staff using California statewide 1990 and 2005 emissions as a proxy for Oakland.
- <sup>xix</sup> California Climate Action Team. Draft Biennial Report. March 2009. <http://www.climatechange.ca.gov/publications/cat/>
- <sup>xx</sup> Bay Conservation and Development Commission. "San Francisco Bay Scenarios for Sea Level Rise Index Map" [http://www.bcdc.ca.gov/planning/climate\\_change/index\\_map.shtml](http://www.bcdc.ca.gov/planning/climate_change/index_map.shtml)
- <sup>xxi</sup> Hansen, James and Makiko Sato, Pushker Kharecha, David Beerling, Robert Berner, Valerie Masson-Delmotte, Mark Pagani, Maureen Raymo, Dana L. Royer, James C. Zachos. "Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?" The Open Atmospheric Science Journal. Volume 2. ISSN: 1874-2823. pp.217-231
- <sup>xxii</sup> Fisher, B.S., N. Nakicenovic, K. Alfsen, J. Corfee Morlot, F. de la Chesnaye, J.C. Hourcade, K. Jiang, M. Kainuma, E. la Rovere, A. Matysek, A. Rana, K. Riahi, R.G. Richels, S. Rose, D.P. van Vuuren and R. Warren. 2007. Issues Related to Mitigation in the Long-Term Context. In Climate Change 2007: Mitigation - Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, S O. Davidson and B. Metz (eds.), Cambridge University Press, Cambridge. pp.229-230
- <sup>xxiii</sup> Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari, 2007: Policies, Instruments and Co-operative Arrangements. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- <sup>xxiv</sup> California Air Resources Board. "Climate Change Proposed Scoping Plan." <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>
- <sup>xxv</sup> California Air Resources Board. <http://www.arb.ca.gov/cc/cc.htm>
- <sup>xxvi</sup> State of California Executive Department. Executive Order S-3-05. <http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm>
- <sup>xxvii</sup> California Air Resources Board. "Climate Change Proposed Scoping Plan." Oct 2008. <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>
- <sup>xxviii</sup> California Air Resources Board. <http://www.arb.ca.gov/cc/cc.htm>
- <sup>xxix</sup> State of California Executive Department. Executive Order S-3-05. <http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm>
- <sup>xxx</sup> California Air Resources Board. "Climate Change Proposed Scoping Plan." <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>