EXHIBIT NO. 1

31
6-9-09

*City of Alexandria, Virginia*

# MEMORANDUM

DATE: JUNE 3, 2009

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

FROM: JAMES K. HARTMANN, CITY MANAGER

SUBJECT: SUBMISSION OF GRANT APPLICATION TO THE U.S. DEPARTMENT OF ENERGY FOR THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANT–FORMULA GRANT

---

**ISSUE:** City Council consideration of submission of a grant application to the U.S. Department of Energy for the American Recovery and Reinvestment Act of 2009 Energy Efficiency and Conservation Block Grant (EECBG) – Formula Grant.

**RECOMMENDATIONS:** That City Council authorizes the City Manager to:

(1) Submit a grant application including the City's Energy Efficiency and Conservation Strategy to the U.S. Department of Energy for the EECBG–Formula Grant in the amount of $1,372,800 by June 25, 2009; and

(2) Execute all necessary documents that may be required.

**BACKGROUND:** The American Recovery and Reinvestment Act (ARRA) appropriates funding for the Department of Energy (DOE) to issue/award formula-based grants to states, U.S. territories, units of local government, and Indian tribes under the Energy Efficiency and Conservation Block Grant (EECBG) Program. The purpose of the EECBG Program is to assist eligible entities in creating and implementing strategies to reduce fossil fuel emissions and energy use and improve energy efficiency in the building and transportation sectors.

The grant application must be received by DOE by June 25, 2009. The grant requires the City to develop an Energy Efficiency and Conservation Strategy (EECS). The City has two options: 1) utilize grant funds to develop EECS in an amount not to exceed $250,000 or 2) develop and submit an EECS by the June deadline enabling the City to apply for the entire grant amount of $1,372,800, which allow the City to receive grant funds and begin implementation sooner. Staff is recommending option 2.

As Council is aware, Phase I of the Eco-City Action Plan was approved on January 24, 2009 and the draft version of Phase II of the action plan was released on April 25, 2009. Both phases of

the Eco-City Action Plan were developed with extensive public participation and outreach. City Council's commitment to environmental sustainability has positioned the City to take advantage of these planning efforts to develop the City's Energy Efficiency and Conservation Strategy (EECS).

Staff was able to consolidate appropriate strategies, targets, goals and actions from Eco-City Action Plan to develop the EECS. A copy of the draft EECS is provided as Attachment I.

Four of the 10 broad principles identified in Phase I &II of the Eco-City Action Plan form the main pillars or basis of the City's EECS. These four pillars are:

1. **Transportation** - The City will integrate transportation options with land use decisions in order to ensure a healthy environment while continuing economic growth. This strategy element is intended to increase the use of existing public transportation modes, create three new rapid transit routes, and reduce the number of vehicle miles traveled.

2. **Green Buildings** - This strategy element is intended to require all new buildings to achieve LEED Gold standards by 2020 and LEED platinum standards by 2025, achieve a 20% reduction in energy consumption in existing buildings by 2020, and require all new buildings to be carbon neutral by 2030.

3. **Energy** - Alexandria commits to managing its energy—both the electricity that powers our buildings and homes and the fuel that powers our vehicles and other equipment. This strategy element is intended to reduce per capita energy consumption and increase the penetration of renewable energy sources.

4. **Climate Change** - This strategy element is intended to achieve a 10% reduction of business-as-usual GHG emissions by 2012, a 20% reduction below 2005 levels by 2020, and an 80% reduction below 2005 levels by 2050.

To facilitate the implementation of the strategy elements described above, the City is proposing the following types of projects for use of EECBG funds. It should be noted that each of these activities/projects meets the eligible activity criteria outlined in DOE's EECBG guidance document and nearly all were taken directly from the short and mid-term actions outlined in the Eco-City Environmental Action Plan. The grant proposal will accommodate flexibility by allowing the City to shift resources among programs or projects listed below. Approximate planned budgets and brief descriptions of the programs and projects are as follows:

- **Energy Conservation Program / Energy Audits**: ($250,000) This is an energy efficiency and conservation project. The project involves the assessment of energy consumption at City facilities, evaluation of energy efficiency measures at City facilities and the development of strategies to target high-consumption facilities. Overall program goal is to make City facilities more energy efficient. Funding would allow for the accelerated implementation of these strategies. The City will use funds for its FY 2011 energy conservation program, which remains unfunded due to fiscal constraints. The City's energy conservation program will be used to

conduct employee education, develop measurement and verification protocols, identify and implement energy efficient technologies.

- **Green Revolving Loan Program**: ($200,000) The City is currently evaluating a variety of innovative financing mechanisms to develop a revolving loan program. Revolving loan programs provide sources of money from which loans are made for installation of green technologies such as energy efficient windows, weatherization, or solar panels. Energy audits may also be a component of this program.

- **Street Light & Traffic Signal LED Lamp Conversion - Phase I:** ($200,000) The City will use funding to retrofit traffic and street lights with energy efficient, LED technology. Use of LED technology results in lower operating and maintenance cost.

- **Renewable Energy Program:** ($250,000) The City will evaluate feasibility of renewable energy technology at City facilities and install renewable source of energy at one of the City facilities. The technologies currently being considered include solar, wind and geothermal.

- **Green Buildings Phase II:** ($150,000) Funding will be utilized for the development of a virtual Green Building Resource Center/Program targeted at reducing water and energy use in existing residential and commercial buildings.

- **Green Fleet:** ($72,800) The City will expand its existing green fleet program. Grant funds will be used to fund the incremental costs of the hybrid vehicles thus leveraging City's existing resources.

- **Green Jobs Training for Weatherization Technicians/Energy Auditors:** ($100,000) Funds will be used to provide technical training to local residents in support of development of Green Jobs workforce and in process supporting City's Energy Efficiency and Conservation efforts through Weatherization and Energy Audits.

- **Technical Consultant Services:** ($75,000) Technical consultant(s) will assist the City with program implementation, management, and reporting activities. Services may include, but are not limited to, conducting energy audits, green jobs training, etc.

**FISCAL IMPACT:** The application is for a noncompetitive grant in the amount of $1,372,800 and no matching funds are required. Administrative costs are recoverable under this grant up to 10% of the grant amount. The period of performance for this grant is 36 months. The City will be required to obligate/commit all EECBG funds within eighteen (18) months from the effective date of the award. In the event funds are not obligated/committed within eighteen (18) months, DOE reserves the right to deobligate the funds and cancel the award. Projects and policies contained in the Energy Efficiency and Conservation Strategy which may require City funds are

subject to the adoption of specific policies and plans as well as subject to appropriations (availability of funds).

**ATTACHMENT:** Proposed Energy Efficiency and Conservation Strategy (EECS)

**STAFF:**
Mark Jinks, Deputy City Manager
Emily Baker, Director, T&ES
William J. Skrabak, Director, T&ES, Office of Environmental Quality
Lalit Sharma, Division Chief, T&ES, Office of Environmental Quality
Erica Bannerman, Senior Environmental Specialist, T&ES, Office of Environmental Quality
Malik Williams, Fiscal Officer/Grant Coordinator, T&ES

Attachment

ECO-CITY ALEXANDRIA

# City of Alexandria Energy Efficiency and Conservation Strategy

*Actions for a Sustainable Alexandria*

The City of Alexandria, Virginia, is pleased to submit this Energy Efficiency and Conservation Strategy (EECS) as part of the request for funds under the Energy Efficiency and Conservation Block Grant (EECBG) program. While energy efficiency and conservation has been embedded in various City programs for many years, the City undertook a formal, integrated strategy development process beginning in the spring of 2007. The City of Alexandria partnered with Virginia Tech's Department of Urban Affairs and Planning (UAP) to design and facilitate a new, strategic collaborative planning process, called Eco-City Alexandria, to create an Eco-City Charter and Environmental Action Plan to guide Alexandria toward sustainability. This EECS is based on the extensive work conducted in developing the City's EAP.

In describing the City's proposed EECS, we first present a brief summary of the process for developing the EECS. Next, we present the four key pillars of the EECS – green buildings, energy, transportation, climate change – and show how their associated goals and objectives are aligned with the EECBG program purposes. Finally, we provide a schedule for major goals and actions associated with the EECS. It should be noted that some of these goals and actions are subject to the adoption of specific policies and plans as well as subject to appropriations (availability of funds).

## SUMMARY OF THE PROCESS FOR DEVELOPING THE EECS

The Alexandria Environmental Policy Commission (EPC) and City staff has completed an Environmental Action Plan (EAP) that explains how Alexandria can address climate change, lead the new green economy, and continue its high quality of life while decreasing the City's carbon and ecological footprints. The EAP serves as the road map for City leaders, staff, and citizens to implement Alexandria's Eco-City Charter. The EAP process and related activities associated with the development of the EECS are summarized below:

- In 2007, the Eco-City Alexandria team conducted an inventory of existing City programs and plans and examined best practices from across the country and around the world to create a Compendium of Model Programs and Practices.
- The Environmental Policy Commission (EPC) developed the Eco-City Environmental Charter, which outlines the City's guiding principles, vision, and overall environmental future. The Charter identified 10 guiding principles to serve as a guide for moving the city towards a sustainable future. The 10 principles relate to land use & open space, water resources, air quality, transportation, energy, building green, solid waste, environment & health,

emerging threats, and implementation. The Eco-City Charter was adopted by City Council on June 14, 2008.

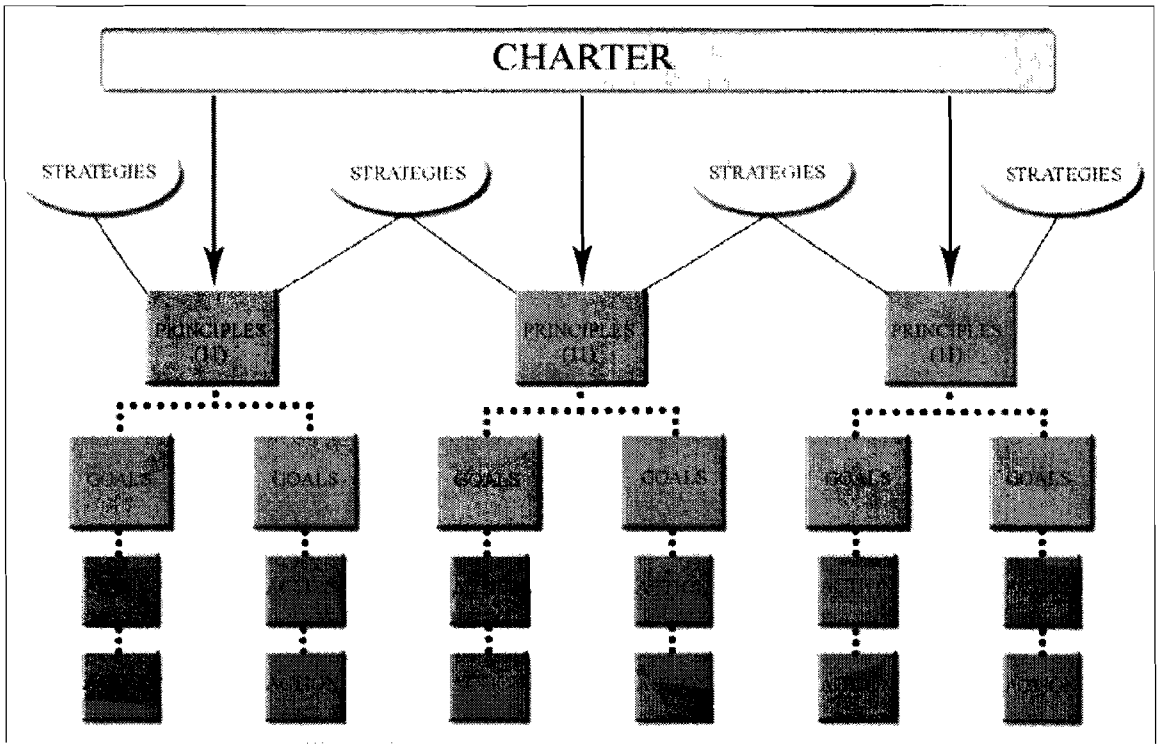
- During the fall of 2008 the EPC, working closely with City staff and Virginia Tech's Eco City Studio, developed a Phase One Action Plan that involved more than 40 goals and 133 action steps to guide sustainability efforts through fiscal year 2011 (June 30, 2011). Given the limits on the City's current budget, many of these programs and policies will leverage existing resources and staff. The City Council unanimously approved this preliminary Phase One plan in February 2009.
- The City held numerous community outreach activities designed to facilitate discussion among various community stakeholders and to provide feedback, input, and discussion on the City's Eco-City Charter and Environmental Action Plan.
- In FY 2008, a new Energy Manager position was created in the Department of General Services to analyze, develop and implement the City's energy conservation efforts, including changes in operating procedures and contracts to save on future energy costs, as well as, enhance the environment. The City's goal is to reduce energy consumption in the City's facilities by as much as 3 percent per square foot per year. This includes electricity, water, and natural gas with a goal of reducing energy consumption by 20 percent by the year 2015.
- In FY 2009, continued emphasis was be placed on energy consumption analysis, the development of strategies to address the largest consumers of energy; promoting energy awareness such as turning off lights and office electrical equipment; adjusting and adhering to space temperature settings and implementing energy conservation initiatives. A new Energy Conservation Committee has also been created to develop strategies to conserve energy.
- The City participated with other members of the Metropolitan Washington Council of Governments (MWCOG) in developing the National Capital Region Climate Change Report. The report recommends reducing emissions from the energy sector by improving energy efficiency, reducing demand for energy, and developing clean (alternative) energy sources. Secondly, it also recommends reducing emissions from transportation by reducing Vehicle Miles Traveled (VMT), increasing fuel efficiency, and reducing the carbon content of fuel and via changes in land use planning (e.g. tree preservation, green building standards, etc.). Finally, it establishes an early emission reduction goal (2012) to force early action, a medium-range goal (2020) to encourage expansion of recommended policies and programs, and a long-range goal (2050) to stimulate support for research into technologies and clean fuels needed to stabilize GHG emissions.
- The City completed a Greenhouse Gas Emission Inventory Report in April 2009. The report contains estimates of greenhouse gas emissions and energy consumption by City government operations as well as for the entire community.
- The City has drafted a Climate Action Plan that identifies local actions that can be taken to reduction greenhouse gas emissions, reduce energy consumption, and promote the use of renewable energy.

- The EPC is currently designing the Phase Two Action Plan based on the trends that Alexandria will likely face in the year 2030. The challenges of climate change and peak oil will drive the need to build more sustainably, provide alternative transportation choices, and design renewable energy sources to meet the demands of residents and businesses alike. At the same time, the EPC recognizes the importance of retaining the historic charm and character of the city.

These actions have led to a long-term, comprehensive energy and environmental strategy for the City as a whole.

**THE FOUR PILLARS OF THE EECS**

The diagram below illustrates the relationship between the City's Eco-City Charter principles and the EAP's cross cutting strategies, policy goals, and specific action steps.




The Environmental Charter outlines the City's guiding principles, vision, and overall environmental future. The Charter identified 10 guiding principles to serve as a guide for moving the city towards a sustainable future. The 10 principles relate to land use & open space, water resources, air quality, transportation, energy, building green, solid waste, environment & health, emerging threats, and implementation.

Under each principle, the EAP sets a series of specific goals to guide implementation by the city, the business community and citizens. Action steps include the particular means (ordinances, policies, and programs, projects) to implement and achieve the EAP's goals. Broad cross-cutting strategies serve as a way to link the goals and actions across multiple principles and maximize the potential environmental benefits. The EAP contains approximately 54 goals, 55 preliminary targets, and 354 actions

that would span the course of 21 years.

Four of the 10 broad principles identified in the EAP form the pillars of the EECS. These four pillars are:

1. **Transportation** - Encourages modes of transportation that reduce dependence upon the private automobile by promoting mass transit and pedestrian- and bike-friendly transportation networks. The City will integrate transportation options with land use decisions in order to ensure a healthy environment while continuing economic growth. This strategy element is intended to increase the use of existing public transportation modes, create three new rapid transit routes, and reduce the number of vehicle miles traveled.
2. **Green Buildings** - Alexandria's government, businesses, and citizens impact our environment through the choices they make when renovating existing structures and constructing new ones. These choices manifest themselves in the quantity and types of energy we use, the impact we have on our water quality, the amount of waste we create, the amount and quality of green space available to us, and our public health. This strategy element is intended to require all new buildings to achieve LEED Gold standards by 2020 and LEED platinum standards by 2025, achieve a 20% reduction in energy consumption in existing buildings by 2020, and require all new buildings to be carbon neutral by 2030.
3. **Energy** - The quantity and sources of energy used by Alexandria's government, businesses and residents impact our environment and quality of life—whether it be through pollutants added to the air, negative effects on water quality or local contributions to climate change. Recognizing this, Alexandria commits to managing its energy—both the electricity that powers our buildings and homes and the fuel that powers our vehicles and other equipment. This strategy element is intended to reduce per capita energy consumption and increase the penetration of renewable energy sources.
4. **Climate Change** - Alexandria must be adaptive and responsive to emerging and unforeseen environmental threats – such as climate change – that could strain infrastructure, deplete natural resources, disrupt the economy, and threaten public health. Failure to respond quickly and appropriately to such threats will likely have severe consequences for the health and economy of Alexandria and its citizens. This strategy element is intended to achieve a 10% reduction of business-as-usual GHG emissions by 2012, a 20% reduction below 2005 levels by 2020, and an 80% reduction below 2005 levels by 2050.

Exhibits 1 to 4 show the goals associated with each of these pillars and how these goals are aligned with the purposes and eligible activities of the EECBG program.

**Exhibit 1 Alexandria's EECS Transportation Pillar -**
**Goals and Relationship to EECBG Purposes and Eligible Activities**

| EECS Goal | EECBG Desired Outcome Supported by Goal | Corresponding EECBG Eligible Activity |
|---|---|---|
| **Transportation Pillar** | | |
| **Goal 1**: Move aggressively toward a culture of city streets that puts "people first" by implementing development and transportation projects consistent with the following level of precedence: pedestrians, bicyclists, public transportation, shared motor vehicles and private motor vehicles. | ✓ Reduced energy consumption, GHG emissions from fossil fuels, and air pollution | #7 Development and Implementation of Transportation Programs to conserve energy used in transportation |
| **Goal 2**: Educate individuals and organizations on the availability of transportation alternatives that will reduce dependency on single occupancy vehicles. | ✓ Reduced energy consumption, GHG emissions from fossil fuels, and air pollution | #7 Development and Implementation of Transportation Programs to conserve energy used in transportation |
| **Goal 3**: Improve and expand an integrated rapid transportation system that includes intercity passenger rail, heavy rail, trolleys, streetcar and buses. | ✓ Leveraging of transportation resources to maximize energy and environmental benefits<br>✓ Reduced energy consumption, GHG emissions from fossil fuels, and air pollution | #7 Development and Implementation of Transportation Programs to conserve energy used in transportation |
| **Goal 4:** Develop a city-wide environmentally sustainable comprehensive parking strategy. | ✓ Reduced energy consumption, GHG emissions from fossil fuels, and air pollution | #7 Development and Implementation of Transportation Programs to conserve energy used in transportation |

**Exhibit 2 Alexandria's EECS Green Building Pillar -**
**Goals and Relationship to EECBG Purposes and Eligible Activities**

| EECS Goal | EECBG Desired Outcome Supported by Goal | Corresponding EECBG Eligible Activity |
|---|---|---|
| **Green Building Pillar** | | |
| **Goal 1**: Building on the City's Green Building Policy, all development, either new or renovation should be constructed with the lowest ecological impact as is reasonably practical by advancing energy efficient green construction, sustainable building location, site design, and emerging technologies. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Increase reliability of energy generation | #8 Building Codes and Inspection to promote building energy efficiency.<br>#13 Renewable Energy Technologies on Government Buildings to encourage onsite renewable energy technology |
| **Goal 2**: Expedite the Commonwealth's adoption of further green building standards/building codes and expansion of local government authority to adopt green building ordinances, programs, and policies. | ✓ Improved coordination of energy-related policies and programs across jurisdictional levels of governance in order to maximize the impact of this program on long-term local priorities | #8 Building Codes and Inspection to promote building energy efficiency. |
| **Goal 3**: Promote green building practices, share information and provide educational, technical, and financial assistance to the building industry, businesses, and residents. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Increase reliability of energy generation | #8 Building Codes and Inspection to promote building energy efficiency. |
| **Goal 4**: The City will lead by example in green building practices. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Increase reliability of energy generation | #13 Renewable Energy Technologies on Government Buildings to encourage onsite renewable energy technology |

**Exhibit 3 Alexandria's EECS Energy Pillar -**
**Goals and Relationship to EECBG Purposes and Eligible Activities**

| EECS Goal | EECBG Desired Outcome Supported by Goal | Corresponding EECBG Eligible Activity |
|---|---|---|
| **Energy Pillar** | | |
| **Goal 1**: Initiate an energy planning process to evaluate energy use needs and impacts within the city, and the effectiveness and return-on-investment of steps to reduce energy use and mitigate greenhouse gas emissions. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Use of innovative financial mechanisms that transform markets<br>✓ Reduced GHG emissions and air pollution from fossil fuels | #4 Financial incentive programs and mechanisms for energy efficiency improvements<br>#6 Energy Efficiency and Conservation Programs for Buildings and Facilities: |
| **Goal 2**: Reduce energy consumption through conservation and the adoption of more energy efficient technologies and practices by the City, its residents, and businesses. | ✓ Reduced energy consumption and costs in the building and transportation sectors<br>✓ Reduced GHG emissions and air pollution from fossil fuels | #3 Residential and Commercial Building Energy Audits:<br>#5 Energy Efficiency Retrofits of existing facilities to improve energy efficiency. |
| **Goal 3**: The City's energy portfolio will be renewable and clean by 2050. | ✓ Reduced energy consumption and costs in the building and transportation sectors<br>✓ Deployment of market-ready distributed renewable energy technologies<br>✓ Reduced GHG emissions and air pollution | #13 Renewable Energy Technologies on Government Buildings to develop, implement, and install onsite renewable energy technology |
| **Goal 4**: Encourage the use of clean renewable energy resources, such as wind, geo-thermal, and solar, to reduce the city's carbon footprint. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Deployment of market-ready distributed renewable energy technologies<br>✓ Reduced GHG emissions and air pollution | #13 Renewable Energy Technologies on Government Buildings to develop, implement, and install onsite renewable energy technology |
| **Goal 5**: Support interdepartmental planning and prioritization of energy management and investment activities. | ✓ Reduced energy consumption and costs in the building sector<br>✓ Use of innovative financial mechanisms that transform markets | #5 Energy Efficiency Retrofits of existing facilities to improve energy efficiency.<br>#6 Energy Efficiency and Conservation Programs for Buildings and Facilities: |

**Exhibit 4 Alexandria's EECS Climate Change Pillar -**
**Goals and Relationship to EECBG Purposes and Eligible Activities**

| EECS Goal | EECBG Desired Outcome Supported by Goal | Corresponding EECBG Eligible Activity |
|---|---|---|
| **Climate Change Pillar** | | |
| **Goal 1**: Adopt targets and establish implementation framework for reducing greenhouse gas emission reductions for 2012, 2020 and 2050. | ✓ Reduced energy consumption and costs in the building and transportation sectors<br>✓ Reduced GHG emissions and air pollution from fossil fuels<br>✓ Deployment of market-ready distributed renewable energy technologies<br>✓ Improved coordination of energy-related policies and programs across jurisdictional levels of governance<br>✓ Create new green firms and green jobs | The Climate Action Plan will identify activities in virtually all 14 of the EECBG eligible activity areas that will result in energy efficiency improvements, fossil-fuel emission reductions, economic benefits, and deployment of renewable energy sources. |
| **Goal 2**: Institutionalize the consideration of the effects of possible climate changes into long-term planning. | ✓ Improved coordination of energy-related policies and programs with other local and community level programs in order to maximize the impact of this program on long-term local priorities | The Climate Action Plan will identify long-term activities in virtually all 14 of the EECBG eligible activity areas to mitigate GHG emissions or adapt to climate change |
| **Goal 3**: Prepare and educate city residents and business owners for a carbon-constrained economy and other climate change impacts. | ✓ Improved coordination of energy-related policies and programs with other local and community level programs in order to maximize the impact of this program on long-term local priorities | The Climate Action Plan will identify long-term activities in virtually all 14 of the EECBG eligible activity areas that will emphasize the benefits of reducing GHG emissions. |

**Greenhouse Gas Emission Inventory and Forecast**

The City completed a Greenhouse Gas Emission Inventory Report in April 2009. The inventory identifies all activities in the City that consume energy and produce GHG emissions and provides a baseline of energy use and GHG emissions. The GHG inventory also provides forecasts of future emissions under a "business-as-usual" scenario.

Exhibit 1 summarizes the Community-wide energy use and GHG emissions for calendar year 2005. The Community inventory includes emissions produced by residents, by businesses/ agencies, and by residents and commuters traveling within the city. It includes direct emissions from sources located within the city, as well as indirect emissions that result from activity within the city but the associated emissions occur outside of the city's boundary (e.g., electricity consumed in the city that is imported from coal-fired power plants outside of the city).

The Community inventory is based on electricity and fossil fuel consumption. Electricity is also generated in the city by the Mirant Potomac River Generating Station and the Covanta energy-from-waste plant. Some of this electricity is consumed within the city, while most is transmitted for sale in other areas. To avoid double counting, we have subtracted grid-based generation to assign responsibility for electricity usage to the end-user, which will help in targeting policies to reduce emissions. Using this formula, the total GHG consumption-based emissions for Alexandria in 2005 were 2.9 million tons, which does not include emissions from Mirant and Covanta.

Onroad vehicle traffic in the city accounts for 43 percent of the 2.9 million tons emitted in the city. Commercial and residential buildings account for 36 percent and 16 percent of the total, respectively. Future GHG emissions under a "business-as-usual (BAU)" scenario were developed to account for the anticipated growth in energy consumption resulting from projected growth in population, employment, and vehicle traffic. GHG emissions are projected to increase to 3.1 million tons in 2012.

Exhibit 6 summarizes energy use and GHG emissions from the City government's operations, which are a subset of the total energy use and GHG emissions shown in Exhibit 5. The City Government Operations inventory provides an estimate of GHG emissions produced by City government activities, including fuel use, electricity use, and waste production resulting from City government operations. The emissions inventory includes both direct emissions (for example, emissions within the city from fossil fuel combustion at City buildings) and indirect emissions (emissions generated outside the city by City employees commuting to Alexandria to work).

In FY2006, City government operations resulted in the production of about 87,815 tons of GHG emissions, primarily from fossil fuel and electricity consumption in City buildings and schools. These emissions are a subset of the city-wide community total GHG emissions, representing approximately 3 percent of the city-wide total of 2.9 million ton. The consumption of electricity and the combustion of natural gas in City government buildings resulted in the majority of emissions in FY2006. School buildings were the second largest source and made up 25 percent of the total government CO2e emissions. Gasoline fuel used by City government employees commuting to work was the third largest category of emissions. Emissions from City government operations are project to increase to 93,927 tons in 2012.

**Exhibit 5 City-Wide Baseline and Forecasted Energy Use and GHG Emissions**

| | 2005 | | 2012 | |
|---|---|---|---|---|
| **Energy Source/ Sector** | **Energy (MMBtu)** | **CO2e (tons)** | **Energy (MMBtu)** | **CO2e (tons)** |
| **Electricity Use** | | | | |
| Residential | 1,357,336 | 291,547 | 1,451,807 | 311,839 |
| Commercial | 4,563,509 | 980,211 | 4,770,692 | 1,024,713 |
| Industrial | 44,840 | 9,631 | 46,876 | 10,068 |
| Rail | 150,415 | 32,308 | 160,884 | 34,557 |
| | **6,116,100** | **1,313,698** | **6,430,259** | **1,381,177** |
| **Fuel Oil Use in Buildings** | | | | |
| Residential | 268,805 | 22,220 | 287,514 | 23,767 |
| Commercial | 86,839 | 7,178 | 90,781 | 7,504 |
| Industrial | 218,302 | 18,003 | 228,213 | 18,820 |
| | **573,946** | **47,401** | **606,508** | **50,091** |
| **Natural Gas Use in Buildings** | | | | |
| Residential | 2,592,432 | 160,164 | 2,772,865 | 171,312 |
| Commercial | 1,001,696 | 61,886 | 1,047,173 | 64,696 |
| Industrial | 1,001,696 | 61,886 | 1,047,173 | 64,696 |
| | **4,595,824** | **283,937** | **4,867,211** | **300,704** |
| **Propane Use in Buildings** | | | | |
| Residential | 66,081 | 4,783 | 70,680 | 5,116 |
| Commercial | 74,097 | 5,363 | 77,461 | 5,606 |
| Industrial | 23,535 | 1,703 | 24,603 | 1,780 |
| | **163,713** | **11,849** | **172,745** | **12,502** |
| **Gasoline Use in Vehicles and Equipment** | | | | |
| Onroad Vehicles | 4,907,479 | 417,747 | 5,481,654 | 466,624 |
| Offroad Engines | n/a | 15,408 | n/a | 16,480 |
| | **4,907,479** | **433,155** | **5,481,654** | **483,104** |
| **Diesel Use in Vehicles and Equipment** | | | | |
| Onroad Vehicles | 9,312,065 | 807,706 | 10,401,577 | 902,208 |
| Offroad Engines | n/a | 6,110 | n/a | 6,535 |
| Rail | 1,837 | 161 | 1,837 | 172 |
| | **9,313,902** | **813,977** | **10,403,414** | **908,915** |
| **West Disposal** | | | | |
| MSW to Landfill | n/a | 1,530 | n/a | 1,636 |
| Wastewater Sludge | n/a | 3,837 | n/a | 4,104 |
| | **n/a** | **5,367** | **n/a** | **5,741** |
| **City-Wide Totals** | **25,670,964** | **2,909,384** | **27,961,790** | **3,142,234** |

n/a not available

**Exhibit 6 City-Wide Baseline and Forecasted Energy Use and GHG Emissions**

| | FY 2006 | | FY2012 | |
|---|---|---|---|---|
| **Energy Source/ Sector** | **Energy (MMBtu)** | **CO2e (tons)** | **Energy (MMBtu)** | **CO2e (tons)** |
| **Electricity Use in Buildings** | | | | |
| City Owned | 89,553 | 19,235 | 95,786 | 20,574 |
| Libraries | 8,876 | 1,907 | 9,494 | 2,040 |
| Leased (Landlord) | 21,498 | 4,618 | 22,994 | 4,939 |
| Leased (Tenant) | 30,145 | 6,475 | 32,243 | 6,926 |
| Schools | 84,233 | 18,092 | 90,096 | 19,351 |
| | **234,305** | **50,327** | **250,613** | **53,829** |
| **Natural Gas Use in Buildings** | | | | |
| City Owned | 60,053 | 3,710 | 64,233 | 3,969 |
| Libraries | 4,621 | 285 | 4,943 | 305 |
| Leased (Landlord) | 6,191 | 382 | 6,622 | 409 |
| Leased (Tenant) | 9,164 | 567 | 9,802 | 606 |
| Schools | 57,807 | 3,571 | 61,830 | 3,820 |
| | **137,836** | **8,516** | **147,429** | **9,109** |
| **Gasoline Use in Vehicles and Equipment** | | | | |
| Fire Department | 4,978 | 424 | 5,324 | 454 |
| City Fleet | 52,438 | 4,474 | 56,088 | 4,786 |
| Employee Commute | 130,372 | 11,139 | 139,446 | 11,914 |
| | **187,788** | **16,037** | **200,858** | **17,154** |
| **Diesel Use in Vehicles and Equipment** | | | | |
| Fire Department | 3,681 | 320 | 3,937 | 342 |
| City Fleet | 13,817 | 1,198 | 14,779 | 1,282 |
| School Buses | 18,240 | 1,582 | 19,510 | 1,692 |
| | **35,738** | **3,100** | **38,225** | **3,315** |
| **Electricity Use for non-Building Lighting** | | | | |
| Streetlights | 27,749 | 5,960 | 29,680 | 6,375 |
| Traffic Signals | 10,257 | 2,203 | 10,971 | 2,357 |
| | **38,006** | **8,164** | **40,651** | **8,732** |
| **Solid Waste Disposal** | | | | |
| Solid Waste Disposal | n/a | 1,671 | n/a | 1,787 |
| | **n/a** | **1,671** | **n/a** | **1,787** |
| **City Government Totals** | **633,674** | **87,815** | **677,777** | **93,927** |

n/a not available

## Targets, Schedules and Milestones

The City's Greenhouse Gas emission inventory was used, in part, in developing specific targets, schedules and milestones for each of the pillars of the EECS. The MWGOG Climate Change Steering Committee recommended targets for reducing regional greenhouse gases. These targets represent the consensus of U.S. scientists who say that greenhouse gas emissions must be reduced by 50–85 percent by 2050 to avoid the possible consequences of global warming. MWCOG has recommended targets for reducing regional GHG emissions for the years 2012, 2020, and 2050. The goals include an early goal (2012) to force early action, a medium-range goal (2020) to encourage expansion of recommended policies and programs, and a long-range goal (2050) to stimulate support for research into technologies and clean fuels needed to stabilize greenhouse gas emissions. The MWCOG recommended targets are generally consistent with the target set in the Virginia Energy Plan, which was to reduce greenhouse gas emissions by 30 percent by 2025. The MWCOG targets are shown in Exhibit 5-2.

**Exhibit 7 Greenhouse Gas Emission Reduction Targets**

| Year | Proposed Reduction Target | Rationale |
|---|---|---|
| 2012 | Reduce Projected Emissions by 10 Percent Below 2012 Business As Usual (BAU) Levels | Early goal to force early action; the goal is to stop projected growth in regional greenhouse gas emissions by achieving a 10 percent reduction in regional emissions from 2012 BAU levels, corresponding to returning regional emissions back to 2005 levels by 2012. |
| 2020 | Reduce Emissions by 20 Percent Below 2005 Levels | Medium-range goal to encourage expansion of recommended policies and programs on a national, state, and local level. |
| 2050 | Reduce Emissions by 80 Percent Below 2005 Levels | Long-range goal to stimulate research into technologies and clean fuels needed to stabilize GHG emissions; this is an ambitious long-term goal and would place the region among national leaders calling for aggressive action to address climate change. |

The City government has set targets that are consistent with the MWCOG emission reduction percentage targets. The City is committed to doing its part in achieving these emission reduction targets, while recognizing that a coordinated regional effort will be needed that will involve individual actions by citizens, state and federal government actions, business actions, federal and state policy and regulations, academic research and development, and new technology.

The EECS also sets targets and actions for each pillar as a way to lay the groundwork for measuring performance. These targets and actions are subject to the adoption of various policies and are subject to appropriations (availability of funds).

Actions and performance targets have been defined for three time periods: Phase I - FY 2009 to FY 2011; Phase II Mid Term - FY 2012 to FY 2020; and Phase II Long Range - FY 2021 to 2030. These targets and actions for each of the four pillars of the EECS are shown in Exhibits 8 to 11.

**Exhibit 8 EECS Transportation Pillar Targets and Actions**

| TRANSPORTATION PILLAR | |
|---|---|
| **Targets:** | ➢ By 2017, increase the number of commuters who use public transportation alternatives by 50 percent using 2008 as the baseline<br>➢ By 2017, create three rapid transit routes as set forth by in the Transportation Master Transportation Plan<br>➢ By 2017, reduce the number of Vehicle Miles Traveled (VMTs) |
| **Actions:** | <u>Short Term (2009-2011)</u><br>• Implement actions in Bicycle and Pedestrian Mobility Plan; conduct audits of the streetscape to improve safety for vehicles, pedestrians, and cyclists; Improve facilities for cyclists; conduct bike/pedestrian education programs<br>• Use existing informational tools to promote the benefits of transportation alternatives<br>• Improve the experience of current and potential transit users<br>• Improve access to mass transit by requiring all new DASH buses to have bicycle racks<br>• Pass a resolution adopting the principles of Complete Streets and Low Impact Development in road projects<br><u>Mid-Term (2012-2020)</u><br>• Complete the Shared Path Network Complete and the Bike Network by 2020<br>• Provide an efficient network of express bus routes<br>• Develop a policy for all new buses to be low emission/hybrid or CNG vehicles<br>• Explore the feasibility of constructing a street car line that would connect to Arlington and serve the Seminary Road corridor<br>• Establish one rapid transit route in operation by 2012 and a further two routes in use by 2017<br>• Add a Metrorail station to the Potomac Yards development by the time occupancy of the development reaches 70%<br>• Develop plans to have the Rapid Transit Routes converted to zero emission dedicated design vehicles by 2020<br>• Create a plan by 2012 with financial incentives and disincentives designed to deter single occupancy vehicle trips and monitor its effects<br>• Reduce parking ratios and encourage shared parking.<br>• Encourage the people who work in Alexandria to use of alternative modes of transportation by developing incentives and disincentives that discourage employee parking<br><u>Long-Term (2021-3030)</u><br>• Plan and implement an intelligent mix of transport styles to encourage residents, work units and tourism<br>• Coordinate with key stakeholders to accommodate the increase in freight and high-speed passenger rail<br>• Support the King Street trolley and other alternative modes of moving people into the historic and retail districts easily and quickly |

**Exhibit 9 EECS Green Building Pillar Targets and Actions**

| GREEN BUILDING PILLAR | |
|---|---|
| **Targets:** | ➢ By 2020, all new buildings to achieve LEED Gold standards<br>➢ By 2020, sixty percent of all existing buildings achieve a 20 percent energy consumption reduction<br>➢ By 2025, all new buildings to achieve LEED Platinum standards<br>➢ By 2030, all new buildings to be carbon neutral |
| **Actions:** | <u>Short Term (2009-2011)</u><br>• Establish and promote green building standards for new commercial and residential development based on LEED standards<br>• Pursue conformance with green building standards as part of the Development Special Use Permit process<br>• Provide green building and site design education and training to development staff in appropriate City agencies; Arrange for Plan Review Staff to receive LEED certification<br>• Request the Commonwealth's adoption of the latest International Code Council (ICC) building code amendments (which include elements to increase energy conservation measures) by 2011.<br>• Identify and encourage enhanced green measures that may be added to the next Virginia State Amendments to the ICC Building Code<br>• Identify a local non-profit that can provide green building information and technical assistance to citizens<br>• All new construction and renovation of City buildings, where feasible, will meet a LEED Silver rating, as a minimum<br>• Conduct feasibility study to install, in phases, a green roof on City Hall<br><u>Mid-Term (2012-2020)</u><br>• Develop a green building policy for retrofitting all existing buildings<br>• Establish low impact development guidelines<br>• Require that all properties be subject to full cost energy audits at time of sale or legal transfer<br>• Develop incentives for energy conservation through tax policy and fees<br>• Require that all new structurally applicable rooftops either incorporate alternative energy systems (e.g., wind, solar)<br>• Seek local authority to adopt additional green building regulations and to require energy efficient technologies<br>• Encourage the implementation of the latest smart metering technology by offering incentives and technical assistance<br>• Create a fund for residents and businesses to provide low-interest loans for green renovations<br>• All new construction and renovation of City buildings, where feasible, meet a LEED Gold rating or equivalent standard<br><u>Long-Term (2021-3030)</u><br>• Require that when seeking to replace existing roofs and retrofit surface parking lots, property owners either integrate alternative energy systems (e.g., wind, solar) into that space |

**Exhibit 10 EECS Energy Pillar Targets and Actions**

| ENERGY PILLAR | |
|---|---|
| **Targets:** | ➢ By 2010 purchase 5% of electricity needs through green certificates<br>➢ Purchase 25% renewable energy by 2020, 35% by 2030, and 50% by<br>➢ Reduce per capita energy use<br>➢ Reduce energy use in City operations |
| **Actions:** | Short Term (2009-2011)<br>• Initiate a process for establishing a City Energy Master Plan by 2009<br>• Identify energy reduction strategies through maximizing energy efficiency and conservation by 2020 and 2030<br>• Direct City employees to regularly shut down their computers and other office equipment at the end of each workday<br>• Develop energy audit checklists for home owners and businesses<br>• Lengthen the allowable payback period for the City's energy efficiency investments from 7 years to 15 years to be more consistent with the City's cost of capital<br>• The sedans or hybrids purchased by the City will have an average city fuel economy 20% greater than Corporate Average Fuel Economy (CAFÉ) requirements<br>• Use sustainable biodiesel for all of the City diesel fleet operations<br>• Provide information to the public regarding renewable energy resources through the City's website<br>• Conduct energy audits of a number of major City facilities<br>Mid-Term (2012-2020)<br>• Create and utilize an Energy Efficiency Metric to ensure the City maximizes its return-on-investment with respect to measures designed to reduce energy consumption and greenhouse gas emissions<br>• Require property sales to include energy use and efficiency information<br>• Establish tax incentives and financial support mechanisms to promote energy efficiency improvements and modifications for residential units and businesses<br>• Change the City's building code to require multi-family residential buildings to track and report monthly energy use in individual units<br>• Create a City Fleet Management Plan (FMP) to minimize the emission of greenhouse gases and other pollutants from City-owned and operated vehicles, as well as construction and landscape care equipment.<br>• Conduct a feasibility study for facilitating the establishment of infrastructure necessary for city distribution and use of clean renewable technology (e.g., smart grids, plug-in stations for electric cars, etc.)<br>• Develop and adopt plan to upgrade the region's electrical grid to support micro-generation<br>• Conduct annual energy audits of major City buildings<br>Long-Term (2021-3030)<br>• Update the Transportation Master Plan to achieve the goal of having 50% of all personal trips be by walking, bicycling, or public transport by 2030 |

**Exhibit 11 EECS Climate Change Pillar Targets and Actions**

| CLIMATE CHANGE PILLAR | |
|---|---|
| **Targets:** | ➢ Reduce Business As Usual (BAU) emissions by 10% below 2012 level by 2012<br>➢ Reduce emissions by 20% below 2005 level by 2020<br>➢ Reduce emissions by 80% below 2005 level by 2050 |
| **Actions:** | <u>Short Term (2009-2011)</u><br>• Assign the Environmental Coordinating Group (ECG) to propose methods to achieve the emission reduction targets and to begin drafting a Climate Action Plan that will include exploring methods for making the targets binding<br>• Disseminate educational materials and establish a website on the causes and effects of climate change, how people can reduce their climate impact, and how greenhouse gas reduction policies may affect the availability and prices of energy and other goods<br>• Emphasize the benefit of increasing development density as a method for reducing greenhouse gas emissions<br><u>Mid-Term (2012-2020)</u><br>• Support and work with local legislators for adoption of California's Greenhouse Gas Vehicle Program<br>• Implement Climate Action Plan<br>• Replace all publically-owned street lights in the city with energy-efficient (such as light emitting diodes (LED)) or renewable-energy lights<br>• Examine the carbon sequestration potential of the tree canopy in the City and opportunities for carbon banking on a regional basis<br>• Identify the economic opportunities associated with climate change planning such as recruiting high tech, green firms, the creation of green jobs, etc.<br>• Carry out a risk analysis of the effects of global climate change on Alexandria<br>• Empower the ECG to develop adaptation planning strategies for the city<br>• Gather and publish environmental performance metrics to identify trends in water quality, average sea level, air quality metrics, energy use, and temperature<br>• Establish a voluntary program for city residents, schools, and businesses to report their efforts in reducing their environmental impact and create an awards program to incentivize participation |

**Exhibit 12 Proposed Activities and Relationship to EECS and EECBG Eligible Activities**

| Proposed Activity | Activity Description |
|---|---|
| Energy Conservation Program and Energy Audits | The project involves the assessment of energy consumption at City facilities, evaluation of energy efficiency measures at City facilities and the development of strategies to target high-consumption facilities. Overall program goal is to make City facilities more energy efficient. Funding would allow for the accelerated implementation of these strategies. The City will use funds for its FY 2011 energy conservation program, which remains unfunded due to fiscal constraints. The City's energy conservation program will be used to conduct employee education, develop measurement and verification protocols, identify and implement energy efficient technologies.<br>This activity supports the EECS Energy Pillar by developing strategies for maximizing energy efficiency and conservation.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity # 3 – Residential and Commercial Building Energy Audits and EECBG Eligible Activity 6 - Energy Efficiency and Conservation Programs |
| Green Revolving Loan Program | The City is currently evaluating a variety of innovative financing mechanisms to develop a revolving loan program. Revolving loan programs provide sources of money from which loans are made for installation of green technologies such as energy efficient windows, weatherization, or solar panels. Energy audits may also be a component of this program.<br>This activity supports the EECS Energy Pillar by providing a financial mechanism for energy efficiency improvements.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity 4 - Financial Incentive Program |
| Street Light and Traffic Signal LED Replacement Pilot Program | The City will use funding to retrofit traffic and street lights with energy efficient, LED technology. Use of LED technology results in lower operating and maintenance cost.<br>This activity supports the EECS Energy and Climate Change Pillars by reducing electricity consumption and GHG emissions associated with street lighting.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity 12 – Traffic Signals and Street Lighting |
| Renewable Energy Program | The City will evaluate feasibility of renewable energy technology at City facilities and install renewable source of energy at one of the City facilities. The technologies currently being considered include solar, wind and geothermal.<br>This activity supports the EECS Energy and Climate Change Pillars by reducing electricity consumption and GHG emissions associated with fossil fuel consumption.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity 13 – Renewable Energy |

| Proposed Activity | Activity Description |
|---|---|
| | Technologies on Government Buildings |
| Green Buildings Phase II | Funding will be utilized for the development of a virtual Green Building Resource Center/Program targeted at reducing water and energy use in existing residential and commercial buildings.<br>This activity supports the EECS Green Building Pillar by developing and implementing building codes to promote building energy efficiency.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity 8 – Building Codes and Inspections |
| Green Fleet | The City will expand its existing green fleet program. Grant funds will be used to fund the incremental costs of the hybrid vehicles thus leveraging City's existing resources.<br>This activity supports the EECS Transportation and Climate Change Pillars by reducing fossil fuel consumption by the City's vehicle fleet.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity 7 – Transportation |
| Green Jobs Training for Energy Auditors | Funds will be used to provide technical training to local residents in support of development of Green Jobs workforce and in process supporting City's Energy Efficiency and Conservation efforts through Weatherization and Energy Audits.<br>This activity supports the EECS Energy Pillar by developing strategies for maximizing energy efficiency and conservation.<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity # 3 – Residential and Commercial Building Energy Audits |
| Technical Consultant to Support EECBG Program | The City proposes to use the services of a technical consultant to assist in a number of program implementation, management and reporting activities. Technical consultant(s) will assist the City with program implementation, management, and reporting activities. Services may include, but are not limited to, conducting energy audits, green jobs training, etc.<br>This activity supports all four EECS Pillars (Transportation, Green Buildings, Energy, Climate Change).<br>This activity is suitable for funding because it meets the specification for EECBG Eligible Activity # 2 - Technical Consultant Services. |
| Administrative Overhead | This request for funding is set-aside to defray the City's administrative costs for operating EECBG-funded programs.<br>This activity supports all four EECS Pillars (Transportation, Green Buildings, Energy, Climate Change).<br>This activity is suitable for funding. |

## Exhibit 13 – Summary of Proposed EECBG Activities

| Project Title | EECBG Eligible Activity | Sector | Number of Jobs Created Retained | Energy Saved Per Year | Renewable Energy Generated (MWh) | GHG Emissions Reduced (tons CO2e) | Funds Leveraged ($) | EECBG Budget ($) | NEPA Required? |
|---|---|---|---|---|---|---|---|---|---|
| Energy Conservation Program and Energy Audits | 6. Energy Efficiency and Conservation Programs | All Sectors | 2.7 | 2400 MWh 48,500 therms | 0 | 2,072 | 0 | 250,000 | |
| Green Revolving Loan Program | 4. Financial Incentive Program | Residential | 2.2 | 152 MWh 6,600 therms | 0 | 138 | 0 | 200,000 | |
| Street Light and Traffic Signal LED Replacement Pilot Program | 12. Lighting | Public | 2.2 | 500 MWh | 0 | 380 | 0 | 200,000 | |
| Renewable Energy Program | 13. On-site Renewable Technology | Public | 2.7 | 0 | 80 MWh | 58 | 0 | 250,000 | |
| Green Buildings Phase II | 8. Building Codes and Inspections | Commercial | 1.6 | 0* | 0* | 0* | 0 | 150,000 | |
| Green Fleet | 7. Transportation | Public | 0.8 | 1700 gals of gasoline | 0 | 20 | 224,440 | 72,800 | |
| Green Jobs Training for Energy Auditors | 6. Energy Efficiency and Conservation Programs | Residential/ Commercial | 1.1 | 0.8 | 0* | 0* | 0* | 100,000 | |
| Technical Consultant to Support EECBG Program | 2. Technical Consultant Services | All Sectors | 0.8 | 0.8 | 0* | 0* | 0* | 75,000 | |

23

| Project Title | EECBG Eligible Activity | Sector | Number of Jobs Created Retained | Energy Saved Per Year | Renewable Energy Generated (MWh) | GHG Emissions Reduced (tons CO2e) | Funds Leveraged ($) | EECBG Budget ($) | NEPA Required? |
|---|---|---|---|---|---|---|---|---|---|
| | | **Total** | **14.1** | | | | | **1,297,800*** | |

* Energy savings, renewable energy generated, and GHG emission reductions indirectly included in activities identified above.
* The City proposes to utilize up to 10% of the grant funds for administrative costs. This is not reflected in the budget total.

24