

U.S. Department of Energy
ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANT (EECBG) PROGRAM
ACTIVITY WORKSHEET

Grant Number: EE0000750

Grantee: Oakland County, Michigan		Date: 11/23/2009	
DUNS #: 1362003620000		Program Contact Email: holdswortha@oakgov.com	
Program Contact First Name: Art		Last Name: Holdsworth	
Project Title: Activity 2: Facilities Management Energy Program			
Activity: 5. Energy Efficiency Retrofits		If Other:	
Sector: Public		If Other:	
Proposed Number of Jobs Created: 40.00		Proposed Number of Jobs Retained: 0.00	
Proposed Energy Saved and/or Renewable Energy Generated:			
Proposed GHG Emissions Reduced (CO2 Equivalent):		5,753.00	
Proposed Funds Leveraged: \$60,000.00			
Proposed EECBG Budget: \$3,661,300.00			
Projected Costs Within Budget:			
Administration:	\$50,000.00	Revolving Loans	\$0.00
		Subgrants:	\$0.00
Project Contact First Name Art		Last Name: Holdsworth	
Project Contact Email holdswortha@oakgov.com			

Metric Activity Building Retrofits **If Other:**

Project Summary: (limit summary to space provided)

This grant activity has five components: Building weather stripping program (Facilities Management): \$400,000; HVAC improvements (Facilities Management): \$700,000; Lighting Retrofits (Facilities Management): \$1,486,300; Pump optimizations (Water Resource Commissioner): \$750,000; Building envelope improvements: \$325,000 Energy Audits performed under the County's technical consultant services grant activity will help us to determine the best approach and priority for the projects we will pursue. 1. Weather Stripping: Oakland County Facilities Management operates over 40 County owned buildings encompassing nearly 2.0 million square feet. These buildings operate with an annual energy budget of over \$5.0 million dollars. We intend to restore building envelopes on several Oakland County-owned buildings by means of removal and replacement of caulking and weather stripping on the building's metal windows and doors. We anticipate saving between 4% and 7% of our heating and cooling costs by reducing the air leaks in our buildings. Envelope restoration will be done according to a prioritized ROI list. While this activity will not address every building within the County's inventory, it will establish an approach plan and permit us to address those buildings with the most significant potential energy savings. 2. HVAC Equipment Replacements: We have several inefficient chillers that need to be replaced because of high energy consumption and CFC's. The energy audits will help us identify and set priorities and it is anticipated that this activity will replace our largest energy users. We anticipate energy savings in the range of 15% to 35% with the installation of new units. 3. Funding in this activity will provide a significant opportunity for Oakland County Facilities to replace and retrofit existing office lighting with high efficiency T8 lamps and improved light fixtures. Work will be prioritized based on the results of the energy audits performed under activity 2 in our application. While the amount requested in the application will not fully cover the cost for lighting retrofits in all our buildings, it will permit the County to make significant reductions in energy consumption and provide us with a model for future work. 4. The Water Resource Commissioner's annual power cost is nearly \$2 Million for public water, wastewater and augmentation wells throughout Oakland County. This activity would act upon the energy audits and identify equipment replacement guidelines and conservation measures (lights, motion sensors, programmable thermostats, etc.). Additionally, since pumping typically accounts for 80 to 95% of the energy use, selected pump testing would be performed to determine overall pumping efficiency. In addition, a pump optimization program would be used to identify cost-effective pump combinations to meet the demands of the facilities. Typically, this type of analysis identifies savings in pump operations of 5% to 10% of the total energy use each year. Pump and motor modifications or the purchase of energy efficient pumps and equipment would be made based upon the results of the energy audit and ROI analysis. 5. This grant activity includes the replacement of windows at a park conference center facility. The Building was constructed in 1929 and utilizes a mix of original single pane and 30 year old deteriorated replacement windows. Windows would be replaced with new high efficiency double pane windows. Additional insulation will also be added to the building when the window work is being done. We anticipate a reduction of energy use in this building of 12% or more through this activity.

Submitted by: **Date:**
Typed Name: Mr Bill Bullard 11/23/2009
/s/ Signed Electronically

Approved by: **Date:**
Typed Name: Jason Randall 11/23/2009
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Grantee: Oakland County, Michigan **Date:** 11/23/2009
DUNS #: 1362003620000 **Program Contact Email:** holdswortha@oakgov.com
Program Contact First Name: Art **Last Name:** Holdsworth
Project Title: Activity 6: New Airport Terminal Building - Transportation Alternatives

Activity: 7. Transportation **If Other:**
Sector: Public **If Other:**

Proposed Number of Jobs Created: 1.00 **Proposed Number of Jobs Retained:** 0.00
Proposed Energy Saved and/or Renewable Energy Generated:
Proposed GHG Emissions Reduced (CO2 Equivalent): 384.00
Proposed Funds Leveraged: \$6,477,100.00
Proposed EECBG Budget: \$126,500.00
Projected Costs Within Budget:

Administration: \$0.00 **Revolving Loans:** \$0.00 **Subgrants:** \$0.00

Project Contact First Name: Art **Last Name:** Holdsworth
Project Contact Email: holdswortha@oakgov.com

Metric Activity: Transportation **If Other:**

Project Summary: (limit summary to space provided)

This grant activity will assist in the construction of a new General Aviation Terminal and Administrative Building at the Oakland County International Airport. The new building will reuse the existing foundation, basement, and first floor slab of the existing building. The new building will incorporate LEED Certification practices and will be the County's first LEED registered building. This grant activity will provide the local community and traveling public an alternative approach to extensive travel for business meetings. Grant Activity Details: Members of the public, local business community, or visitors by air that need a private space to conduct business will be able to use one of three private office rooms or the conference center by checking in or through advanced registration with Airport administration. The airport's central location within the County and easy access off main roads make it a good location for promotion of limited commutes rather than extensive travel within the region. It is the County's intent to promote these spaces and equipment as a means to alternative travel for meetings. Keeping travel local or conducting business through video conference will promote better use of resources and time. As the airport is already a regional and international transportation terminal, the County wants to promote it as a terminal for alternative modes of "e-transportation" as well. The rooms will be available at little or no cost to the user for daily use and will only seek to recoup direct cost technology fees. Funding through this grant activity will provide the energy efficiency and technology delta for the construction of three telecommuter offices and a conference center. The County is providing the funding to construct the office and conference spaces. Energy efficiency upgrades will include insulation, windows, lighting and lighting controls all exceeding current energy codes in efficiency. The offices will also showcase locally produced LED lighting replacements for fluorescent fixtures. Within the three offices, technology promoting connectivity will include internet through WiFi and webcam enabled large flat screen wall mounted monitors. Within the Conference Center teleconference audio visual equipment would enable communications with other equally equipped facilities anywhere in the world. Making this technology available to the local business community and to the business community that uses the airport by air will create opportunities for limiting or eliminating local as well as air travel throughout the region. WiFi service will also be available throughout the main lobby of the building. This grant activity will also fund an in-building web based display system that will provide users with the energy savings and GHG avoidance values for use of the space. Being web based, the information will also be available on the County's web site.

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Grant Number: EE0000750

Grantee: Oakland County, Michigan**Date:** 11/23/2009**DUNS #:** 1362003620000**Program Contact Email:** holdswortha@oakgov.com**Program Contact First Name:** Art**Last Name:** Holdsworth**Project Title:** Activity 1: Building and Facilities Energy Audits**Activity:** 2. Technical Consultant Services**If Other:****Sector:** Public**If Other:****Proposed Number of Jobs Created:** 2.00**Proposed Number of Jobs Retained:** 0.00**Proposed Energy Saved and/or Renewable Energy Generated:****Proposed GHG Emissions Reduced (CO2 Equivalent):** 3,970.00**Proposed Funds Leveraged:** \$50,000.00**Proposed EECBG Budget:** \$195,500.00**Projected Costs Within Budget:**

Administration:	\$0.00	Revolving Loans	\$0.00	Subgrants:	\$0.00
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Project Contact First Name: Art**Last Name:** Holdsworth**Project Contact Email:** holdswortha@oakgov.com**Metric Activity:** Building Energy Audits**If Other:****Project Summary: (limit summary to space provided)**

The County will, with assistance from an appropriate consulting contract firm, perform energy audits which will assist the County in selecting projects with a high return on investment (ROI) and to leverage County funds along with Utility, State, and other Federal grant monies. The following activities will be undertaken with the consultant: 1. Review the County's Energy Management Procedures for effectiveness and to assist with implementation. 2. Perform Phase I, preliminary walk-through, energy audits of County facilities and buildings for Facilities Management, Parks and Recreation, and the Water Resource Commissioner. Interviews with knowledgeable facilities personnel at each facility will help identify energy conservation opportunities. 3. Perform Phase II and III audits on projects Identified during the Phase I audits as having energy saving opportunities with good ROI such that detailed project specification can be developed for bidding the work to be done under the individual projects. 4. The consultant will assist the County in meeting EECBG application documentation and reporting requirements. 5. With the assistance of the consultant, the County will utilize DTE and Consumers Power Utilities Energy Optimization funds to supplement and leverage block grant funding wherever possible. 6. The consultant will assist the County to combine projects of similar scope to take advantage of economies of scope and scale. Anticipated activity expenditures are as follows: Grant compliance and reporting: \$40,500 Phase I, II, and III energy audits: \$155,000

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Grantee: Oakland County, Michigan **Date:** 11/23/2009
DUNS #: 1362003620000 **Program Contact Email:** holdswortha@oakgov.com
Program Contact First Name: Art **Last Name:** Holdsworth
Project Title: Activity 4: New Airport Terminal Building - Renewable Energy Enhancements

Activity: 13. Onsite Renewable Technology **If Other:**
Sector: Public **If Other:**

Proposed Number of Jobs Created: 3.00 **Proposed Number of Jobs Retained:** 0.00
Proposed Energy Saved and/or Renewable Energy Generated:
Proposed GHG Emissions Reduced (CO2 Equivalent): 419.00
Proposed Funds Leveraged: \$6,477,100.00
Proposed EECBG Budget: \$271,300.00
Projected Costs Within Budget:

Administration: \$0.00 **Revolving Loans:** \$0.00 **Subgrants:** \$0.00

Project Contact First Name: Art **Last Name:** Holdsworth
Project Contact Email: holdswortha@oakgov.com

Metric Activity: Government, School, Institutional Procurement **If Other:**

Project Summary: (limit summary to space provided)

This grant activity will assist in the construction of a new General Aviation Terminal and Administrative Building at the Oakland County International Airport. The new building will reuse the existing foundation, basement, and first floor slab of the existing building. The new building will incorporate LEED Certification practices. Funding in this activity will showcase several locally produced emerging energy technologies. Photovoltaic roofing on low slope roof surfaces: \$72,700 Photovoltaic roofing on metal pitched slope roof surfaces: \$112,600 Wind turbine for electrical generation: \$60,700 Solar powered building signage: \$25,300 1. Photovoltaic Roofing on low slope roof surfaces: Install a 5.8KW photovoltaic system on the low slope portion of the building. System shall consist of crystalline silicon modules in a fixed mounted array. The array shall be oriented for optimal energy production (42 degree tilt at 180 degrees azimuth) and located to avoid shading from roof top equipment and adjacent building structural elements. The array shall be mounted on permanent structural supports that raise the bottom of the array 24" above the roof surface to allow re-roofing without removing the PV modules. The PV array shall be connected to the building electrical system through an UL1741 grid-tie inverter that is approved by the local utility. Estimated annual energy production: 6,700 kWh to offset approximately \$603 in Utility costs. Project to utilize US manufactured PV panels (Evergreen,Solarworld), Michigan manufactured components (Evergreen Solar - string ribbon wafers used in the panels), and US manufactured inverters (PV Powered). 2.Photovoltaic roofing on metal pitched slope roof surfaces: Install approximately 10KW building integrated photovoltaic laminate system on the sloped standing seam roof. System shall consist of triple-junction amorphous silicon panels design specifically for integration to a metal roof system (UniSolar PVL). The panels will be installed at a 24 degree tilt, 204 degree azimuth with little or no shading expected. The PV array shall be connected to the building electrical system through an UL1741 grid-tie inverter that is approved by the local Utility. Estimated annual energy production: 11,900 Kwh to offset approximately \$1,071 in utility cost. The system will utilize Michigan manufactured PV laminate (Unisolar) and US manufactured inverters (PV Powered). 3. Wind turbine for electrical generation: Install a single vertical shaft Windspire wind turbine as manufactured by Michigan based Mariah Power. Estimated annual production for the unit is 1,100 kWh to offset \$99 in utility costs. The system will utilize US manufactured inverters (PV Powered). 4. Solar powered building signage: This installation will include roof mounted photocells and storage batteries located inside the building to provide power to LED signage on the face of the building. Signage will activate with a photocell and draw down from the storage batteries before switching over to grid supplied power when needed. Signage will identify the building and public entrance.

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Grantee: Oakland County, Michigan**Date:** 11/23/2009**DUNS #:** 1362003620000**Program Contact Email:** holdswortha@oakgov.com**Program Contact First Name:** Art**Last Name:** Holdsworth**Project Title:** Activity 3: Airport Site Lighting LED Replacements**Activity:** 12. Lighting**If Other:****Sector:** Public**If Other:****Proposed Number of Jobs Created:** 2.00**Proposed Number of Jobs Retained:** 0.00**Proposed Energy Saved and/or Renewable Energy Generated:****Proposed GHG Emissions Reduced (CO2 Equivalent):** 6,002.00**Proposed Funds Leveraged:** \$6,477,100.00**Proposed EECBG Budget:** \$224,300.00**Projected Costs Within Budget:**

Administration:	\$0.00	Revolving Loans	\$0.00	Subgrants:	\$0.00
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Project Contact First Name Art**Last Name:** Holdsworth**Project Contact Email** holdswortha@oakgov.com**Metric Activity** Government, School, Institutional Procurement**If Other:****Project Summary: (limit summary to space provided)**

Funding in this grant activity will provide replacement LED lamp heads for all existing exterior HID light poles on the entrance boulevard drive, parking lot, and pedestrian entrance way to the terminal. The new terminal building is being located on the foundation of the existing building so site amenities are being retained. Existing HID lamp heads will be replaced but the existing poles and structures will be retained. The County plans to use a Michigan produced product designed for retrofit applications (www.xusledlighting.com). Lighting controls are an integrated part of the approach with these lamp heads. Photocell and timer technology will be used to control lighting from the building's energy management system. The fixtures also incorporate a thermal controlled cooling fan to assist with lamp light. LED site lighting will consume approximately 50% less energy than traditional HID lamp sources.

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DUNS #: 1362003620000 **Program Contact Email:** holdswortha@oakgov.com
Program Contact First Name: Art **Last Name:** Holdsworth
Project Title: Act 5: New Airport Terminal Building - Energy Saving and Avoidance Construction Enhancements

Activity: 6. Buildings and Facilities **If Other:**
Sector: Public **If Other:**

Proposed Number of Jobs Created: 75.00 **Proposed Number of Jobs Retained:** 0.00
Proposed Energy Saved and/or Renewable Energy Generated:
Proposed GHG Emissions Reduced (CO2 Equivalent): 15,659.00
Proposed Funds Leveraged: \$6,477,100.00
Proposed EECBG Budget: \$400,800.00
Projected Costs Within Budget:

Administration: \$0.00 **Revolving Loans:** \$0.00 **Subgrants:** \$0.00

Project Contact First Name: Art **Last Name:** Holdsworth
Project Contact Email: holdswortha@oakgov.com

Metric Activity: Government, School, Institutional Procurement **If Other:**

Project Summary: (limit summary to space provided)

This grant activity will assist in the construction of a new General Aviation Terminal and Administrative Building at the Oakland County International Airport. The new building will reuse the existing foundation, basement, and first floor slab of the existing building. The new building will incorporate LEED Certification practices. This grant activity helps provide for energy saving and avoidance construction enhancements above and beyond those required by local code. Grant Activity Details: 1. Hybrid HVAC system including geothermal field, \$189,700: Funding through this grant activity would provide the delta between a typical boiler and condenser HVAC system and the one designed for this facility. The system as designed provides for a vertical geothermal field with supplemental downsized high efficiency boiler and extensive zone and equipment automated controls. Estimated annual energy avoidance of 12,428 kWh per year or \$6,962 in utility costs is expected, as compared to the baseline ASHRAE 90.01 HVAC system to meet the current State of Michigan Energy Code. 2. Extensive building insulation, \$12,600: Extra roof deck insulation and triple glazed windows will be used in staff occupied areas of the building. Funding through this grant activity would provide the delta between typical insulation and double glazed windows. Estimated annual energy avoidance of 4,815 kWh per year or \$522.00 in utility costs compared to the baseline insulation requirements to meet the current State of Michigan Energy Code. 3. Energy efficient lighting systems, \$89,800: The funding in this activity will be used to incorporate lighting design enhancements to meet the recommended illumination levels by the IESNA and required lighting levels per state and national codes can be met. In addition, the goal is to reduce the connected lighting power use required by the state energy code by approximately 24%. Lighting design for the building consists of high performance fluorescent luminaires with the use of LED and metal halide sources for accent lighting. Lighting fixtures have been selected based on highest efficiency ratings. An automated light management system utilizing integrated occupancy sensors and daylight harvesting will be implemented as part of the lighting design. Estimated annual energy avoidance is 19,700 kWh to offset \$1,770 in utility cost. The funding request for interior lighting represents the delta between a standard lighting system and the system as planned for the facility which will exceed the codes and provide for the anticipated 24% reduction in energy cost. 4. Solar hot water heating: \$32,000: Install a roof top solar hot water collector to supply domestic hot water to the facility. The system would be the primary source of hot water supply for the building and would be backed up with a high efficiency on demand gas fired water heater. The estimated annual energy avoidance would be 77.5 Mcf per year or \$962 in utility costs compared to an 85% efficient storage type water heater. 5. Building commissioning services, \$75,900: Basic building commissioning services as required by LEED certification and the State of Michigan Energy Code are included in the funding for the construction of the facility. Funding through this grant activity would provide the delta between this work and a complete commissioning effort which would include extensive air balancing and calibration of all equipment, motors, and controls. The Lawrence Berkley National Laboratory reports that a 13% energy savings can be obtained through this effort.

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