SEP ARRA Final Report - Minnesota

Submitted By:

MN Dept of Commerce

December 28, 2012

OVERVIEW: On February 17, 2009 President Obama signed into law the American Recovery and Reinvestment Act (ARRA). In May 2009, the Minnesota Legislature passed, and Governor Pawlenty signed, S.F. 657 legislation that designated Minnesota's share of the ARRA energy dollars into specific programs.

For the past three years, the Minnesota Department of Commerce (Commerce) has developed and delivered energy programs based on Chapter 138 of the 2009 Minnesota State Laws. Commerce received $54,172,000 in State Energy Program formula ARRA funds. These funds were appropriated across eight market titles and supported over 120 grants and contracts.

The ARRA funds were instrumental in supporting the Minnesota energy economy as we moved out of the recession. Additionally, the significance of this funding will have a lasting impact through effective training and placement of dislocated workers, money and energy saved with more efficient homes, expanded business within the renewable energy supply chains, and increased clean energy production.

The following document includes reports on each of the programs carried out with SEP ARRA funds. Each section is organized by market title and programs within each market title. A sampling of attachments for each section accompanies this document.

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Archaeological Review

DOE Award Number: DE-EE0000164
Market Title: Administration -6360
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Funds for these contracts were utilized for the purpose of completing preliminary archaeological reviews for ARRA funded ground source heat pump and wind turbine installations in order to determine whether the proposed projects have the potential to affect significant archaeological sites. Each review included, but was not limited to:
    - Review inventory, survey and map information at the Minnesota State Historic Preservation Office.
    - Use of maps, aerial photos, and other sources to evaluate topographical indicators that may identify potentially significant sites.
    - Review current and past land use to determine whether or not a project site has the potential to yield undisturbed archaeological evidence.
    - If necessary, consult with the Minnesota State Archaeologist to determine whether a project could generate concerns under the provisions of the *Private Cemeteries Act.*
    - For each property reviewed, prepare a standard letter briefly summarizing findings, and state whether or not further archaeological survey work is necessary.
- **Goals:** The goal of this contract was to identify any sites that were potentially archaeological significant in areas where ground source heat pumps or wind turbines were to be installed. When such sites were determined, rebates were not allowed.
- **Benefits:** Benefits include avoiding construction on sites that may have archaeological value or significance.
- **Eligibility:** The selected contractors must have met or exceeded the United States Secretary of the Interior's Professional Qualification Standards for Archaeology/Historical Archaeology.
- **Accomplishments:** NHPA Reviews were completed on 192 GSHP and 46 wind projects. Of these, Archaeological Research Services did reviews on four GHSP and six wind projects that had already been completed and one proposed GSHP project on a public building. AMEC Earth & Environmental, Inc. did reviews on nine GSHP and one wind project that had already been completed. The remainder of the NHPA reviews was done by the State Historic Preservation Office. Rebates were issued to 175 GSHP Installations and 29 small wind installations. Two wind and two GSHP projects were denied rebates due to high archeological potential.
- **Timeline:** November 2010 – December 2011

- **Implementing Partners:** These contracts were run solely out of the Department of Commerce and awarded to the sub grantees listed below.

II. GOALS AND OBJECTIVES COMPARISON

- The goal was to review wind and ground source heat pump projects for potential impact to archaeological resources. The desired outcome was achieved.

III. PROJECT MODIFICATION

- Initially, travel costs were incurred as a part of these grants, so contracts were modified to shift allowable costs for travel into the labor & fringe category.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- As a result of the reviews, two GSHP and two wind projects were prevented from using federal funding due to potential impact to archaeological resources.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Site visits were conducted when Commerce deemed it warranted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Archaeological Research Services did reviews on four GHSP and six wind projects that had already been completed and one proposed GSHP project on a public building.
- AMEC Earth & Environmental, Inc. did reviews on nine GSHP and one wind project that had already been completed.
- As a result of the reviews, two GSHP and two wind projects were prevented from using federal funding due to potential impact to archaeological resources.

VII. BEST PRACTICES & LESSONS LEARNED:

- Due to language in the state legislation appropriating ARRA funds for GSHP and Wind projects, we were required to give rebates to projects that had already been completed before an archaeological review could be done. In the future, we would not allow rebates for projects that had already been completed before NHPA review.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- This was a short term contract to ensure project compliance. Sustainability of this project is not applicable, though Commerce will be sure to apply any lessons learned should archaeological review be needed in the future.

IX. COST STATUS:

- Original budget: $10,000
- Revised budget: N/A
- Expenditures: $8,230.13
- Balance: $1,769.87

X. MEDIA AND OUTREACH:

- Not applicable for these contracts.

XI. SUB-RECIPIENTS:

Sub-recipient: **AMEC Earth & Environmental, Inc.**
Dollar amount: **$5,000**
Performance Period: **8/12/2011 – 11/30/2011**
Description of Project: Complete preliminary archaeological reviews for ARRA funded ground source heat pump and wind turbine installations in order to determine whether the proposed projects have the potential to affect significant archaeological sites.

Sub-recipient: **Archaeological Research Services**
Dollar amount: **$5,000**
Performance Period: **11/11/2010 – 12/31/2011**
Description of Project: Complete preliminary archaeological reviews for ARRA funded ground source heat pump and wind turbine installations in order to determine whether the proposed projects have the potential to affect significant archaeological sites.

XII. ATTACHMENTS:

- AMEC review of archaeological potential for David Beddor GSHP project
- Archaeological Research Services review of archaeological potential for Tom Willet wind turbine project.
- Archaeological Research Services review of archaeological potential for Clifford Patrick wind turbine project.

Geographical Information System

DOE Award Number: DE-EE0000164
Market Title: Administration -6360
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Contract to set up an automated routine to convert street addresses to coordinates (geo-coding) for plotting via a Geographical Information System. The list of addresses would be updated periodically and the automated system would handle the additional addresses, and update the cumulative database of geo-coded coordinates for the particular project.
- **Goals:** Simplify plotting of project-related metrics (e.g. energy savings) for programs that have additional sites added over time.
- **Benefits**: Graphical presentation of the areal extent of project-related metrics. Applicable to any metric, since the routine just handles the address conversion.
- **Eligibility:** Pertinent to any project with street addresses needing to plot metrics – e.g. energy savings from building energy efficiency measures, power production from solar panel installations, weatherization of low-income residential homes.
- **Accomplishments:** Automated routine developed – full production testing still needed.
- **Timeline:** February 2012– June 2012
- **Implementing Partners:** This contract was run solely out of the Department of Commerce and awarded to the sub grantee listed below.

II. GOALS AND OBJECTIVES COMPARISON

- The goals of the contract were achieved.

III. PROJECT MODIFICATION

- **There** were no modifications.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- Not applicable.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Automated routine developed in support of presentation of results for other projects.

VII. BEST PRACTICES & LESSONS LEARNED:

- Not Applicable.

VIII. POST-ARRA PROJECT SUSTAINABILITY: Not Applicable.

IX. COST STATUS:

- Original budget: $5,000

- Revised budget: $2860.81
- Expenditures: $2860.81
- Balance: $0.00

X. MEDIA AND OUTREACH:

- Not Applicable.

XI. SUB-RECIPIENTS:

Sub-recipient: **Minnesota Geospatial Information Office within the Department of Administration and the Minnesota Office of Enterprise Technology**
Dollar amount: **$2,860.81 (SEP ARRA Portion)**
Performance Period: **2/01/10 – 6/30/2012**
Description of Project: Set up an automated routine to convert street addresses to coordinates (geo-coding) for plotting via a Geographical Information System.

XII. ATTACHMENTS:

- No attachments.

Residential Outreach

DOE Award Number: DE-EE0000164
Market Title: Information and Outreach - 6361
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 2, Section 5 of the 2009 Minnesota State Laws states:

  In order to maximize the number of new households participating in programs delivering residential energy conservation services under this act, the commissioner shall use stimulus funds to award grants on a competitive basis by September 1, 2009, to one or more organizations that are experienced in conducting outreach activities to partner with nonprofit and community organizations. Outreach activities must include, without limitation, households in low-income areas, small cities, and rural communities, and must reach all regions of the state. The methods used to contact households may include, but are not limited to, direct contact with households, advertising in traditional and nontraditional media, distribution of literature, presence at community events, partnering with community organizations, and other innovative measures. The commissioner may contract to coordinate outreach efforts with a community-based organization with demonstrated regional or statewide capacity, including an organization established under Minnesota Statutes, section 216C.385.

  The purpose of this activity was to maximize the number of new households participating in programs delivering residential energy conservation services funded through stimulus dollars, including but not limited to, the Weatherization Assistance Program. The methods employed to contact residents included direct household contact, advertising, distribution of literature, community events, partnering with community organizations, and other innovative measures. An RFP was issued to solicit response from providers throughout the state. Commerce selected 3 qualified responders to carry out this program statewide.

- **Goals:** The goal of the program was to conduct statewide outreach to households in low-income areas, small cities, and rural communities.
- **Benefits:** Often, those who are least able to afford home energy improvements are those who need them the most. This program reached out to low-income groups to assist them in accessing programs that could help save energy and money.
- **Eligibility:** Eligible entities included: any persons; any municipality, or other governmental or political subdivision or other public agency, any public or private corporation, any partnership, firm, association, or other organization, any receiver, trustee, agent, or other legal representative of any of the fore going, or any other legal entity, but does not include the Minnesota Department of Commerce.

- **Accomplishments:** This grant was awarded to 3 entities: The Neighborhood Energy Connection, Northwest Community Action, Inc, and Common Ground Construction. The largest award went to the **Neighborhood Energy Connection** ($136,489). With this funding, NEC exceeded a number of its goals. NEC exceeded its initial goal to have 7,000 direct referrals to ARRA-funded programs by tallying 8,065. This was achieved through the distribution of more than 67,000 fliers, 10,600 door hangers, 3,016 in-home visits, and a number of other outreach strategies including: tabling at community events; workshops; electronic newsletters; radio advertising; telephone hotlines; and media releases.

  Common Ground employed similar outreach techniques. They held 48 presentations/workshops that had 780 attendees; held online workshops with 209 participants, canvassed 9,012 doors and were able to recruit 2,087 households to participate in data collection. They also distributed 432 energy savings kits, and had 1,849 direct referrals to ARRA supported weatherization programs.
  - Number of jobs created and retained: 6.5 (NEC: 4.5, CGI: 1, NWCAP: 1)
  - Funds leveraged: $129,013[1]
  - Number of low-income households served: 8,065 + 1849 + more than 500
  - Number of rural communities served: 9 counties (CGI) + 12 counties (NWCAP)
  - Areas of the state served: **NEC**: St. Paul, Minneapolis, and Rochester with focus on non-English speaking residents. **NW Community Action:** Becker, Clearwater, Hubbard, Kittson, Lake of the woods, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake, and Roseau counties. **Common Ground Construction:** Koochiching, Itasca, Aitkin, Kanabec, Pine, Carlton, St. Louis, Lake, and Cook counties as well as the City of Duluth.
- **Timeline:** March 2010 – June 2011
- **Implementing Partners:** This program was administered solely by the Minnesota Department of Commerce and delivered by the sub grantees listed below.

II. GOALS AND OBJECTIVES COMPARISON INCLUDING ANY MODIFICATIONS:

- This program essentially met what it set out to do. There were no necessary modifications.

III. PROJECT MONITORING EFFORTS:

- Commerce worked closely with grantees to ensure they were staying on task and had what they needed to perform work. Commerce received monthly reports from the grantees, conducted regular check-ins either in-person or by phone. Commerce received a final report from each grantee detailing outreach programs and achievements.

IV. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Common Grounds identified a number of barriers to participation in energy improvement programs. Common Grounds found that many participants seemed to be seeking one major improvement to significantly reduce energy costs. Taking many little

[1] 50% of the funds for this program came from Weatherization Assistance Program. The leveraged funds include all reported match. The funds expended only included the SEP portion.

steps made the process overwhelming and intimidating. Further, when people would seek estimates for the work, different contractors would offer different opinions on what should be done, which only escalated confusion. Common Grounds tried to work with participants to minimize confusion and cater decisions to each of the homeowners.

Other uncertainties and misperceptions that were identified include:

- Where to start on making homes more energy efficient – which improvements to do first, and what has the best return on investment.
- How to find a qualified energy auditor especially in rural locations that have a shortage of certified building energy analysts.
- Who can be trusted – sales people or contractors, many conflicting opinions as to what product or equipment is best. Having an independent third party that provided objective information was a key factor in homeowners moving forward with energy saving improvements.
- How tightening houses may impact health and safety – how tight is too tight? Most homeowners are unaware of proven buildings science or the use of blower doors and infrared thermography.
- Approximately 1/3 of workshop participants had desires to replace their windows. Many of them had the impression that this would have the greatest impact on energy savings and the best payback.
- Confusion or misunderstanding of CFLs.
- Dubious claims on a variety of products and services have made it more difficult for consumers to find credible information and select products and services that have quantifiable and credible results.

V. BEST PRACTICES & LESSONS LEARNED:

- As part of its final report, NEC included recommendations for replication. The recommendations are based on the grant experience and reflect both best practices and missed opportunities. First, while strength of message is important, it is also key to have messengers with the right skills and knowledge. Personal contact with underserved communities was the most effective technique that was employed. A home energy conservation outreach worker will be most successful if they:
  - Represent the community they are trying to organize, including language fluency (NEC hired to Hmong speaking workers to perform outreach in Hmong communities);
  - Are naturally outgoing and experience in community organizing, sales, or marketing;
  - Have some pre-existing knowledge of residential conservation;
  - Demonstrate genuine enthusiasm for the issues; and
  - Are creative, flexible, and self-motivated.

  Recommendations for strategies to employ for similar outreach efforts:
  - **Meet the public where they are**. Avoid spending substantial effort attracting underserved individuals to events that are unfamiliar to them. Instead, identify

existing, popular locations, events, and activities where you can present your programs and services to the target audience.

- **Understand the dilemma inherent in the message**. It is important to respect the audience's wish and right to fully engage in the resource-rich American lifestyle. Asking certain groups to use less energy may be received as an insult.
- **Use simple terminology and make you proposal relevant to the audience's life experiences**. Avoid acronyms and jargon that would only be understandable by insiders. Connect with your audience by presenting information in contexts that are relatable.
- **If necessary, be fluent in language of audience**.
- **Be patient but consistent.** It may take a long time for your message to sink in. It is important to keep on message to avoid confusion.
- **Be visible in the community. Go where you will be seen and listened to.** Advertise in appropriate media. Use advertising and presentation models that reflect the communities you want to engage.

VI. POST-ARRA PROJECT SUSTAINABILITY:

- Without grant funding, this outreach has not been continued. That said, Minnesota has Community Action groups that continue to work with low-income residents throughout the state. Additionally, Commerce works with the Clean Energy Resource Teams (CERTs) who work as the "boots on the ground." CERTs have teams in seven regions throughout the state. CERTs conduct outreach around building clean energy communities throughout the state.

VII. COST STATUS:

- Original budget: $250,000
- Revised budget: $242,915
- Expenditures: $207,117
- Balance: $35,798

VIII. MEDIA AND OUTREACH:

- NEC released a flier in community newspapers. See Attachments.
- NEC mailed out post cards. See Attachments.

IX. SUB-RECIPIENTS:

Sub-recipient: **Neighborhood Energy Connection**
Dollar amount: **$136,489 Grant**
Performance Period: **March 2010 – June 2011**
Description of Project: Conducted outreach to low-income and non-English speaking residents in St. Paul, Minneapolis, and Rochester.

Sub-recipient: **Northwest Community Action, Inc.**
Dollar amount: **$42,000 Grant**
Performance Period: **April 2010 – June 2011**
Description of Project: Conducted outreach to low-income residents in rural communities in northwest Minnesota.

Sub-recipient: **Common Ground Inc.**
Dollar amount: **$64,426 Grant**
Performance Period: **April 2010 – June 2011**
Description of Project: Conducted outreach to low-income residents in Duluth and surrounding 9 county region in northeast Minnesota.

X. ATTACHMENTS:

- NEC Newspaper Insert
- NEC post card
- NEC Final Report
- Common Ground Final Report: DEEP Newsletter and DEEP Energy Info Guide.

Minnesota State Fair

DOE Award Number: DE-EE0000164
Market Title: Information and Outreach
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** The Eco Experience at the Minnesota State Fair draws more than 300,000 people annually and has proven to be an effective outreach tool for a wide range of environmental and energy-related messages. The Minnesota Pollution Control Agency is the lead agency for the Eco Experience, and works in partnership with a variety of organizations, including other state and government agencies, non-profits, and businesses to provide science-based education to state fair attendees. In previous years, the largest exhibit in the building has been dedicated to residential home improvements; usually with an emphasis on new construction opportunities. With SEP ARRA funding for outreach and education, the Minnesota Department of Commerce saw an opportunity to expand and coordinate this area with an increased focus on energy-related improvements for existing homes. The resulting *Energy Solutions Home* enabled Commerce to partner with various organizations to implement messaging around home energy conservation and efficiency opportunities. Commerce coordinated the messaging and efforts of the partners through a multi-faceted approach, including:
    - Established the overall messaging goals
    - Sought proposals from potential partners
    - Designed the overall exhibit space
    - Designed, approved, and produced all the educational signage for the exhibit
    - Contracted KidZibits, a local exhibit fabricator, to design and construct museum quality displays and wall components
    - Coordinated partner relations, including the overall staffing requirements for the exhibit

- **Goals:** The primary goals of the exhibit included displays that:

    - Educated fairgoers about a variety energy-related building improvement opportunities
    - Highlighted advancements in the understanding of building science
    - Presented data and statistics on energy use and the environmental impacts of the operation of a typical home
    - Exhibited products, emerging technologies, and techniques that can significantly improve the operation of existing homes
    - Offered strategies to reduce the impact of environmental and health effects, lower operational and maintenance costs, increase the durability of systems and materials, and enhance occupant comfort and safety

    - Provided information for enhancing the designs of new homes and for retrofit projects
    - Supplied resources for helping homeowners to finance energy-related home improvements
- **Benefits:** The *Energy Solutions Home* proved to be an efficient way to educate a high number of Minnesotans about strategies for improving their homes' energy performance. Fairgoers gained knowledge on a wide variety of topics including:
    - Typical household energy use
    - Home energy assessments
    - Lighting efficiency
    - Home envelope improvements
    - Heating, cooling, and ventilating options
    - Energy star appliances
    - Renewable energy resources
    - Indoor water conservation
    - Outdoor water conservation
    - Green building materials
    - Available financing/rebates
- **Eligibility:** Any individual or business was eligible to apply for the design and fabrication of the exhibit. Additionally, any individual or business was eligible to submit a proposal to be a partner in the exhibit.
- **Implementation/Deliverables:** Through contractual agreements, the following were delivered to Commerce:
    - Design assistance for the overall layout of the exhibit, detail drawings of structural wall components and display pieces, and style guides for signage, and color palettes.
    - Structural wall component system, consisting of 143 interlocking wall sections and connectors, designed to provide backdrops and spatial separation of the various displays within the exhibit.
    - Five display models:
        - Lighting Options
        - Home Energy Use
        - Ice Dams & Air Leaks
        - Rim Joist Insulation
        - Solar Siting Options
    - Educational signage for the entire exhibit space.
- **Accomplishments:**
    - Number of jobs created and retained: 4 FTE
    - Number of Displays: 11
    - Estimated number of people who walked through the exhibit: >250,000
    - Number of home energy guides and other materials distributed: 10,000
- **Timeline:** January 2012 – October 2012

- **Partners:** CenterPoint Energy; Neighborhood Energy Connection; Clean Energy Resources Teams; Center for Energy and Environment; Fields Outdoor Spaces; Warner's Stellian; Minnesota Pollution Control Agency; Castle Building & Remodeling; Natural Built Home; University of Minnesota; Minnesota Housing and Finance Agency; SustainMax; PanelWorks; Quarve Contracting; A&A Millwork; Powerfully Green; Bell Museum of Minnesota.

II. GOALS AND OBJECTIVES COMPARISON INCLUDING ANY MODIFICATIONS:

- The overall goals of the project were met (or exceeded) in every category. Modifications for future use of the deliverables will primarily focus on enhancements and expansion of goals and messages.

III. PROJECT MONITORING EFFORTS:

- Commerce worked closely with all contractors to ensure compliance with the contracts.

IV. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The investment in the structural wall component system and display models, along with the associated signage and collateral materials, offered the opportunity to deliver high quality energy-related messaging to a large and diverse audience over the 12-day period of the Minnesota State Fair. The overall museum-quality design values of the exhibit, combined with the oversight and coordination of partner displays and staffing, provided a highly visual and interactive environment for fairgoers to learn about home energy options and provide guidance for taking next steps. Staff and partner surveys indicated a very high level of satisfaction with the project; attendee survey results (done by MPCA) are pending, but anecdotal feedback suggests a positive response.

  The planned design of the exhibit to have a multi-year life with reconfigurations of the structural wall pieces to provide a fresh look and provide new settings for displays (both Commerce and potential partners) demonstrates a commitment to maximizing the return on the investment. Display pieces were also designed for a long life with the capabilities of modifications/updating of graphic elements to reflect current concepts and understandings of building science.

  Additionally, four of the display models were fabricated with packing crates to facilitate their use at other events and locations throughout the state during non-fair times. These can be transported by Commerce staff when attending other events (trade shows, conferences, public presentations, training opportunities) or loaned to other organizations (e.g., schools) for on-site educational experiences.

V. BEST PRACTICES & LESSONS LEARNED:

- The relatively short time frame available for the successful implementation of this project required a focused application of staff resources; this sometimes resulted in challenges ranging from allocation of staff to uncertainty on decision-making processes. Although a significant amount of effort was put into process planning, a project of this scope involving multiple partners cannot be designed to cover every contingency. However, the flexibility of both leadership and staff enabled unforeseen obstacles to be addressed, ensuring a high level of quality.

VI. POST-ARRA PROJECT SUSTAINABILITY:

- The structural wall components were designed and fabricated to withstand multiple years of use and were built to be flexible to allow future reconfigurations. Four of the displays were also constructed to be transported to various events or remain in one or more locations to serve as educational pieces throughout the remainder of the year. It is Commerce's goal to keep the basic energy messages the same, but give the exhibit a different look and feel each year, through enhancements, potential additional displays, and new partner arrangements.

VII. COST STATUS:

- Original budget: $180,567.91
- Expenditures: $180,567.37

VIII. MEDIA AND OUTREACH:

- The Energy Solutions Home exhibit garnered two live media interviews during the fair and inclusion into a documentary video produced by the Minnesota Association of Professional Employees (MAPE)
- Seven press releases were distributed prior to and during the fair, which were picked up by media outlets throughout the state.
- Quick Response (QR) codes were printed on most of the educational signage throughout the exhibit. Commerce and partners reported increased traffic to specific web pages as a result.
- Additionally, the entire Eco Experience has a separate website, which featured exhibitors from throughout the building, including the Energy Solutions Home exhibit.

IX. SUB-RECIPIENTS:

Sub-recipient: **KidZibits**
Dollar amount: **$160,752 Grant**
Performance Period: **July 2012 – September 2012**
Description of Project: Design and fabricate structural wall components and display models for the Energy Solutions Home at the 2012 Minnesota State Fair.

Sub-recipient: **Minnesota Pollution Control Agency**
Dollar amount: **$10,000 Internal Agreement**
Performance Period: **March 2012 – October 2012**
Description of Project: MNPCA provided staff time for design services to create:

a) An overall design (including drawings) of the exhibit, structural components, and display pieces for the Energy Solutions Home in the Eco Experience for the 2012 Minnesota State Fair.
b) Style guides for exhibit and displays: color palettes, typefaces, signage.
c) Specifications (including drawings) for seeking bids for the design/fabrication of the structural components and of the individual displays.

X. ATTACHMENTS:

- 2012 State Fair Report

Facility Cost-share

DOE Award Number: DE-EE0000164
Market Title: Government Building Energy Efficiency
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 2, Section 7 of the 2009 Minnesota State Laws states:

  Local Government and School District Renovations. *(a) The commissioner shall award grants to local governments and school districts to make energy efficiency improvements in existing local governments and school district facilities. The use of stimulus funds must be coordinated with the local public buildings enhanced energy efficiency program under Minnesota Statutes, section 216C.43, or other available financing programs.*
  (b)The commissioner hsall prioritize lighting upgrades, energy –efficient windows, energy recommissioning, and other cost-effective energy projects that are ready for immediate implementation.
  (c) The commissioner may require a local government or school district, as a condition of receiving a grant, to commit to implement future activities, including but not limited to staff training, that are designed to create additional energy or operating savings to the local government.
  (d) The commissioner shall coordinate with the Department of Education to prioritize school district projects for funding under this section, consistent with the principles of statewide geographic distribution of projects, optimized energy savings, and an improved learning environment for schoolchildren.

  Grants were awarded to local governments, public schools and park districts to assist in the cost of making energy efficient improvements to existing buildings and facilities.
- **Goals:** The goals of the program were to create/sustain jobs, reduce energy consumption, save local governments money, and to reduce greenhouse gas emissions by spurring implementation of the energy efficiency projects.
- **Benefits:** The benefits of the program include, getting local government entities to think about energy efficiency and to act on it. This program provided an excellent opportunity for communities to receive assistance that would help them to achieve the goals outlined above.
- **Eligibility:**
  - Eligible Applicants: All Minnesota public school districts, cities, counties, townships, park districts, or any combination of these units operating under an agreement to exercise powers jointly were eligible for this program.
  - Eligible Activities: Eligible projects included measures that would improve the energy efficiency of an applicant-owned facility of one or more stationary

energy using device(s) owned by an applicant. There were two Categories of eligible activities.

- Category A: Energy Efficient window replacements funds could be used to replace existing windows with energy efficient windows. Replacement windows must have been the equivalent of at least the Energy Star label.
- Category B: Non-window Replacement Energy-Efficiency Improvements
  1. Building Energy Efficiency Retrofits: Grant funds were eligible to be used to make energy efficiency improvements in existing buildings. Projects were limited to: insulation; weather stripping; caulking and similar building envelope improvements; door repair or replacement; interior lighting and control improvements; heating, ventilating, and air conditioning upgrades; purchase and installation of Energy Star appliances for the purpose of replacing less efficient appliances; building recommissioning; and domestic hot water improvements.
  2. Exterior Lighting Improvements: Replacement of exterior lighting (e.g., parking lots and ramps, walkways, etc.) with energy efficient lighting technologies.
  3. Traffic Signal and Street Lighting Retrofits: Traffic signals and street lighting may be replaced with more efficient technology.
  4. Other: Energy efficiency improvements to local government facilities such as pumps or motors.

All measures must have had a simple pay back of no fewer than 2 years and not greater than 15 years.

- **Accomplishments:** Funding used for this program was paired with Energy Efficiency and Conservation Block Grant funding. So, while 79 grants were awarded under this program, only 8 were funded using SEP dollars. All 8 of the grants went to school districts in greater Minnesota. The smallest grant awarded was $4,894 and the largest was $84,898. Each of these grants was successfully completed by the program end date.
- **Timeline:** May 24, 2010-September 30, 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce; sub-grantees are listed below.

II. GOALS AND OBJECTIVES COMPARISON

- This program met the goal of getting local governments to implement energy saving measures. The program fell short, however, in the number of grants awarded. As mentioned, only 8 local governments received SEP funding. This number is somewhat skewed due to the EECBG funding, which was utilized first, funding the other 71 grants.

III. PROJECT MODIFICATION

- Commerce did not make any modifications to the program despite the low number of SEP funded grants awarded. Remaining funds were reallocated to longer lasting, more sustainable financing programs (e.g. revolving loan funds).

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- In aggregate, the 8 projects funded on this program reduced energy by 6,401 MMBTU and 577 tons of greenhouse gas emissions.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Additionally, Commerce conducted site visits to ensure projects were executed as agreed upon and that grantees were keeping proper records on file.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- SEP ARRA funds were helpful to cities, counties, and schools in that they assisted with implementing projects that may not have been implement without assistance. However, it seemed that the projects that were most successful were those that had someone on staff who was knowledgeable about energy improvements and already had projects that had been ready to go. Often, in less populated areas of the state, a city clerk or city administrator was responsible for carrying-out the energy projects at the same time that person had other responsibilities. This frequently caused more work for Commerce staff to help grantees through the process. Additionally, projects tended to be one-off projects that may have had a negligible impact on energy savings. This program achieved its goal of providing a quick stimulus and achieving energy savings. However, for most public entities a comprehensive, well thought out approach would result in better results.

VII. BEST PRACTICES & LESSONS LEARNED:

- If this program were to be released again there are a few things that may have been done differently. First, Commerce would have done more on the front end of the project and created a packet for sub-grantees to complete and understand what needed to be done in order to receive federal funds. Second, the eligible activities may have been changed to include more comprehensive programs that address broader energy needs like performance contracting, or similar activities.

VIII. POST-ARRA PROJECT SUSTAINABILITY: Not applicable.

IX. COST STATUS:

- Original budget: $5,442,360
- Revised budget: $330,829.86 (Awarded)
- Expenditures: $329,195
- Balance: $1,633.98

X. MEDIA AND OUTREACH:

- Not Applicable.

XI. SUB-RECIPIENTS:

Sub-recipient: **Crosby – Ironton Public Schools**
Dollar amount: **$52,600 Grant**
Performance Period: **August 2010 – December 2010**

Description of Project: Replaced 72% efficient boiler with 93% efficient boiler at Cuyuna Elementary.

Sub-recipient: **Maple River Public Schools**
Dollar amount: **$47,070 Grant**
Performance Period: **September 2010 – June 2011**
Description of Project: Replaced 50% efficient boiler with 65% efficient boiler at Mapleton Middle/High School.

Sub-recipient: **Marshall Public Schools**
Dollar amount: **$20,774.50 Grant**
Performance Period: **September 2010 – June 2011**
Description of Project: Increased lighting efficiency: replacement of 929 fixtures.

Sub-recipient: **Moorhead Public Schools**
Dollar amount: **$75,200 Grant**
Performance Period: **September 2010 – March 2011**
Description of Project: Replaced 65% efficient boiler with 83% boiler at Hopkins Elementary School; Replaced 65% efficient boiler with 83% boiler at Robert Asp Elementary School.

Sub-recipient: **Fridley Public Schools**
Dollar amount: **$4,894 Grant**
Performance Period: **September 2010 – December 2010**
Description of Project: Increase lighting efficiency with replacement of 76 fixtures at Fridley High School.

Sub-recipient: **Greenway Public Schools**
Dollar amount: **$12,360 Grant**
Performance Period: **September 2010 – March 2012**
Description of Project: Replaced 46 lighting fixtures and install 17 sensors at Marble Elementary School.

Sub-recipient: **Rush City Public Schools**
Dollar amount: **$33,031.50 Grant**
Performance Period: **October 2010 – June 2011**
Description of Project: Increase lighting efficiency by replacing 1,207 fixtures at Rush City High School.

Sub-recipient: **Kelliher Public Schools**
Dollar amount: **$84,898.88 Grant**
Performance Period: **August 2010 – June 2012**
Description of Project: Install building controls and VSD at Kelliher New School and Kelliher Old School.

XII. ATTACHMENTS:

- No attachments

State Public Buildings Energy Efficiency Program

DOE Award Number: DE-EE0000164:
Market Title: Government Building Energy Efficiency
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138, Article 2, Section 8 of the 2009 Minnesota State Laws states:
  ***State Government Building Renovations**. (a) The commissioner shall use stimulus funds to renovate state government buildings to enhance energy efficiency. The commissioner of administration shall select, fund, and implement state government buildings renovation projects using federal stimulus money. Priority must be given to lighting upgrades, window repair and replacement with energy –efficient windows, energy recommissioning, and other cost-effective energy projects that are ready for immediate implementation.*
  (b) In addition to other uses, funds may be used to advance public building enhanced energy efficiency program projects under Minnesota Statutes, section 16B.322, and for grants for a portion of costs incurred by state agencies in implementing energy efficiency improvements not part of that program.
  (c) Funds may be used to develop a system and procedures to set energy –reduction goals for state buildings, to automate utility bill data and analysis, to develop a system for reporting monthly energy use relative to these state building energy-reduction goals, and to install individual metering devices for separate buildings.
  (d) The Department of Administration may require a state agency, as a condition of receiving stimulus funds under this section, to commit to implement future energy-savings activities, including but not limited to staff training, that are designed to create additional energy or operating savings to the state agency.
  (e) By January 15, 2011, and annually thereafter, the commissioner, in consultation with the commissioner of administration, must issue a report to the chairs and ranking minority members of the senate and house of representatives committees having jurisdiction over energy policy and finance on the activities and energy savings under this section.

  Stimulus funds were appropriated by the legislature to the Department of Administration (Admin) to support the Public buildings Enhanced Energy Efficiency Program (PBEEEP). PBEEEP is a buildings recomissioning program run out of Admin. There are four stages of PBEEEP: Screening; Investigation; Implementation; and Verification. These stages are designed to gain optimal knowledge about each building and identify which buildings have to most potential for energy savings.

  In addition to providing funds for PBEEEP, Commerce loaned funds to the Department of Administration for the purpose of a lighting retrofit at the state Capitol campus, including

parking ramp structures. Commerce also loaned funds to the Southwest Minnesota State University, under PBEEEP, to perform and light retrofit.

- **Goals:** The goals of PBEEEP are to reduce energy consumption and costs for state owned buildings. These funds helped to jump-start the program by spurring investigations in all state owned facilities, and moving forward with projects that were deemed qualified for implementation.
- **Benefits:** Benefits of this program included: energy and cost savings; greenhouse gas reduction; job creation; and the foundation for continuing the program.
- **Eligibility:** This program was mandated by the legislature. Funds for the Capitol lighting project and the SMSU lighting project were awarded through internal agreements.
- **Accomplishments:** This grant was awarded to the Department of Administration and subcontracted to the Center for Energy and Environment. Seven engineering firms on the State of Minnesota's master roster for energy engineering services successfully worked in the program: AMEC Earth and Environmental, Inc.; Ericksen, Ellison and Associates; Hallberg Engineering, Inc.; Hammel, Green and Abrahamson, Inc.; Karges-Faulconbridge, Inc.; LHB, Inc.; and Sebesta, Blomberg and Associates, Inc.

  Nine hundred five (905) buildings at 71 sites throughout the state participated in the program. These building account for 65% of the total energy use of state government buildings (excluding the University of Minnesota, which had an independent program). All state agencies with qualifying buildings participated in the program: Department of Administration, Division of Plant Management; Minnesota State Colleges and Universities; Department of Corrections; Department of Natural Resources; Minnesota State Academies; Department of Military Affairs; Department of Human Services; Department of Transportation and the Perpich Center for Arts Education.

  The program far exceeded its initial goal of three projects with a total of 30 buildings. Every state facility with over 100,000 square feet of interior space was offered the opportunity to participate in the program during the two years 2010-2011 and 75% did. The participants represented 99% of the eligible facilities; the remaining sites were independently pursuing energy savings projects already or were engaged in energy service contracts. All investigation projects were completed by the September 30, 2012 program end date. The implementation projects, with associated job creation, are ongoing, and are not covered by ARRA funds.

  PBEEEP produced significant energy savings at all facilities during the period 2010-2011. Compared to the average commercial buildings in the state in the years 2009-2011, the buildings that participated in PBEEEP reduced their energy use by 7% over the 2009 baseline year. This may be considered to be a behavioral savings was from participating in the program, and occurred before the implementation of energy saving measures. This effect has been observed in other programs where facility managers have become

involved in tracking, and consequently managing the energy use of their facilities. In addition, knowing that the energy use is being investigated by a third party appears to lead to improved operations. In PBEEEP, the buildings in the program had an overall reduction of 7% in their weather normalized energy usage compared to the baseline year of 2009 (220 Btu's a year with a value of $2.9 million, the comparison is with all of Xcel Energy's commercial customers).

When the 220 billion Btu's already saved by PBEEEP participants is combined with the 140 billion Btu's in energy savings opportunities identified in the program for implementation, the program will result in an average 11% reduction in energy use by these State of Minnesota buildings. To put this in perspective, because participation in the program was so successful, the program will lead to a 7.3% reduction in the total energy use of ***all*** Minnesota State Government Buildings (excluding the University of Minnesota).

The program created 11 jobs for its duration. In addition, the energy savings will reduce state government expenses and allow job retention without additional spending. The $2.9 million in savings achieved during the program and $1.4 million in annual energy savings identified in the program will help retain up to 50 jobs statewide due to avoided energy costs (using the estimated cost per job of $100,000).

- **Timeline:** April 2009 – September 2012
- **Implementing Partners:** Minnesota Department of Commerce, Minnesota Department of Administration, Center for Energy and Environment, Southwest Minnesota State University

II. **GOALS AND OBJECTIVES COMPARISON:** The program met its objectives.

III. **PROJECT MODIFICATION:** Two loans were added to the initial appropriation in order to assist with the implementation of energy savings projects.

IV. **NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:**

- The program was offered to all state of Minnesota owned facilities with over 100,000 square feet of buildings at a single site (excluding the University of Minnesota which had an independent program). The average building size in the program was 34,000 square feet.
- A cost effective method of screening facilities was developed in order to select only those where cost effective energy savings improvements are likely to be found.
- The screening process also resulted in a consistent assessment of all large state owned buildings at a single moment in time, ensuring that best practices for energy management are identified if not already in place. This will lead to larger energy savings in those facilities that were not previously able to implement these best practices.
- PBEEEP used a rigorous quality assurance process that resulted in achievable, verifiable energy savings that can be confidently pursued by the state agencies knowing that they will obtain the expected financial savings.

- Up to date energy use information for all participating sites was entered into the State of Minnesota's Buildings, Benchmarking and Beyond (B3) system; these sites have, on average twice as much data (6 years of history vs. an average of 3 years for non-participants) that is more current (most recent data is 6 weeks old vs. 14 months old for non-participants).
- Data accuracy in B3 was assured by the program, which made many corrections to the self-reported data in the system.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Additionally, Commerce conducted site visits to ensure projects were executed as agreed upon and that grantees were keeping proper records on file.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Discuss the results of your program including all deliverables
- Savings of up to 27% were identified by PBEEEP, averaging 7.3% for the investigated sites.
- Behavioral savings averaging 7% at all sites (compared to all commercial buildings in the state) were achieved by the program.
- The program demonstrated that rigorous recommissioning of existing buildings leads to energy savings regardless of their starting energy use. Contrary to the assumption that programs should target only buildings that perform worse than a computed benchmark, energy savings were found in all buildings that met the program's screening criteria.
- Projects in recently renovated buildings all found good savings, indicating that recent construction and HVAC upgrades create opportunities for additional energy saving through recommissioning.
- There is variability in the providers of recommissioning services which are reduced, but not eliminated, but a quality assurance program.
- Most Minnesota state government owned buildings had undergone lighting upgrades 5 to 15 years ago: this reduced the potential average savings per building compared to the 16% recommissioning savings reported in a nationwide study (Mills, Evan. 2009. *Building Commissioning: A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions.* California Energy Commission Public Interest Energy Research (PIER). http://cx.lbl.gov/2009-assessment.html.) The State of Minnesota's buildings have been operating at a higher average level of efficiency than the national average for this period as indicated by the average7.3% savings identified by PBEEEP investigations.
- The screening process developed by the program was a low cost method of identifying facilities where cost-effective projects should be undertaken. Because all screening was provided by the program administrator it was consistent and objective. Half of the buildings that were visited for screening were investigated; by excluding the half with

poor potential for additional savings, a greater focus was put on the buildings that were investigated.

VII. **BEST PRACTICES & LESSONS LEARNED**: There were a number of outcomes to the program that resulted in a change in the way CEE delivers programs similar to this and lessons learned on how to better administer technical programs. The following are the best practices and lessons learned:

- PBEEEP was not only designed to deliver energy efficiency projects to State Agencies, it was designed to provide education and training for the engineering firms working in the program. CEE's observation over the past 10 years has been that engineering firms were not delivering traditional recommissioning projects to their clients. They were generally performing facility assessments that resulted in the installation of capital equipment as the primary driver to realizing energy savings. This does get savings for the client but at a high cost. Recommissioning takes more effort and has a much better return on investment. As a result of PBEEEP there were a number of firms that commented back to program engineers that they learned the importance of trend data collection, new ways to conserve energy and new ways to calculate energy savings. The rigors of the program required that the firms verify from a list of 47 typical energy wasting scenarios that these situations were not present at the sites that they were responsible to investigate. This raised the level of recommissioning in the State of Minnesota.
- PBEEEP exposed state agencies to a high quality recommissioning program providing a better awareness and understanding of this work and raising the level of expectation for future work.
- The presence of the ARRA funds accelerated the spending requirements and made it mandatory to get projects in and out of the program in a fixed period. PBEEEP was designed on the concepts of recommissioning which focuses on making what you have work better, not wholesale replacement. In order to make what you have work better, it takes time to study the systems and understand the inefficiencies that result from their operation. Depending on results, additional time and effort may be required to do the job right. The sunset date on the funds required that the studies get completed quickly which didn't favor the true recommissioning approach and many of the initial projects took longer than expected to complete. This was not possible for projects whose initial end date was also the funding sunset date. Added time to these projects would have allowed for more time to better study the facility and find savings that can't be found by simple audit based approaches.
- Another outcome of the project was the management of the number for projects. The number of facilities that participated in the program dictated that the engineering firms have multiple projects at one time which created an inability to learn from one project before starting the next one. The loss of this component of the original program design resulted in duplication of errors if the firm was uncertain on how to calculate energy savings. A better approach would have been to allow each firm to complete a project

from start to finish thereby allowing them to better understand the requirements of the program before they were allowed a second project, as was contemplated in the original five year program design. This would have reduced the administration time spend on correcting the same issues multiple times across multiple projects.

- One goal of PBEEEP was to establish new relationships between government agencies and recommissioning providers, which was successful at many sites.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- PBEEEP was designed to be a low risk way for agencies to get quality energy efficiency projects completed at their facility and initially wasn't designed to be used with ARRA funds. The fact that ARRA funds were available reduced the payback period that the participating agencies experienced. In the initial program development stage, ARRA funds were not identified as a source of funding for the projects which makes PBEEEP sustainable without the ARRA funds.

  PBEEEP is a four phase process; Screening, Investigation, Implementation, and Verification. To make the projects attractive to the State agencies, the Screening and Investigation phase work was to be completed with no out of pocket costs to the agencies. In the original design, the cost of the initial Screening and Investigation phase work was to be paid for by a short term loan from the State of Minnesota with the repayment of the funds once the investigation was completed. The funds would be repaid by wrapping them into the implementation budget for energy conservation measures that were identified in the investigation phase. With the use of the ARRA funds, the Screening and Investigation phase work was provided at no cost to the sites, which made it extremely attractive to the sites to participate.

  The cost breakdown for PBEEEP with and without the stimulus money suggests that the program would have been successful without the funds. PBEEEP work identified 569 measures in all the sites that resulted in $1,426,000 in annual energy savings with a simple payback of 3.5 years. The investigation cost for this work, which was funded with ARRA funds was not included in the original payback number. If this amount was added back into the total costs for the reported savings, the payback would have increased to 6.8 years which is still within the range of an acceptable payback for State Agencies.

  Another point that supports the sustainability of PBEEEP is the intent of the original program design to cycle back on a 5 year basis to sites to assure energy efficiency. Industry standards for recommissioning recommend that buildings get recommissioned every 5 years. This time span reflects the typical time period that setpoints, schedules, and operational issues will start to degrade the performance of the energy use at the buildings. This time span also provides time for technologies to develop and costs to be lowered to a point that makes implementation of an improvement over the previous study period more likely. It was originally planned to take between 3 and 5 years to

complete all the investigations at all State owned sites. As stated earlier, this timeline was shorted with the influx of ARRA funds. PBEEEP does still exist as a program and will be there if the sites start to have degradation of savings at their sites.

IX. COST STATUS:

- Original budget: $6,824,942.25
- Expenditures: $6,677,824.22
- Balance: $147, 118. 03

X. MEDIA AND OUTREACH:

- Media and outreach was limited to the State agencies and was primarily driven by the Department of Administration, Real Estate and Construction Services (RECS). RECS had authority to work with all state agencies and could do so with a simple interagency agreement that allowed each agency to access PBEEEP. A number of recruiting webinars and live presentation were delivered to get to the 99% participation level that was achieved in the program.

  A website (www.pbeeep.org) was launched to provide program details and training materials for both the Agency clients and the participating engineering firms. For the Agencies, the website provided information on the program and the process that PBEEEP followed. An online application tool that was the entry point to the program was also available on the site. For the engineering firms, tools were generated that explained the guidelines of the program and aided in the transfer of information. These tools were developed in Microsoft Word and Excel formats to assure that all firms would be able to manage the tool and report the required information back to the program. The engineering firms could also view training modules that discussed the different sections of the PBEEEP Guidance manual and discover ways to better work within the program.

  Building data was collected on the square footage of each of the state agencies site that participated in the program along with annual energy consumption, but this information is already available via the B3 benchmarking website (www.mnbenchmarking.com). The program used the information to verify and update the B3 accounts if they were out of date (the situation for approximately half of the sites at the beginning of the program).

XI. SUB-RECIPIENTS:

Sub-recipient: Minnesota Department of Administration – Real Estate & Construction Services.
Dollar amount: $5,472,782.22
Performance Period: March 2010 – September 2012
Description of Project: Admin, along with the Center for Energy and Environment, delivered the Public Buildings Enhanced Energy Efficiency Program to all state agencies. Through screening and investigation, they determined which buildings needed the most improvement and which buildings were best suited for the program.

Sub-recipient: Minnesota Department of Administration – Real Estate & Construction Services.
Dollar amount: $1,100,000
Performance Period: January 2012 – October 2015
Description of Project: Commerce loaned funds to Admin for the purpose of implementing a lighting retrofit project at the Capitol campus. The loan will be paid back by October of 2018. The project included:

- **Transportation Building:**
  - Replace the current lighting controls with networked lighting control panels tied together and interfaced to the building automation system;
  - Install additional occupancy sensors and controls to improved lighting control strategies;
  - Install stairways motion sensor fixtures that run at 10% output with not motion and full output when motion is detected.
- **Parking Facilities:** Replace existing lighting fixtures for drive lanes, parking stalls, pole lighting, and upgrading the lighting in egress stairs; elevator lobbies; and connecting links associated with the ramp structures at:
  - Centennial Ramp
  - Andersen Ramp
  - Transportation Building Garage
  - Judicial Garage
  - State Office Buildings Ramp
  - Retirement Systems Ramp
  - BCA Garage
  - Administration Ramp

Sub-recipient: Minnesota State Colleges and Universities: Southwest Minnesota State University (SMSU).
Dollar amount: $251,160
Performance Period: April 2012 – October 2018
Description of Project: The loan was issued for the purchase and installation of lighting improvements for the SWMS campus and has a repayment period through 2018.

- This project accomplished the following:
  - Lighting upgrade of 7,060 lighting fixtures in ten buildings at Southwest Minnesota State University.
  - Annual savings of over 1 million kilowatt hours.
  - Project created 4 jobs during the quarter it was active.
  - Project will save over $37,000 per year.

XII. ATTACHMENTS:

- 2011 State PBEEEP Report to the Legislature

Project Re-Energize – Builders Association of Minnesota

DOE Award Number: DE-EE0000164
Market Title: Residential Energy Efficiency
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** The Grantee developed, implemented, and managed a program to provide rebates to eligible Minnesota homeowners for energy-efficiency improvements installed by residential contractors licensed in Minnesota, including the following tasks:
  - Program development and management;
  - Contractor program delivery training and advanced air sealing and diagnostics training;
  - Marketing/consumer education;
  - Website development;
  - Rebate processing and fulfillment;
  - Program compliance reviews and site inspections; and
  - Reporting.
- **Eligibility:**
  - Eligible Recipient: 1,188 property owners of record
  - Eligible Structure: Owner-occupied principal residence consisting of no more than four dwelling units constructed prior to January 1, 2000.
  - Square Footage: No more than 3,000 square feet excluding basements, garages, and crawlspaces; Total square footage to be measured from exterior wall to exterior wall. Crawlspaces as defined per the Minnesota State Building Code.
  - Eligible Installation: Eligible measures were required to be installed by a residential contractor licensed in good standing by the Minnesota Department of Labor and Industry that participated in a two-hour training session. Air sealing measures and air quality testing could only be performed by Project ReEnergize professionals that went through an all day training to ensure all air sealing and safety protocols were followed.
  - Eligible Measures:
    - Replacement Energy Star window;
    - Advanced air sealing of attic with mechanical ventilation;
    - Full attic insulation to R-44 minimum or physical limitation; and/or full exterior wall insulation.
  - Maximum Rebate:
    - $2,500 without attic air sealing;
    - $4,000 with attic air sealing (or $4,750 to replace an orphaned water heater if safety testing showed it was backdrafting)
  - Rebate per Measure:
    - $800 Advanced air sealing of attic including installation of mechanical ventilation, pre/post blower door test and depressurization testing.
    - $300 Window [window opening] with attic air sealing.

- $250 Window [window opening] without attic air sealing.
- $800 Full attic insulation to minimum R-44 or maximum based on physical limitation, with attic air sealing.
- $800 Full exterior wall cavity insulation, with advanced attic air sealing.
- $750 Replacement of orphaned atmospherically-vented water heater if back drafting occurs after air sealing. This amount may be in addition to the maximum rebate amount listed above.

- **Goals:** The goals of stimulating jobs and reducing energy consumption were realized through the implementation of this program.
- **Benefits:** The program stimulated investment in home energy efficiency upgrades which will have the long term impact of saving over 30,000 MMBtus each year into the future. The $3,000,000 grant program generated an estimated $18,000,000 in total home improvements. This benefited manufacturers, suppliers, and construction trades in addition to the energy efficiency and resulting money saved by the homeowners.
- **Accomplishments:** Developed, implemented, and managed a program which provided rebates to 1,188 eligible Minnesota homeowners for energy-efficiency improvements installed by residential contractors licensed in Minnesota.
- **Timeline:** September 23, 2009 to December 31, 2010
- **Implementing Partners:** Builders Association of Minnesota and its 14 Local Associations.

II. GOALS AND OBJECTIVES COMPARISON

- This program was successful in achieving its goals and objectives of stimulating jobs for remodelers and associated subcontractors while reducing energy consumption through the implementation of this program. Notably, the program generated $18 million in residential remodeling investments with $3 million in rebate dollars.
- The majority of remodelers said that the rebates allowed them to get homeowners "off the fence" and make the decision to remodel during the height of the recession. The average amount of the rebates was $2,200. But the average cost per home improvement project was $13,700

III. PROJECT MODIFICATION

- One contract modification was made to the original grant. The modification did not affect grant amount, rather it clarified some minor administrative aspects of the grant agreement.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The major program successes were the achievement of 1,188 residences which were upgraded with energy efficiency measures to save energy and money for the homeowners. The $3,000,000 grant program also leveraged a total $18,000,000 in construction activity in the residential market.
- The specifications for Project ReEnergize air sealing training tools were used by Building Performance Institute staff to develop their *BPI Installer Residential Certification Building Envelope Whole House Air Leakage Control Installer Certification Scheme Handbook (RBE WHALCI).*

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. The program manager was required to submit monthly progress updates along with their invoices.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- For every $1 of grant funds an additional $5 was expended for residential upgrades.

VII. BEST PRACTICES & LESSONS LEARNED:

- Providing rebates through remodelers provides more first and second tier job creation opportunities than providing rebates only through energy efficiency contractors.
- There were more remodeling, HVAC, and insulation companies with the equipment (e.g., blower doors) and expertise to test their own work than anticipated. Self testing kept costs to homeowners at a minimum and should be considered for future programs.
- Project ReEnergize had very low marketing costs. The program relied on remodelers identifying consumers who were already considering remodeling and energy efficient home improvement projects.
- The lack of income requirements for those who received rebates helped inject more investment into the private sector. The program was successful at multiplying the initial rebate investment into direct job creation activities.
- Window rebate amounts were too high. The rebates could have been spread to more homeowners if the per window rebates were lowered or the total window rebates were capped at a lower amount.
- Fewer attic air sealing jobs were performed than anticipated. Better education of contractors and the general public about the need for air sealing is needed. Safety protocols were viewed as cumbersome and hard to schedule.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

Without grant funding the project is not sustainable Post-ARRA. However, the project heightened awareness of the benefits of energy efficiency upgrades and created new partnerships between remodelers and subcontractors such as those HVAC contractors, insulators and energy raters that provide air sealing and performance testing services.

IX. COST STATUS:

- Original budget: $3,000,000
- Revised budget: $3,000,000
- Expenditures: $2,992,254
- Balance: $7,745

X. MEDIA AND OUTREACH:

- In order to be eligible to perform air sealing for Project ReEnergize one employee from each contracting company was required to complete a 4-hour advanced air sealing course. The course required a class room and hands-on component. Portable air sealing

protocol training props were developed to have all students perform hands-on skills on how to air seal the following areas of an attic: 1) Large opening; 2)Opening with a heat source (chimney); 3) Ducts outside conditioned spaces; 4) Recessed can light; and 5) Pipes (wet wall). The training tools were unique because they could be activated by a simple fan that allowed students to use a smoke bottle to determine if their air sealing techniques worked properly.

The specifications for Project ReEnergize air sealing training tools were used by Building Performance Institute staff to develop their *BPI Installer Residential Certification Building Envelope Whole House Air Leakage Control Installer Certification Scheme Handbook (RBE WHALCI).* See Everblue's BPI Approved Weatherization Training Kits for an example of how Project ReEnergize training materials were incorporated into BPI's nation-wide air sealing training: http://www.everblue.edu/air-sealing-weatherization-kits

- The air sealing and performance testing (backdrafting) components of the training were held throughout the State of Minnesota in 8 community and technical colleges. By providing free training space, the college staff were given access to the training materials and the air sealing prop specifications. Several of these facilities held BPI trainings after Project ReEnergize was completed. Eleven Performance Testing and Air Sealing courses were held at 7 locations across the state.

- A "HOME INCENTIVE FINDER" website was developed and operational during the project duration which helped Project ReEnergize contractors find utility rebates for air sealing, HVAC upgrades, and insulation. The website is no longer active.

II. ATTACHMENTS:

- Air Sealing Box Diagrams
- Blower Door Protocol
- Depressurization Test Protocol
- Project ReEnergy Postcard
- MPR Press Release
- Performance Testing Results
- Project ReEnergize Packet
- Project ReEnergize Success Story

Minnesota Housing Finance Agency – Energy Saver Rebate Program

DOE Award Number: DE-EE0000164
Market Title: Residential Energy Efficiency
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 2, Section 2 of the 2009 Minnesota State laws states**:**

  The commissioner shall coordinate with the Minnesota Housing Finance Agency to use stimulus funds in conjunction with the Minnesota Housing Finance Agency's financing programs, including, but not limited to, loans, grants, and rebates, and additional programs the Minnesota Housing Finance Agency or other entities may develop to finance energy efficiency improvements in dwellings, including the purchase and installation of energy efficient windows. Financing programs for which there is market demand must be prioritized.

  The Minnesota Housing Finance Agency (MHFA) valued the opportunity to work with the Minnesota Department of Commerce, Division of Energy Resources to encourage homeowners to make cost-effective home improvements that lower energy use and operating costs. The Energy Saver Rebate was an excellent example of how these two agencies partnered by using an existing network of lenders to reach homeowners and provide incentives for making energy-efficient improvements to their homes.
- **Goals:** The goals of this program were to stimulate the economy and create jobs in the residential sector while achieving a reduction in energy consumption for homeowners.
- **Benefits:** Some of the benefits of the Energy Saver Rebate program included: enhanced employment opportunities for construction trades in the residential sector, increased demand for manufacturing of construction materials, and reduced consumption of energy and resultant energy cost savings for homeowners.
- **Eligibility:**
  - All rebate-eligible work was required to be financed by a Fix-up Fund Loan or Community Fix-up Fund Loan.
  - A complete list of Fix-up Fund Lenders that were participating in the Energy-Saver Rebate Program can be located at: http://www.mnhousing.gov.
  - Fix-up Fund Loan must close after November 23, 2009, or the effective date of the grant contract.
  - Home must be owner occupied.
  - Home type eligibility follows the Fix-up Fund Loan guidelines:
  - Single family homes;
  - Duplexes, triplexes, and quads;
  - A unit of a condominium, no common space;
  - Individual unit in a planned unit development;
  - Town homes;

- Income Limits: Maximum household income for participation is 115% of Minneapolis-St. Paul Metropolitan Statistical Area Median Income: $96,500 at the time of the program.
- All work must be done by a licensed Minnesota contractor.
- The maximum rebate is $10,000, limited to one rebate per household/property.

Eligible Energy-Saver Rebate Improvements

The following improvements were eligible for a rebate in the amount of 35% of the cost of the improvements that were financed with Fix-up Fund Loan:

- Energy Star certified furnace or boiler replacement;
- Energy Star certified central air conditioning replacement;
- Insulation; exterior walls and attic, as long as combined with attic air sealing;
- Attic air sealing;
- Energy Star certified replacement windows;
- Energy Star certified replacement exterior doors;
- Energy Star certified replacement light fixtures; and
- Water Heater replacement.

- **Accomplishments:** The 2,140 households who made energy-saving home improvements received an average rebate of more than $3,000 for a total rebate cost of $6,540,356. The most common improvement was window replacement; more than half of all homeowners replaced their windows at an average project cost of nearly $9,500. However, when the rebate was reduced from 35% to 25% for window/doors in the third round of funding, the proportion of window replacements went from 59% to 44%. After windows, the next most common improvements were the heating system (45%) and central air conditioning (25%).

  - Below is a summary of the three rounds of rebate production:

	Rebate Value *(does not include lender fee or admin)*	Households Served	Average	Available Dates
Round 1	$3,605,921	1,086	$3,320	December 7, 2009-March 19, 2010
Round 2	$865,863	247	$3,506	March 30-31, 2010
Round 3*	$2,068,572	807	$2,563	September 30-November 10, 2010
TOTAL	**$6,540,356**	**2,140**	**$3,056**	

  - **Reduced rebate from 35% for all improvements to 25% for windows/doors and 35% for all other items*

- Below is a summary of the types of improvements and the average costs per project:

Improvement	Projects	Proportion of all rebates	Average Project Cost	Average Rebate Amount
Heating Systems	960	45%	$5,045	$1,766
Central A/C	528	25%	$3,641	$1,274
Light Fixtures	10	0%	$1,083	$379
Window Replacement	1,144	53%	$9,484	$3,028
Exterior Doors	407	19%	$3,078	$987
Attic Air Sealing	192	9%	$641	$224
Insulation – Attic	201	9%	$1,766	$618
Insulation – Wall	122	6%	$2,809	$983
Water Heater	115	5%	$1,972	$690

- **Timeline:**
  - **Round 1:** December 7, 2009 - March 19, 2010
  - **Round 2:** March 30-31, 2010
  - **Round 3:** September 30 - November 10, 2010

- **Implementing Partners:** Minnesota Housing Finance Agency's Fix Up fund lenders.

II. GOALS AND OBJECTIVES COMPARISON:

- The Energy Saver Rebate program met all established goals. Demand for rebate funds were high from program inception, resulting in efficient distribution of 3 rounds of funding over an 11 month period. Most lenders participating in Minnesota Housing's Fix Up Fund program also participated in the Energy Saver Rebate (ESR), resulting in usage and impact in all housing markets. Homeowners used ESR funds for a broad spectrum of energy improvements, with funds effectively flowing to improvement areas of greatest need.

III. PROJECT MODIFICATION

- Due to the success of the program it was modified twice to add additional funds to the program.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- With more than 65,000 labor hours generated and $23.5 million in new activity spurred with less than $7 million in rebates, the initiative was successful in buoying the hard-hit residential construction sector.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The 2,140 households who made energy-saving home improvements received an average rebate of more than $3,000 for a total rebate cost of $6,540,356. The most common improvement was window replacement; more than half of all homeowners replaced their windows at an average project cost of nearly $9,500. However, when the rebate was reduced from 35% to 25% for window/doors in the third round of funding, the proportion of window replacements went from 59% to 44%. After windows, the next most common improvements were the heating system (45%) and central air conditioning (25%).

VII. BEST PRACTICES & LESSONS LEARNED:

- Placing a rebate program within the structure of an existing, long-standing loan program and lender network proved to be highly efficient in delivery and in reaching the target market.
- Lenders were able to leverage existing homeowner improvement projects to "add on" needed energy improvements. The opposite (homeowners adding non energy FUF funded improvements to rebate funded energy projects) did not appear to occur.
- Lender referral relationships to local contractors and suppliers were a plus in helping homeowners to identify energy improvement needs, and to select the most efficient products.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- Without grant funding, this program has not been continued. That said, Minnesota Housing Finance Agency continues to offer its other programs.

IX. COST STATUS:

- Original budget: $4,400,000
- Revised budget: $7,700,000
- Expenditures: $7,032,661
- Balance: $667,339

X. MEDIA AND OUTREACH:

- MHFA advertised the Energy Saver Rebate Program through a number of channels including press releases and Center for Energy and the Environment. See Attachments for examples.

XI. ATTACHMENTS:

- Pioneer Press Article
- MHFA and CEE Postcard
- Commerce write-up
- MHFA Press Release

Innovative Energy Residential Efficiency Program -DEEP

DOE Award Number: DE-EE0000164
Market Title: Residential Energy Efficiency
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 2, Section 3 of the 2009 Minnesota State Laws states:

  Subdivision 1. Program. The commissioner shall make a grant to a city of the first class located in the service area of Minnesota Power for an innovative residential energy efficiency program that must coordinate its activities with the state energy program, local government unit, weatherization program, utility conservation improvement program, and private nonprofit funding sources. Stimulus funds must be matched $1 for every $4 of stimulus funds granted under this section and are available to the extent of the match. The program must include the following elements:

  1) *Provision of basic residential energy conservation measures;*
  2) *Provision of more comprehensive residential energy conservation measures, including extensive retrofits and appliance upgrades;*
  3) *A plan to establish a revolving loan fund so that the program is sustainable over time; and*
  4) *Innovative financing options allowing residents to finance energy efficiency improvements, at last in part, with energy savings.*

  This appropriation designated the City of Duluth as the recipient of funds for the development of an innovative energy efficiency program: Duluth Energy Efficiency Program (DEEP).
- **Goals:** The goal was to create a long-lasting, innovative energy efficiency incentive program to help residents of the City of Duluth implement energy saving measures.
- **Benefits:** The benefits were to 1) have a financing mechanism in place that Duluth residents could afford energy saving opportunities 2) reduction in energy through implementation of energy saving actions 3) money saved in the community, 4) greenhouse gas emissions reductions, and 5) job creation.
- **Eligibility:** Various eligibility requirements were established specific to the various pathways, e.g., Single Family, Multifamily, Do-It-Yourselfers, and Contractors.
- **Accomplishments:** Through DEEP, a complete residential energy efficiency program was developed in the City of Duluth that provides basic and comprehensive residential energy conservation measures, including extensive retrofits and appliance upgrades. See below for additional detail.
- **Timeline:** February 2011 - July 2012
- **Implementing Partners:** Ecolibrium3

II. GOALS AND OBJECTIVES COMPARISON

Project activities were divided into four unique pathways with activities outlined as follows:

Single Family Pathway	Status
Develop and deliver neighborhood workshops.	Completed
Provide on-line tools for completing home energy ratings and establish database.	Completed
Sign households up for audits.	Completed
Coordinate Green Canvass flyer distribution and survey with workshops.	Completed
Home Performance Audits	Completed
Create intake process to develop comprehensive referral process of approved loan programs.	Completed
Provide homeowner rebates.	Completed
Quality assurance.	Completed
Design Demonstration Classroom/ Training Center.	Completed
DIY Pathway	
Develop curriculum and recognition program for building materials suppliers.	Completed
Completion of training of 25 retail associates.	Completed
Mentoring and technical assistance	Completed
On-Site Consultation- DIY	Completed
Multi-Family Pilot Study Pathway	
Develop baseline energy and building data	Completed
Verify of data and potential savings	Completed
Develop Pilot Improvement Program	Completed
Contractor Development Pathway	
Provide BPI Contractor Development Scholarships.	Completed
Develop Equipment Lending Library.	Completed
Coordinate post-BPI training meetings.	Completed

III. PROJECT MODIFICATION

- The following modifications were made to the original project:
    - o Single Family Pathway: Residential Rebates were increased by $30,000.
    - o Contractor Development Pathway: total number of scholarships was reduced by 30 to reflect actual demand.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The DEEP program accomplished its goals of creating jobs, reducing energy use, retaining dollars in the local economy, and developing long-term community capacity to improve our housing stock.

- Despite the fact that energy efficiency makes economic and environmental sense for individuals and communities, there exists a gap between knowing energy efficiency improvements should be done and actually completing the work. The Duluth Energy Efficiency Program (DEEP) was designed to bridge this gap using intelligent program design, leveraging of multiple resources, and dedicated customer service.
- The program was created in response to a perfect storm of an economic downturn, higher unemployment, a housing crisis, energy price fluctuations, and global climate change. Although each of these trends can provide many challenges, together they provided a remarkable opportunity to create positive change in Duluth. The Duluth Energy Efficiency Program (DEEP), a community-wide innovative energy efficiency program that focuses on Duluth's aged housing stock and citizen energy use behaviors, was developed to create/retain jobs, lessen the energy affordability gap faced by Duluth families, retain energy dollars currently exported from our city and state, and reduce Duluth's carbon footprint. The design of this program corresponds to the residential pyramid of energy efficiency (developed by Minnesota Power), thus achieving the highest return on investment for energy improvement dollars invested.
- Several factors indicated the need to focus on Duluth's housing stock and reduction of the energy affordability gap faced by residents. Challenges include:
    - 50% of Duluth's homes are more than 85 years old.
    - Duluth is a very cold climate community with 9,800+ heating degree days per year.
    - Average annual energy bills are at $2,900 reflecting an increase of 63% over the past 6 years.
    - Energy affordability gap is $1,668 per household.
    - Energy affordability gap has increased by 305% since 2002.
    - Significant measurable reductions could be realized through weatherization and air sealing that extends beyond current options for low-income families, however, based upon a pilot home performance study, few homeowners were pursuing improvements.
    - Gaps in programming and assistance have been identified that, if filled, could produce significant energy reductions.

  In order to comprehensively fill the gaps in our community that prevent households from completing energy improvement measures and behavioral change, the Duluth Energy Efficiency Program was developed by a consortium of governmental, utility, housing, environmental, and community partners. The DEEP program began by identifying the barriers that kept households from completing energy efficiency improvements and by determining what other factors along the energy efficiency value chain may impede the development of a community-scale efficiency program. Finally, as the program was designed and operated over the past 20 months, the City of Duluth and DEEP staff have explored means of creating program sustainability at the conclusion of ARRA funds.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Site visits were conducted when Commerce deemed it warranted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- DEEP produced results in each of four pathways; the general description of each pathway is detailed below.
    - **Single Family (1-4 Unit Housing)**

      The single-family pathway was the basis of the DEEP program under ARRA because of its prioritization of job creation and economic stimulus. Under this pathway, DEEP provided educational workshops for home performance audits, energy improvements and quality assurance. The energy improvements section was conducted by BPI certified contractors.
      DEEP served as a third-party retrofit manager helping households navigate the technical and financial steps for project completion. Property owners were guided through the process and only asked to complete small manageable "next steps" along the way. Property owners were present during audits, attended in person or by phone audit reviews with DEEP staff, allowed multiple contractors to visit their homes during a 1-hour open house, reviewed received bids with DEEP staff, and completed rebate paperwork upon job completion. DEEP staff scheduled audits; conducted environmental and state historical property reviews; coordinated with auditors; bundled all available financial resources; assisted homeowner in applying for low interest utility loans; developed scopes of work; bid documents; and contracts; gave notice to proceed; provided quality assurance on each job; and processed rebates.
    - **Do-It-Yourself**

      25% of the Home Performance Testing pilot participants (a project conducted by MN Power and Comfort Systems prior to the development of DEEP) stated that they were do-it-yourselfers and would prefer doing their own improvements. Under most programs, do-it-yourselfers are left without the preferred equipment, testing, and/or expertise. This pathway was an innovative program that allowed do-it-yourselfers access to a specialized workshop and to a BPI trained technician who provided blower door testing, scope development, and follow-up quality assurance. This homeowner assistance was coupled with targeted training sessions to better inform point-of-sale staff members at local building material suppliers on energy and building envelope issues, safety protocols, and how to refer customers to DEEP training and resources. Over half of the DIY

participants ended up utilizing contractors for part of their energy efficiency work.

- **Multi-Family (5+ Unit Housing):** The multi-family pathway provided options for both landlords and tenants to save on their energy bills by coordinating structural and mechanical analysis and assistance in scope development and improvements to the landlord and training to the tenants. Tenants were able to receive low-cost/no-cost measures to reduce electrical and water usage. The multi-family pathway's main intent was to provide data in relation to multi-family properties in the city of Duluth. The work conducted under this pathway focused on first creating a database of multi-family properties and calculating a btu/sqft for a minimum of 250 properties. The second stage was verification of building units. The final phase was to work with a small number of property owners to accomplish energy efficiency improvements recommended by a performance assessment. Limited rebates were available on the multifamily side.
- **Contractor Development:** One of the original DEEP partners was a Duluth-based affordable housing agency that worked with local housing inspectors to determine scopes of work for their rehab program. The housing agency discovered that the inspectors were not calling out air sealing and insulation work for fear that whatever contractor got the job would do more harm to the home than good. This was just one instance that highlighted the need to develop contractor knowledge of building science and appropriate installation and evaluation skills. DEEP recognized that property owners needed skilled individuals to complete jobs and contractors needed enough jobs to warrant the investment in training and equipment. DEEP connected these by requiring BPI training for contractors, establishing long-term mentoring, developing an equipment lending library, and creating a large enough pipeline of projects that business development could occur.

Specific results are listed below:

- 494 single family contracts were completed with rebates issued over 15 months (143% of deliverable).
- Average household energy saving of $518 (not including electrical savings due to direct install of low cost measures).
- $392,945 annual community energy savings (includes direct install).
- $1.17 of local investment for each $1 of ARRA funds.
- 97% of grant funds expended.
- Leveraged $1,702,756 in private investments in projects, $183,000 in HUD CDBG funds, and $500,000 in EPA Climate Showcase (2011-2013).
- 35 different contractors were trained and completed DEEP contracts.

- 1,926 households participated in at least one DEEP activity including workshops, direct installs, audits, completed projects – represents 5% of Duluth's households.
- 11 home improvement retail stores attended training, distribute DEEP information at point of sale, and offer discounts to DEEP trained DIY-ers.
- 323 multi-family energy scores were generated with 11 completed projects representing 141 units of housing (including transitional housing units).
- 162 DIY audits were completed with work complete or in progress on 87% of units.
- Integration of DEEP program with CIP of MN Power, Comfort Systems, and AEOA's low-income weatherization program.
- Creation of a community energy classroom.

VII. <u>BEST PRACTICES & LESSONS LEARNED</u>:

- Duluth was recognized as an EPA Climate Showcase Community for DEEP work.
- Having a subsidized home performance audit program is essential to getting people into the DEEP process. MN Power and Comfort Systems provided rebate dollars for home performance audit programs resulting in an average cost to the consumer of $75 (waived for low-income households). Once the audit is complete, it is easier to demonstrate the potential savings and encourage continuation in the process. Consumers, in general, are very resistant to paying hundreds of dollars upfront for audit services.
- The DEEP ARRA contract was signed in October of 2010. The DEEP rebates program was launched in March of 2011, once the utility-based home performance rebate program was in place. Between October and March, low-income audits were performed. A clear flow of work between DEEP and WAP provider, Arrowhead Economic Opportunity Agency (AEOA), maximized the benefit to low-income households. DEEP provided audits and grants/rebates to homes that could not be served by AEOA due to income or because a home had been weatherized since September 1994. All WAP eligible households were referred to AEOA and DEEP distributed information about WAP eligibility throughout the grant period.
- Two levels of assessments were available through the utilities. The basic walk through audit did not include blower door or infrared. Although this audit provided the same level of direct install, resulting in similar electrical savings for a lower overall cost, there was a lost opportunity cost for determining greater envelope needs (homeowners receiving the free walk through audit cannot get the rebates on the advanced home performance audit later). With our aged housing stock and cold climate, the advanced audit should be prioritized for most homes (DEEP created these recommendations based on energy score). Current CIP requirements do not easily facilitate this prioritization.
- Initially the model was based on connecting with residents through DEEP workshops. Although this gave an opportunity to encourage behavioral changes, for many it

impeded their participation in the program to wait for a workshop prior to scheduling an audit. An online energy workshop was created to ease access. At the end of the program, the workshop component was not mandatory.

- The DEEP model applied best practice project management and combines all applicable incentives based upon scope of work and client income. This type of project management can be extended to integrate Healthy Homes, aging-in-place, and other prioritized retrofit/rehab. In addition, because current financial resources are bundled, as utility incentives, tax credits, loan programs, or other energy efficiency opportunities come online, the DEEP model can easily integrate those into packages for clients.
- Having a third-party advocate that can look at recommendations from a fuel neutral (i.e., not electric or gas) position allowed for customer savings that cannot be advocated on a utility level due to regulations.
- Creating a nimble process that meets the needs of customers by "hand holding" throughout was the most effective means of converting from audit to completed improvements.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- When the City of Duluth developed DEEP, in conjunction with many partner agencies and organizations, there were not only questions about how to best develop a program that could effectively utilize ARRA funds for residential energy efficiency, but questions about the ability to sustain programming past the ARRA contract. As the ARRA funds expired, DEEP had successfully invested the funds to build energy efficiency capacity in our community, developed a focus on program sustainability, and created a program worthy of replication and expansion into other communities.
- The City of Duluth initially contracted with Common Ground Construction, LLC to administer the DEEP program. Common Ground was a longtime builder of green affordable housing for a community land trust. In the summer of 2011, Common Ground spun-off the DEEP program into a nonaffiliated nonprofit named Ecolibrium3. This organizational change was to facilitate greater opportunities for DEEP sustainability and an expanded mission (from affordable housing) to creation of balanced economic and environmental programs for a more sustainable future. Also in 2011, the City of Duluth was awarded an EPA Climate Showcase Community Award which will provide continued funding for DEEP into 2013.
- A goal under ARRA funds and the Climate Showcase Program was to replicate successful programs to expand energy efficiency implementation. There have already been several instances of replication of the DEEP model or components of the DEEP program. DEEP staff has assisted the Cook County Local Energy Project in the development of the Residential Energy Efficiency Program (REEP) pilot which will be launched this year. DEEP audit forms and protocols have been adapted for use in developing scopes of work for Department of Natural Resources (DNR) buildings throughout Minnesota and are utilized by five local audit firms. The model is also being exported by a DEEP participant that works as an international energy consultant working in Europe and the Caribbean.

The DEEP application process for contractor scholarships is being utilized by the Siletz Tribal Energy Program in Siletz, Oregon.

- Ecolibrium3 is also looking at expanding the DEEP model to other sectors in the City of Duluth and regionally. The City of Duluth has been working with DEEP staff to define commercial energy efficiency options in the city. Ecolibrium3 is exploring becoming a HEAL (Home Energy Affordable Loan) Program implementation site with the Clinton Climate Initiative. If this partnership develops, DEEP will facilitate additional residential energy retrofits by working with employers to offer energy efficiency options and potentially low or no interest loans to their employees. Ecolibrium3 is also working with local utility partners to define programmatic options moving forward. This may include expansion of multi-family offerings in the region. Although financial incentives will be different, Ecolibrium3 is also looking at offering the DEEP model outside of Duluth, recognizing that delivered fuel customers are most likely to benefit economically from energy efficiency work, therefore expanding DEEP using a stronger market-based approach. Regional expansion also facilitates a continued job pipeline for trained contractors.
- In addition to these planned activities, DEEP has been instrumental in responding to the severe flooding in Duluth and surrounding communities after 10" of rain fell in 24 hours in June. In regards to the DEEP ARRA contract, the flood hit at an inopportune time as projects that were anticipated for completion by the expiration of the contract were delayed. The flood also caused a significant need to replace destroyed furnaces, boilers, water heaters, insulation and appliances at a time in which adding projects under DEEP was difficult due to timelines associated with environmental reviews and the ARRA contract expiration. The investment of ARRA funds however, has had a tremendous impact in building critical capacity in our community that will be utilized for flood reconstruction management. It has also created a deeper understanding of the impact of energy efficiency decisions on long-term individual and community resiliency. DEEP processed nearly $569,000 in rebates and scholarships during 15 months and coordinated 505 completed contracts- a volume of work unmatched by other regional housing agencies.
- The DEEP model involves making the best coordinated decisions for financing and scope development based on home assessments. This model, and the ability to work with a high volume of residents simultaneously, has been recognized by the Duluth-based Ordean Foundation in a grant of $500,000 to Ecolibrium3 to assist low-income households affected by the Duluth floods replace water heaters, furnaces/boilers, and insulation, and complete health and safety items based upon an expanded home performance assessment. This work will ensure that flood affected low-income households will be prepared for winter and be more energy efficient. The Ordean Foundation is supporting conversion from fuel oil to natural gas (where available) potentially saving households $1,000 or more per year. The partnerships created with utilities and WAP provider AEOA will further expand these funds as leveraging will occur

between programs to maximize benefit to the flood victims. In the first two days after the Ordean Foundation announcement, sixty households were scheduled for intake and emergency needs had been triaged. This ability to put the first rebuilding dollars on the table to help our most vulnerable citizens is only possible due to the capacity built under ARRA and the EPA Climate Showcase program.

IX. COST STATUS:

- Original budget: $1,455,000.00
- Revised budget: $1,455,000.00
- Expenditures: $1,421,696.88
- Balance: $33,303.12

X. MEDIA AND OUTREACH:

- See text above for description of outreach and efforts to make the DEEP Program a model for other similar energy efficiency programs.
- Networks and collaborations fostered included working with property owners, Do-It-Yourselfers, Contractors, Fond du Lac Tribal Community College, Minnesota Power, Comfort Systems, Arrowhead Economic Opportunity Agency, and local building material suppliers.
- Established a training program for contractors and an equipment lending library as a means to reduce capital outlay that individual companies would have to make to incorporate building science diagnostics into improvement work.
- Awareness of the program was promoted by advertising DEEP through the use of yard signs, fliers sent out with utility bills, “refrigerator” magnets, and bus signage on Duluth Transit Authority Busses.
- Many process pieces of literature were developed and used for the DEEP Program. Some of these included data collection and audit forms utilized by all auditors participating in the DEEP program; rebate marketing pieces and rebate forms; Forms for home performance score, calculations spreadsheet utilized by all auditors for determining scope items (and therefore rebate eligible items; and income verification form utilized to determine if participants qualify for an additional $1,000 of grants from City CDBG funding (match dollars).
- As described in above text, the City of Duluth partnered with Ecolibrium 3 in delivery of the program.

XI. SUB-RECIPIENTS:

Sub-recipient: **City of Duluth**
Dollar amount: **$1,455,000**
Performance Period: **February 2011 - July 2012**
Description of Project: DEEP provided residential energy efficiency education, support, and financing options.

XII. ATTACHMENTS:

- DEEP Postcard

Small City Energy Efficiency Grant – Park Rapids

DOE Award Number: DE-EE0000164
Market Title: Residential Energy Efficiency
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 2, Section 3 of the 2009 Minnesota State Laws states:

  Subdivision 1. Program. The commissioner shall make a grant for an innovative residential energy efficiency program in a small rural city with a population under 4,000 located in the service area of Minnesota Power that is currently working with that utility, the county housing and redevelopment authority, and other state and local housing organizations to enhance energy efficiency for residents and businesses. Stimulus funds must be matched $1 for every $ of stimulus funds granted under this section and are available to the extent of the match. The program must include the following elements:
  1) Provision of basic residential energy conservations measures;
  2) Provision of more comprehensive residential energy conservation measures, including extensive retrofits and appliance upgrades;
  3) A plan to establish a revolving loan fund so that the program is sustainable over time; and
  4) Innovative financing options allowing residents to finance energy efficiency improvements, at least in part, with energy savings.

  This appropriation intended for funds to support energy efficiency programs in the City of Park Rapids, Minnesota. These programs included a Residential Energy Efficiency appliance replacement program ($50,000 in ARRA grant funds) and a revolving loan program for commercial energy efficiency upgrades ($50,000 ARRA grant funds).
- **Goals:** The goals of this program included:
  - Improving energy efficiency through a number of measures including:
    - Conducting community based marketing and outreach to enlist participants in residential energy audits.
    - Identifying qualifying households and referring them to the weatherization assistance program.
    - Executing energy audit-utility data release form.
    - Analyzing and providing feedback on household energy usage.
    - Establishing a list of insulation and air sealing contractors.
    - Identify existing financing, rebates and incentives.
    - Providing Rebates for Energy Star Qualified Major Appliances
    - Providing revolving loan fund for Commercial Energy Efficiency upgrades.
- **Benefits:** Benefits of this program include awareness by residential and commercial energy users of energy efficiency improvements and programs. Benefits of implementing energy efficiency improvements include job creation through the implementation of projects, energy reduction in households and businesses, and resulting greenhouse gas emission reductions. Further this program benefits the

economy not only through job creation, as mentioned, but through the energy saved from reduced utility bills.

- **Eligibility:**
    - Those who were eligible for the residential program included:
        - Owner occupied households within Park Rapids city limits.
        - Completed in-home visit-energy audit.
        - Utility data release form was completed and signed.
        - One appliance upgrade per household.
        - Retroactive appliance purchases were not eligible.
    - Eligible applicants for the Commercial Energy Efficiency upgrade loan program included:
        - An eligible borrower must have been the owner of an eligible facility.
    - An eligible facilities were
        - Existing building located in the City of Park Rapids;
        - Zoned for commercial or industrial use;
        - Used for a business purpose; and
        - Gambling establishments, aquariums, zoos, golf courses and swimming pools were not eligible.
    - Eligible improvements included:
        - Facility systems optimization (commissioning or re-commissioning);
        - Facility systems control improvements;
        - Lighting efficiency improvements;
        - Heating, ventilation and air conditioning systems modifications;
        - Exterior envelope improvements;
        - Motor and pump efficiency improvements;
        - Process heat improvements or other improvements with prior written approval from the MN Office of Energy Security.
        - An eligible improvement must have had a simple payback period that was no greater than fifteen (15) years.
        - An eligible improvement must have had a useful life that was greater than its simple payback period.
        - No new construction, expansion or preparatory work for new construction was eligible.
- **Accomplishments:** The revolving loan program made four loans to commercial establishments and will continue to revolve and generate energy savings.
- **Timeline:** 08/31/2010- 6/30/2013
- **Implementing Partners:** City of Park Rapids, Park Rapids housing Authority; Minnesota Power; Green Park Rapids.

II. GOALS AND OBJECTIVES COMPARISON

- Goals and objectives were not fully realized with the Residential energy efficient appliance replacement program. It is likely that during the height of the recession, residents did not want or were unable to consider any material purchases.
- Funds not utilized by the residential program were transferred to the Commercial Revolving Loan Fund for which more interest existed.
- Four loans were made and the fund will continue to revolve.

III. PROJECT MODIFICATION:

- The grant has had 4 amendments to it since its inception.
- The grant originally provided for $50,000 for Residential energy efficiency with a large appliance replacement component.
- A grant Amendment for an additional $50,000 was added to establish a revolving loan program to fund commercial energy efficiency upgrades in local businesses.
- Little interest was found by local residents in the residential program and a third Amendment to the grant was made to allow the commercial revolving loan fund to utilize the unused residential energy efficiency funds.
- A fourth amendment was made to extend the grant expiration date for the revolving loan program.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The greatest success of this grant program was to provide a revolving loan fund for commercial enterprises in a small outstate community. This allowed commercial establishments to borrow funds under favorable terms, make energy efficiency improvements, and generate construction trades work in the community.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Site visits were conducted when Commerce deemed it warranted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Although the economy remained sluggish, the availability of the revolving loan fund helped some local projects to get underway and generate some commercial construction work in the community and increase energy efficiency of the borrowers.

VII. BEST PRACTICES & LESSONS LEARNED:

- It was learned that, at least in this project community, that there was not much interest in an appliance replacement program to purchase energy efficient appliance even with a rebate incentive.
- The Commercial energy efficiency upgrade revolving loan program, however, did generate interest in this relatively small community at a time when revolving loan programs were having difficulty generating interest in other economic sectors and other parts of the state.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The revolving loan program will be continued post- ARRA. The program will continued to be monitored to identify what is working and what isn't and to ensure that loans continued to be issued and revolved. The program will likely continue as long as there is substantial program activity.

IX. COST STATUS:

- Original budget=$50,000
- Revised budget=$100,000

- Expenditures=$100,000

X. MEDIA AND OUTREACH:

- This project highlighted awareness and promoted energy efficiency in the City of Park Rapids through advertising of energy efficiency programs through Minnesota energy Resources, Green Park Rapids, Minnesota Power, the Minnesota Department of Commerce and ARRA stimulus funding.

XI. SUB-RECIPIENTS: City of Park Rapids

Dollar amount: **$100,000**
Performance Period: 0**8/31/2010- 6/30/2013**
Description of Project: Residential energy efficiency appliance replacement program, and Commercial Energy Efficiency Revolving Loan Program.

XII. ATTACHMENTS:

- No attachments.

Residential Renewable Energy Rebates

DOE Award Number: DE-EE0000164:
Market Title: Residential Renewable Energy Rebates
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 3, Sections 2 and 3 of the 2009 Minnesota State Laws state:

  Renewable Electric Generation and Geothermal Facility Rebates

  (1) The commissioner shall award rebates to qualifying facilities that generate electricity from renewable energy or provide heating and cooling from a geothermal system and that:

  (i) begin operation after July 1, 2009; and

  (ii) provide electricity or heating and cooling to:

  - *a homeowner's primary residence; or*
  - *a business with 20 or fewer full-time employees*

  (2) The owner of a qualifying facility may apply to the commissioner for a rebate of the lesser of $10,000 for homeowners or $25,000 for businesses or 35 percent of the cost of the qualifying facility, including installation costs.

  (3) The Commissioner shall award rebates only from funds appropriated for that purpose and to the extent of those appropriations. Rebates must be made to eligible applicants in the order of the time of receipt of a complete application.

  For purposes of this section, "qualifying facility" means an electric generation facility with a capacity of less than 40 kilowatts that generates electricity from a renewable energy source or a geothermal system that provides heating and cooling.

  Solar Rebate Program
  The commissioner shall award rebates to homeowners and businesses that install solar energy projects.

- **Goals:** The goal of this program was to increase widespread installation of renewable technology in Minnesota in order to increase clean energy production, reduce greenhouse gas emissions, and improve the economy with the creation of jobs.
- **Benefits:** The benefits of increasing renewable energy include: a more diverse energy portfolio and therefore a more reliable electric grid; reduced greenhouse gas emissions; job creation; money saved; and a boost to the renewable economy to help it become self-sustaining.
- **Eligibility**:

- Renewable Electric Generation and Geothermal Facility Rebates:
  - Eligible Systems: Wind systems <35kW and Ground Source Heat Pumps <5 Tons (with some exceptions upon NEPA review);
  - Eligible Applicants: Wind and GSHP: residential. Wind only, Small Businesses with 20 or fewer employees;
  - Maximum Eligible Rebate: $10,000 residential; $25,000 small business; and
  - Other Requirements: Wind: minimum wind resource 12 mph, minimum tower height 80 feet, list of eligible wind turbines, GSHP: EnergyStar, closed loop systems only, and only solution allowed in coolant loop is propylene glycol.
- Solar Rebates
  - Eligible Systems: Solar Electric, Solar Hot Water, Solar Air Heat
  - Eligible Applicants: residential and small business applicants
  - Maximum Eligible Rebate $10,000 residential; $20,000 small business
  - Other Requirements: minimum shade factor of 90% solar access

- **Accomplishments:** 175 Ground Source Heat Pumps, 29 Wind Turbines, and 240 solar electric systems were installed under this program
- **Timeline:** March 2010-Dec 2011
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- GSHP funds ran out more quickly than expected for residential systems, so we did not issue the commercial rebate because of concern for excessive incentive level with the higher funding cap on the same system size limit. Although additional funds were allocated to residential GSHP rebates, we still had a waiting list.
- Wind rebates moved slower than expected due to several factors. The cost of allowable wind systems was generally higher than GSHP, so the funding cap was usually applied, resulting in a lower % of project funding compared to GSHP. In addition, we did not see applications from the installers that we had expected, most likely due to the high incentives available for solar PV.

III. PROJECT MODIFICATION

- As a response to declining solar module costs, to stimulate quick action and to maximize funding, the Solar Electric Rebate stepped incentives down if installed after September 30, 2010 from $2 per watt to $1.75 per watt for installations performed by NABCEP certified installations and from $1.75 to $1.50 for non-NABCEP certified installations.
- GSHP funds ran out more quickly than expected for residential systems, so we did not issue the commercial rebate because of concern for excessive incentive level with the higher funding cap on the same system size limit. Even though additional funds were allocated to residential GSHP rebates, we still had a significant waiting list.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The program stimulated investment among all three eligible solar technologies plus ground source heat and small wind. Commerce received the Solar Star Award from the Minnesota Renewable Energy Society for its "outstanding work in the Administration of the Minnesota Solar Rebate Programs" in November 2011.
- More than $1.39 million in rebates were available for the GSHP program, which, in turn, leveraged more than $2.85 million in additional funding for 175 installations. This investment not only helped to create jobs in the state, but also provided an effective way to learn more about the GSHP industry in Minnesota that will assist in outreach and education efforts in the future. Energy saved: 19,561 mmBTU/yr, Carbon emissions reduced: 5.8 Million lbs CO_2/yr
- About $351,400 in rebate funding was available for the wind program, which, in turn, leveraged more than $1.45 million in additional funding for 29 installations. The rebate program helped to provide valuable insight into the industry and will assist with future program development. Energy generated: 714,000 kWh/yr (or 2,437 mmBTU/yr of electricity), Carbon emissions reduced: 1.2 Million lbs CO_2/yr

V. PROJECT MONITORING EFFORTS:

- Commerce implemented a preapproval process for applicants requiring project review prior to installation. Three cross referencing forms of documentation were required as part of the application process to document the eligibility of the proposed installation site for meeting the minimum shading profile or wind resource. Upon completion, photos documenting the capacity installed and that the installation was installed as proposed in the proposal.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Solar Electric Rebate Program

ARRA Funds spent	$2,288,673
ARRA Completed:	240 projects
Capacity Completed:	1,446 KW
Leveraged:	$8,554,445

- Solar Hot Water Rebate Program

ARRA Funds spent	$194,638
ARRA Completed:	66 projects
Capacity Completed:	9,815 Sq. Ft.
Leveraged:	$983,214

- Solar Air Heat Rebate Program

ARRA Funds spent	$18,303
ARRA Completed:	9 projects
Capacity Completed:	736 Sq. Ft.

- Ground Source Heat Pump Rebate Program

ARRA Funds spent	$1,387,302
ARRA Completed:	175 projects
Capacity Completed:	799.5 tons
Leveraged:	$2,852,927

- Wind Turbine Rebate Program

ARRA Funds spent	$351,400
ARRA Completed:	29 projects
Capacity Completed:	367.8 kW
Leveraged:	$1,454,002

VII. BEST PRACTICES & LESSONS LEARNED:

- Our solar electric program encouraged voluntary professional certification of solar electric installers through the North American Board of Certified Energy Practitioners (NABCEP) by offering a small, added bonus for installations completed by NABCEP installers.
- The thorough documentation for siting of systems is necessary to ensure high quality systems.
- Avoid over-incentivizing within programs. The incentive amount for solar electric started too high and did not decline quickly enough as evidenced by the rate at which the funds were reserved. (Starting at $2.00/$1.75 and decreasing to $1.75/$1.50 per watt.) The program closed to application in July 2010, just four months after the program opened.
- The incentive amount of 35% up to $10,000 for Ground Source Heat Pumps (GSHP) was set too high by the legislature and we were not able to change the funding level. The $1,387,302 allocated for GSHP was reserved by applicants within three weeks, with 70 additional applications for $560,000 on the waiting list.
- The incentive amount of 35% up to $10,000 for residential wind turbines was too low except for the smallest turbines (like the Skystream). The incentive level for small businesses was capped at $25,000 and was more appropriate for turbines up to 10kW. Above 10kW, applicants hit the rebate cap so this was not as attractive. Differentiating the incentive level for residential and small business was unnecessary since both sectors would typically install the same kind of turbine. Fortunately, most of the applicants were farmers who could qualify for either category.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- Seven electric utilities, including the state's largest electric utility, have since begun to offer solar programs to customers to continue to support solar projects after ARRA; most of the solar hot water and solar air heat collectors were manufactured in Minnesota increasing manufacturing capacity in the state.

The state is looking for a new funding source for a solar and wind performance based incentive and will use lessons learned from the ARRA rebates when designing the next program

IX. COST STATUS:

- Original budget: $4,867,214.00
- Revised budget: $4,825,000.00
- Expenditures: $4,318,419.54
- Balance: $506,580.46

X. MEDIA AND OUTREACH:

- Producing electrical Power of their very own, Stewartville Star, *March 28, 2011* http://www.thinkstewartville.com/print.asp?ArticleID=4657&SectionID

XI. SUB-RECIPIENTS:

- See attached spreadsheet.

XII. ATTACHMENTS:

- Solar Rebate Success Story
- Piragis Success Story

Solar Site Assessment

DOE Award Number: DE-EE0000164:
Market Title: Residential Renewable Energy Rebate
Date: December 31, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** The Minnesota Renewable Energy Society received funds to identify, contract for, and implement site assessments and assess potential sites to be located within at least three different neighborhoods in the Twin Cities metropolitan area.
- **Goals:** Make Mine Solar bulk purchase program was developed to raise awareness about solar thermal technologies, an underutilized form of solar, in the form of a cost savings program; Solar site assessments were offered as a complement and increase interest in our Solar Hot Water Program.
- **Benefits:** Interested consumers were invited to attend informational workshops and receive reduced cost professional, independent site assessments. Increasing consumer knowledge around solar site assessments and installation helps to remove barriers to implementation. The more consumers become knowledgeable about solar, the more likely it will be to have increased penetration in the solar market. Benefits of increasing solar installations include job creation, and clean energy generation.
- **Eligibility:** Minnesota residents and businesses were eligible for this program.
- **Accomplishments:**
  - Interested Parties signed up on website: 258
  - Number of Workshops held: 12
  - Attendees at Workshops: 207
  - Number of Neighborhoods Participating: 9
  - Site Assessments Done: 102
  - Solar Installs Completed: 17
- **Timeline:** Fall 2010
- **Implementing Partners:** Minnesota Renewable Energy Society

II. GOALS AND OBJECTIVES COMPARISON:

- The goals of the project were met.

III. PROJECT MODIFICATION:

- The program was expanded to include solar air heat as well as solar hot water.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The program raised awareness among more than 200 consumers and resulted in 17 solar installations that may not have happened otherwise.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with the grantee to ensure compliance and to help grantees meet reporting requirements.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Not applicable.

VII. BEST PRACTICES & LESSONS LEARNED:

- This program was intended to stimulate a private sector program with the goal of increasing solar capacity in the state. Public/private partnerships can be a successful way to achieve common missions. The program helped consumers make decisions, save money though a bulk buy arrangement, and understand the importance of an early site assessment when considering solar

VIII. POST-ARRA PROJECT SUSTAINABILITY: Not applicable. This was a one time, small contract that was not intended to continue.

IX. COST STATUS:

- Budget: $2,000
- Expenditures: $2,000
- Balance: $0.00

X. MEDIA AND OUTREACH: Not Applicable.

XI. SUB-RECIPIENTS:

Sub-recipient: **Minnesota Renewable Energy Society**
Dollar amount: **$2,000**
Performance Period: **8/11/2010 – 10/31/2010**
Description of Project: The Minnesota Renewable Energy Society received funds to identify, contract for and implement site assessments and assess potential site to be located within at least three different neighborhoods. Workshops were held in the nine following neighborhoods: Longfellow, Beltrami, Seward, Lowry Hill East, Lyndale, Bryn Mawr, Merriam Park, West Side of St Paul, Como Park/Midway

XII. ATTACHMENTS:

- No attachments

Wind Speed Web Mapping Application

DOE Award Number: DE-EE0000164:
Market Title: Residential Renewable Energy Rebate
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis**: As an eligibility requirement for the ARRA funded Small Wind Turbine Rebate Program, the Department of Commerce required applicants to demonstrate the average annual wind speed for the proposed turbine location. For this purpose, the Commerce provided an online wind speed web mapping application developed by Applied Geographics, Inc. of Boston, Massachusetts and hosted by the Minnesota Geospatial Information Office (MnGeo). When the user inputs his or her address or site coordinates, the application returns the theoretical wind speed at 30 meters above ground level based on state wind map GIS files.
- **Goals:** The goal was to develop a Wind Speed Verification Tool based on the state wind map GIS dataset.
- **Benefits:** The application that was developed was an important tool to determine eligibility for wind turbine rebates. After the rebate program was completed, the application assisted the Department of Commerce, State Energy Office's mission to provide information to the public regarding the potential siting of wind turbines in the state.
- **Eligibility:** This contract was executed directly with Applied Geographics, Inc. of Boston, Massachusetts.
- **Accomplishments:** The tool was developed in a short time and was available to those who received rebates.
- **Timeline:** 4/30/10 – 4/30/11
- **Implementing Partners:** Applied Geographics, Inc. of Boston, Massachusetts; Minnesota Geospatial Information Office (MnGeo); Rowekamp and Associates

II. GOALS AND OBJECTIVES COMPARISON

- The Wind Speed Verification Tool was developed in a very short timeframe and it worked as intended.

III. PROJECT MODIFICATION

- N/A

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- List all major program successes and achievements. (for example, increased demand for products, kWh produced/saved, awards received, etc.)
- The Wind Speed Verification Tool was developed in a very short time frame and it worked as intended. We would use these vendors again.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The Wind Speed Verification Tool works as intended.

VII. BEST PRACTICES & LESSONS LEARNED:

- For the purposes of the rebate program, it may have been better not to have the street address or zip code geocoding functionality. In retrospect, we would have preferred to have the applicants enter the precise latitude and longitude of the turbine site instead. However, post-rebate program, the address and zip code features are useful for the general public to assess potential siting for wind turbine projects.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The Minnesota Geospatial Information Office has agreed to continue hosting the wind speed web mapping application in the future. The application assists the Department of Commerce, State Energy Office mission to provide information to the public regarding the potential siting of wind turbines in the state. The state's GIS wind speed maps were previously available to consumers as a PDF or as a GIS dataset, but the wind speed web mapping application greatly enhances the average consumer's ability to use the dataset.

IX. COST STATUS:

- Original budget: $4,980
- Expenditures: $4,979.90
- Balance: $0.10

X. MEDIA AND OUTREACH:

- Minnesota Wind Speed Verification Tool: http://mn.gov/commerce/energy/consumers/Wind-Systems/Wind-Speed-Verification-Tool.jsp
- Networks were established between The Department of Commerce, Applied Geographics, Inc, the Minnesota Geospatial Information Office, and a local independent GIS contractor. The project was successful and we would use these vendors again.
- Technologies: online mapping application development, geocoding.

XI. SUB-RECIPIENTS:

Sub-recipient: **Applied Geographics, Inc.**
Dollar amount: **$4,000**
Performance Period: **4/23/2010 – 10/31/2010**
Description of Project: The Department of Commerce used Applied Geographics, Inc. to create a web application that provides wind speed data for a location identified by the user. The application determines the wind speed at a given location to help establish eligibility for the Small Wind Turbine Rebate Program. The state's data set included wind speed data at 30 meters above ground level. In developing the web application, Applied Geographics used a web-based geocoding service developed and maintained by MnGeo that returns a latitude and longitude for a given street address and zip code. In addition, Applied Geographics employed a local Minnesota contractor, by subcontract,

to program the wind speed application such that when only a zip code is entered, the wind speed application returns the average wind speed for the entire zip code area.

Sub-recipient: **Minnesota Department of Administration and the Minnesota Geospatial Information Office (MnGeo)**
Dollar amount: **$980**
Performance Period: **11/01/2010 – 4/30/2011**
Description of Project: As an eligibility requirement for the ARRA funded Small Wind Turbine Rebate Program, the Department of Commerce required applicants to demonstrate the average annual wind speed for the proposed turbine location. For this purpose, the Department provided an online wind speed web mapping application developed for the Department by Applied Geographics, Inc. of Boston, Massachusetts and hosted by the Minnesota Geospatial Information Office (MnGeo). When the user inputs their address or site coordinates, the application returns the theoretical wind speed at 30 meters above ground level based on state wind map GIS files.

To support these functions, the Minnesota Geospatial Information Office (MnGeo) installed, hosted and provided nominal maintenance for the wind speed web mapping application developed for the Department of Commerce by Applied Geographics, Inc.

XII. ATTACHMENTS:

- No attachments.

Local Government Renewable Energy Grant

DOE Award Number: DE-EE0000164:
Market Title: Local Government Renewable Energy
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138. Article 3, Section 5, School District and Local Government Renewable Energy Grant Program, of the 2009 Minnesota State laws states:

Subdivision 1. ***Definitions.*** *(a) For the purpose of this section, the terms defined in this subdivision have the meanings given them.*

(b) "Local government" means a public school district, home rule charter or statutory city, county, regional government, park district, port authority, or town.

Subdivision 2. ***Program Established****. The commissioner shall award grants to units of local government to finance the purchase and installation of a renewable energy system or a geothermal heating and cooling system under this section.*

Subdivision 2. ***Grant proposals.*** *The commissioner shall publish in the State Register a request for proposals from local government for a grant under this section. Within 60 days after the deadline for receipt of proposals, the commissioner shall select grant proposals based on the following criteria:*

(1) The reliability and cost-effectiveness of the renewable technology to be installed under the proposal, including integration of energy storage;
(2) The extent to which the proposal effectively integrate with the conservation and energy efficiency program of the energy utilities serving the local government or school district;
(3) The extent to which the local government or school district has maximized other cost-effective energy efficiency and conservation improvements;
(4) The total life-cycle energy use and greenhouse gas emissions reductions per dollar of installed cost.
(5) The geographic distribution of grant recipients throughout the state;
(6) The percentage of total project cost requested;
(7) The extent to which the proposal uses parts of manufactured or produced in the state of assembly of a final product; and
(8) Other criteria the commissioner may determine to be necessary and appropriate.

Subdivision 4. ***Educational programming****. A school district must integrate information about the renewable energy system for which a grant is received under this section in its educational programming.*

Subdivision 5. ***Grant terms.*** *The maximum grant to a local government under this section may not exceed:*

(1) *For solar electric projects greater than or equal to 100 kilowatts rated capacity, the lesser of 40 percent of the total project cost or $200,000.*
(2) *For solar electric projects less than 100 kilowatts rated capacity, the lesser of 40 percent of total project cost or $100,000.*
(3) *For wind projects greater than or equal to 40 kilowatts rated capacity, the lesser of 35 percent of total project cost or $150,000;*
(4) *For wind projects less than 40 kilowatts rated capacity, the lesser of 35 percent of total project cost or $25,000*
(5) *For geothermal energy projects, the lesser of 35 percent of total project cost or $100,000;*
(6) *For solar thermal projects, the lesser of 50 percent of total project cost or $75,000;*
(7) *For combined heat and power projects and district energy projects, the lesser of 35% of the total project cost or $200,000.*

Grants were awarded to units of local government to assist in the purchase and installation of renewable energy, combined heat and power, district energy or geothermal heating and cooling systems.

- **Goals:** The goal of this program is to increase widespread installation of renewable technology in Minnesota in order to increase clean energy production, reduce greenhouse gas emissions, and improve the economy with the creation of jobs.
- **Benefits:** The benefits of increasing renewable energy include: a more diverse energy portfolio and therefore a more reliable electric grid; reduced greenhouse gas emissions; job creation; money saved; and a boost to the renewable economy to help it become self-sustaining.
- **Eligibility:**
    - Eligible Applicants: All Minnesota cities, counties, park districts, port authorities, regional governments and public school district were eligible to receive this grant.
    - Eligible Activities: Only the following energy technologies were eligible to receive grants under this program:
        - **Solar Electric:** Appropriately-sized system or unit on existing rooftops and parking shade structures; or a 60 kW system or smaller unit installed on the ground within the boundaries of an existing facility.
        - **Wind Energy**: 35 kW or smaller.
        - **Solar Thermal:** Ground mounted systems are limited to 400 square feet; building mounted must be appropriately sized to building load.
        - **Geothermal Heating and Cooling**: Installation of any size is eligible, however, DOE approval is required for any system over 5.5 tons.
        - **Combined Heat and Power and District Energy**: Boilers sized appropriately for the buildings in which they are located with best

available control technology. DOE approval will be required for any approved proposal.

- **Accomplishments:** 15 projects were successfully complete under this program. Activities included solar electric, solar air heat, small wind, and combined heat and power technologies.
- **Timeline:** June 21, 2010-September 30, 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- The goal of increasing clean energy capacity among public entities was achieved.

III. PROJECT MODIFICATION

- There were no project modifications.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- Multiple cities employed third party ownership structures to make hosting a solar energy system feasible.
- Multiple cities employed Minnesota made collectors and modules in completing their solar energy systems. All equipment components were domestically produced.
- Many of the technologies employed are in high visibility areas and raise public awareness among residents and students.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Site visits were conducted when Commerce deemed it warranted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The projects implemented under this grant program have demonstrated successful applications of clean energy technologies in Minnesota and raised public awareness about the value of the state's solar and wind resources as being viable and adding real value.
- Two public utilities funded under this program now offer solar energy incentives to their electricity customers to encourage renewable energy investment in their communities.

VII. BEST PRACTICES & LESSONS LEARNED:

- The lessons learned on the administrative side of the grants and included: not issuing a solicitation just before summer break for schools; local governments need more than 6 weeks to put a proposal together; and cost share contributions are challenging at the 50 % level for public entities right now.
- Well sited, well planned projects such as these are effective at maximizing energy production.
- Students valued having curriculum developed around on-site renewable energy generation in their schools.

- In the case of larger CHP projects, they sometimes take more time to plan and implement.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- This program was not continued beyond ARRA.

IX. COST STATUS:

- Original budget: $4,300,000.00
- Revised budget: $727,782.00
- Expenditures: $684,095.53
- Balance: $43,6886.47

X. MEDIA AND OUTREACH:

- Various public entities held press events and ribbon cuttings publicizing the significance of the renewable energy investment made on behalf of the communities. Senator Al Franken attended a ribbon cutting in Royalton; City of Maplewood held a celebratory press event for the commissioning of two new solar energy systems; City of Sebeka held a press conference after installing their array; Moorhead Public Utilities was featured in a news article about their successful new solar systems situated between two utility owned wind turbines.
- Chisago County uses publicly accessible web-based monitoring to monitor system performance and as a public interest interfacing.
- TC Daily Planet, 6/4/2012, Mahtomedi Zephyr Wind Project is community-wide effort and powerful educational tool
- Star Tribune, 3/19/2011, Wind turbine may spin at Mahtomedi High School
- Star Tribune, 08/03/2011, Wind turbine installed at Mahtomedi High
- White Bear Press, 7/19/2011, New Turbine Harvests Wind Power

XI. SUB-RECIPIENTS:

Sub-recipient: **City of Maplewood**
Dollar amount: **$100,000**
Performance Period: **10/17/2011- 8/31/2012**
Description of Project: Subcontractor obtains necessary permits for two 40 kW Solar Photovoltaic (PV) systems: 1) Maplewood Community Center (2100 White Bear Avenue, Maplewood, MN 55104); and 2) Ground mounted installation adjacent to City Hall

Sub-recipient: **City of Elk River**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

Sub-recipient: **City of Brainerd**
Dollar amount: **$35,626**
Performance Period: **2/03/2011 – 9/30/2011**
Description of Project: Construct a 9.6kW Solar PV project with storage capacity. System will include performance monitoring equipment and will be located at 8027 Highland Scenic Rd, Baxter, MN 56425.

Sub-recipient: **City of Kasson**
Dollar amount: **$26,900**
Performance Period: **2/03/2011 – 9/30/2011**
Description of Project: Complete installation of a 10.3 kW system at City Hall including the racking, inverters, modules and electrical system.

Sub-recipient: **Winona Public Schools**
Dollar amount: **$17,039**
Performance Period: **2/09/2011 – 9/30/2011**
Description of Project: Install 6.2 kW Solar PV System
Sub-recipient: **Metropolitan Council**
Dollar amount: **$200,000**
Performance Period: **2/16/2011 – 3/31/2012**
Description of Project: Install a combined heat and power system at the Solids Management Buildings at the Metro Wastewater Treatment Plant.

Sub-recipient: **Chisago County**
Dollar amount: **$10,000**
Performance Period: **2/08/2011- 9/30/2011**
Description of Project: Install 3.2 kW Solar PV System

Sub-recipient: **Mahtomedi Schools**
Dollar amount: **$25,000**
Performance Period: **2/16/2011- 12/31/2011**
Description of Project: Install 10 kW Wind Turbine at High School Stadium, develop curriculum for K12 learning using online performance data.

Sub-recipient: **City of Royalton**
Dollar amount: **$33,628**
Performance Period: **3/06/2011 – 11/30/2011**
Description of Project: Install 7.0 kW Solar PV System at City Hall/Library

Sub-recipient: **Wadena County Schools**
Dollar amount: **$5,989**
Performance Period: **3/13/2011- 9/30/2011**
Description of Project: Install solar air furnace.

Sub-recipient: **City of Edina**
Dollar amount: **$82,000**
Performance Period: **3/21/2011 – 1/31/2012**
Description of Project: Install 20 kW solar PV system at City Hall

Sub-recipient: **City of Moorhead**
Dollar amount: **$39,800**
Performance Period: **4/10/2011 – 10/31/2011**
Description of Project: Install 12 kW solar PV system at 2200 28th Street North in Moorhead, MN

Sub-recipient: **Lac Qui Parle County**
Dollar amount: **$100,000**
Performance Period: **5/06/2011- 6/30/2012**
Description of Project: Install ground-source heat-pump system at County Courthouse.

Sub-recipient: **Cromwell-Wright School District**
Dollar amount: **$51,800**
Performance Period: **6/13/2011 – 3/31/2012**
Description of Project: Install ground-source heat-pump system at Cromwell- Wright School

Sub-recipient: **City of Bemidji**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

Sub-recipient: **City of Kennedy**
Dollar amount: **$100,000**
Performance Period:
Description of Project: Chapter 138 Article 2 Section 7 of the 2009 Minnesota State Laws states:
Conversion of former school to renewable energy business center. *The commissioner shall award a grant to the city of Kennedy to convert a former school building to use wind, solar, and geothermal energy and to house a renewable energy business center.*
Commerce awarded funds to the city of Kennedy for the installation of wind turbine.

XII. ATTACHMENTS:

- Minnesota Success Story: Mahtomedi Wind.
- Clean Energy Resource Teams, Case Study June 2011.

Solar Cities

DOE Award Number: DE-EE0000164
Market Title: Local Government Renewable Energy
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 3, Section 4, of the 2009 Minnesota State Laws states the following:

  The commissioner shall award grants to local units of government for the installation of large and small-scale solar electric or thermal projects, including innovative storage technology, in a geographically-concentrated area. The project must leverage funds from the federal Department of Energy to demonstrate the impacts of these projects on the electric grid, and the costs and benefits to ratepayers. The commissioner may develop matching requirements for these solar projects in order to maximize job creation and renewable energy development.

  The Cities of Minneapolis and St. Paul were the recipients of this award. The cities each used the funds for solar installation along the central corridor – the light rail line that is being constructed between the two downtowns.
- **Goals:** To increase solar capacity in a high visibility corridor as a complement to focused energy efficiency improvements.
- **Benefits:** increased clean energy production and consumer awareness of solar
- **Eligibility:** Cities having been designated as Solar America Cities by the U.S. Department of Energy
- **Accomplishments:** The Cities of Minneapolis and Saint Paul installed 500 kilowatts of new solar electric capacity and three solar thermal systems.
  - **Timeline:** July 2010- August 2012
- **Implementing Partners:** City of Minneapolis, City of Saint Paul

II. GOALS AND OBJECTIVES COMPARISON

- The goals of increased public awareness of solar and increased solar capacity were accomplished.

III. PROJECT MODIFICATION

- The grantees received an extension to complete the projects due to delays associated with extreme winter weather in 2010.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- City of Saint Paul installed six solar electric systems totaling 220 kW at such facilities as a police station, a library, and science museum. The City also installed the second largest solar thermal system in the state with 1,400 square feet of capacity at the Ramsey County Law Enforcement Center.

- City of Minneapolis installed five new solar electric systems totaling 230 kilowatts at locations such as a fire station, parking ramp, maintenance facilities and a university campus. The City installed two solar thermal systems on two fire stations with 120 square feet each of capacity.
- The 82 kilowatt solar electric system at the RiverCentre is the largest in Saint Paul; Minneapolis Fire Station 19 now showcases both solar thermal and solar electric systems as a result of grant funds. Both cities invested in electric vehicle charging station infrastructure co-sited with solar installations that were installed as part of this grant.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices and to gain approval for sites selected to receive solar installations based on considerations such as location, solar access, and visibility. Site visits were conducted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The program demonstrated that solar works well in Minnesota's two largest cities using various technology types and different module brands.

VII. BEST PRACTICES & LESSONS LEARNED:

- Siting of a solar project is important for a high functioning system. These projects installed by the Solar America Cities demonstrate the effectiveness of well sited systems even in Minnesota's northern climate.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The solar installations installed under this ARRA funding are expected to continue producing energy for two – three decades. The energy requires no fuel purchases and limited maintenance resulting in clean energy production and economic benefit to the cities and their residents.

IX. COST STATUS:

- Original budget: $3,000,000
- Revised budget: $2,850,000
- Expenditures: $2,833,163.83
- Balance: $16,836.17

X. MEDIA AND OUTREACH:

- Some of the systems installed were designed with Minnesota-made components. All system major components were manufactured in the United States.
- Several press conferences were held to acknowledge the significance of city owned solar energy systems with the mayors, representatives from the state and utility, and other elected officials.
- St. Paul Cable TV picked it up and put the entire press event on their cable station.
- The PioneerPress.com did a piece - http://www.twincities.com/stpaul/ci_21760839/st-paul-unveils-solar-panel-roof-law-enforcement?source=rss

- The St. Paul Mayor's office ran a brief piece in the *Mayor's News Update 10.12.12*
- MinnPost: http://www.minnpost.com/political-agenda/2012/10/ramsey-county-installs-solar-water-heating-equipment-atop-law-enforcement-cc
- Rep. McCollum's website: Ramsey County's First Solar Installation Is a Model for Small- to Mid-Sized Buildings Seeking Energy Efficiency
- Finance & Commerce: http://finance-commerce.com/2012/10/ramsey-county-installs-solar-panels/
- High Beam Business: http://business.highbeam.com/5488/article-1G1-305379072/ramsey-county-first-solar-installation-model-small
- Cogeneration and On-site Power Production: http://www.cospp.com/articles/2012/10/minnesota-law-enforcement-centre-deploys-on-site-solar.html

XI. SUB-RECIPIENTS:

Sub-recipient: **City of Minneapolis**
Dollar amount: **$1,350,000**
Performance Period: 2010-August 31, 2012
Description of Project: The City of Minneapolis identified and assessed potential solar photovoltaic and solar thermal projects to be located in close proximity to the proposed route of the Central Corridor light rail line. Minneapolis worked with Commerce to authorize each installation.

Sub-recipient: **City of St. Paul**
Dollar amount: **$1,500,000**
Performance Period: 2010-August 31, 2012
Description of Project: The City of St. Paul identified and assessed potential solar photovoltaic and solar thermal projects to be located in close proximity to the proposed route of the Central Corridor light rail line. St. Paul worked with Commerce to authorize each installation.

XII. ATTACHMENTS:

- Minneapolis Press Release.
- St. Paul Press Conference

Chisago County Biomass Study

DOE Award Number: DE-EE0000164
Market Title: Local Government Renewable Energy
Date: December 28, 2012
Reporting Period Dates: April 2012 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 4, Section 2, of the 2009 Minnesota State Laws states the following:

  Subdivision D. The commissioner shall make a grant to a county economic development authority for development of a biomass energy facility, which has completed an economic and technical feasibility study, including a market potential and cellulosic feedstock analysis. The county in which the facility will be located must included an investor-owned utility, municipal utility, and cooperative electric association, and it must have adopted an essential services and transmission services ordinance as of May 15, 2009.

  As a result of the appropriation, the Chisago County Housing & Redevelopment Authority – Economic Development Authority received a $150,000 grant to develop a business plan for an economically profitable biomass or torrefied biomass manufacturing facility in the Chisago, Isanti, and Pine County areas. The business model must have identified, documented, and evaluated the costs required to produce, collect, transport, store, process and deliver competitive biomass fuel to the intended market(s).
- **Goals:** The near term goal and focus of this grant was the development of a biomass energy plant to initiate bioenergy, biofuels, or biopower manufacturing infrastructure in this region. The intermediate term goal was to develop and establish 16,000 acres of low input prairie in order to have an adequate supply of diverse prairie to support a commercial size conversion plan. The ultimate long-term goal was a renewable energy facility to convert the region's cellulosic biomass into liquid transportation fuels.
- **Benefits:** The benefits of increasing renewable energy included: a more diverse energy portfolio and therefore a more reliable electric grid; reduced greenhouse gas emissions; job creation; money saved; and a boost to the renewable economy to help it become self-sustaining.
- **Eligibility:** This grant was appropriated by the Minnesota Legislature to the Chisago County Housing & Redevelopment Authority – Economic Development Authority as described above.
- **Accomplishments:** The project consisted of two phases. A feasibility study was conducted and completed for Phase 1. A Phase 1 report was published in 2010. The project did not progress into phase 2.
- **Timeline:** April 2010- May 2011

- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce. The grant was received by the Chisago County Housing & Redevelopment Authority – Economic Development Authority.

II. GOALS AND OBJECTIVES COMPARISON:

- The near term goal and focus of this grant was the development of a biomass energy plant to initiate bioenergy, biofuels, or biopower manufacturing infrastructure in the grant region. The intermediate term goal was to develop and establish 16,000 acres of low input prairie in order to have an adequate supply of diverse prairie to support a commercial size conversion plan. The ultimate long-term goal was a renewable energy facility to convert the region's cellulosic biomass into liquid transportation fuels.
- The Phase 1 plan did not prove to be viable and Phase 2 did not proceed. At the end of Phase 1 proposals were presented for alternate use of the Phase 2 funds but were deemed too far afield of meeting the intent of the goals of the grant agreement. The grantee withdrew their request for Phase 2 funding of $90,000.

III. PROJECT MODIFICATION

- The original grant was for $150,000. Phase 1 of the project was completed within the budget of $60,000. Phase 2 of the project did not proceed due to proposed deviation from the original project. The remaining $90,000 budgeted was not spent as the project concluded at the end of Phase 1.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- Program successes and achievements included review and documentation of the current status of biomass technologies and the potential for viability in the Minnesota counties originally proposed for the project.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The project deliverable for Phase 1 consisted of a Feasibility Report titled Biomass Manufacturing Facility for Chisago County, Minnesota. A copy of this report is included in the attachment below.

VII. BEST PRACTICES & LESSONS LEARNED:

- This project explored a number of issues related to biomass manufacturing in the project portion of the State of Minnesota and conclusions were drawn that at the present time the intended biomass manufacturing is not viably sustainable.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- This project was not continued post ARRA.

IX. COST STATUS:

- Original budget = $150,000
- Revised budget = $ 60,000
- Expenditures = $59,997.45

- Balance = $90,002.55

X. MEDIA AND OUTREACH:

- A Phase 1 Final Report is available.

XI. SUB-RECIPIENTS:

Sub-Recipient: Chisago County Housing & Redevelopment Authority – Economic Development Authority
Dollar amount: **$150,000**
Performance Period: **4/20/2010- 5/31/2011**
Description of Project: The purpose of this grant contract was to assist in the development of a biomass energy facility.

XII. ATTACHMENTS:

- Chisago Biomass Phase 1 Study. This file is too large to send. Please request if you wish to review it.

Code Compliance

DOE Award Number: DE-EE0000164
Market Title: Training & Data
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** This project was conducted in response to the American Recovery and Reinvestment Act Section 410 (a) (2) which required, in part, that each state or building code enforcement jurisdiction to adopt minimum energy conservation codes and "… [conduct a] measurement of the rate of compliance each year."
- **Goals:** The goals were to perform a statistically random assessment of energy code compliance of new and remodeled Minnesota buildings and to identify code enforcement procedural changes and training that could improve compliance rates.
- **Benefits:** The project identified that Minnesota homes are built well, and will likely be able to meet the ARRA minimum energy code requirements once the Minnesota energy code is amended and enforced in 2013. The project also identified that in order for commercial buildings to meet the ARRA prescribed energy code requirement, there will need to be additional education required for design professionals and for building/mechanical inspectors.
- **Eligibility:** Because this project was funded through an interagency agreement, only state agencies were eligible. The Minnesota Department of Labor & Industry, Construction Codes & Licensing Division was uniquely qualified.
- **Accomplishments:** The project identified the degree to which Minnesota residential and commercial – new construction and remodeling buildings – meet the energy code requirements of the American Recovery and Reinvestment Act. It also identified the need to additional training on the energy code for design professionals and for building/mechanical inspectors.
- **Timeline:** May 2012 – September 2012
- **Implementing Partners:** The Minnesota Department of Commerce worked with the Minnesota Department of Labor & Industry – Construction Codes & Licensing Division.

II. GOALS AND OBJECTIVES COMPARISON

- Although the project results were not completed when the ARRA funding ended the partial results were completely consistent with the goals of the program.

III. PROJECT MODIFICATION

- Because the project had not been completed at the end of the grant period, additional state funding was used to extend the time available to complete. The original goals will be completed by May 30, 2013.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- For residential new construction projects:

- 53 Plan reviews completed; houses were 47.89% compliant with IECC IECC 2009 at this stage.
- 45 Insulation inspections; houses were 73.30% compliant with IECC 2009 at this stage.
- 36 Final inspection; new houses were 63.67% compliant with IECC 2009 at this stage.

- For residential remodel/renovation/addition projects:
  - 31 Plan reviews complete; houses were 36.31% compliant with IECC 2009 at this stage.
  - 18 Insulation inspections; houses were 67.71% compliant with IECC 2009 at this stage.
  - 11 Final inspections; renovated houses were 68.35% compliant with IECC 2009 at this stage.
- For the commercial building projects:
  - 19 New construction plan reviews completed.
  - 23 Remodeled/Renovated/Additions, plan reviews completed.
  - 95 Progress inspections completed
  - 7 Final inspections completed

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- For residential buildings, the project identified that Minnesota homes are built well. They are 'tight' and have insulation that is well done and are built with good windows. It was found that the differences between the current Minnesota energy code and the 2009 IECC (the ARRA prescribed requirement) are accentuated by the compliance tool and that the attic 38 vs. 49, the wall R19 vs. R21 and the foundation R5 or10 vs. R15 show up as the major divergence. The project concluded that the adoption of the 2012 IECC in 2013 (as the Minnesota residential energy code) will bring residential construction up to the ARRA required standards.
- For commercial buildings, the project identified that none of the buildings studied met the ARRA prescribed requirement. The plan reviews and inspections showed a lack of clear 'system' intent on mechanical construction documents. Many of the projects are using the design build method, and equipment is not clear at the start of the project. Building inspectors may not be familiar enough with the mechanical equipment and rely too heavily on acceptance testing. The project report recommended that additional education is required for design professionals and for building/mechanical inspectors. The report also recommended that the additional commissioning requirements contained in the proposed 2012 energy code will be a powerful tool when understood and properly implemented.

VII. BEST PRACTICES& LESSONS LEARNED:

- The project identified that Minnesota homes are built well, and will likely be able to meet the ARRA minimum energy code requirements once the Minnesota energy code is amended and enforced in 2013. The project also identified that in order for commercial buildings to meet the ARRA prescribed energy code requirement, additional education will be required for design professionals and for building/mechanical inspectors.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The lessons learned will assist Minnesota to implement energy code requirements to be in compliance with the American Recovery and Reinvestment Act.

IX. COST STATUS:

- Original budget: $125,000,
- Expenditures: $31,566.63,
- Balance: $93,433.37

X. MEDIA AND OUTREACH: Not applicable.

XI. SUB-RECIPIENTS:

Sub-recipient: Minnesota Labor & Industry – Construction Codes & Licensing Division.
Dollar amount: $125,000
Performance Period: 5/14/2012 – 09/30/2012
Description of Project: This project was conducted in response to the American Recovery and Reinvestment Act Section 410 (a) (2) which requires, in part, that each state or building code enforcement jurisdiction to adopt minimum energy conservation codes and "… [conduct a] measurement of the rate of compliance each year.

XII. ATTACHMENTS:

- No attachments.

Self Assessment Energy Code

DOE Award Number: DE-EE0000164
Market Title: Training & Data
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** This project was conducted in response to the American Recovery and Reinvestment Act Section 410 (a) (2) which requires, in part, that each state or building code enforcement jurisdiction to adopt minimum energy conservation codes and "… [conduct a] measurement of the rate of compliance each year." Funding for this program supported self-assessment of compliance with energy codes. The baseline energy code used for comparison in these assessments will be the 2009 IECC for residential buildings and the ASHRAE standard 90.1-2007 for commercial buildings.
- **Goals:** The goals of this program were to perform self assessment of energy code compliance for new and remodeled Minnesota buildings and to identify code enforcement procedural changes and training that could improve compliance rates. The objective of these grants was to help local code officials assess the baseline energy code compliance of new and renovated residential and commercial buildings and to identify code enforcement procedural changes and/or training needs that could improve compliance rates.
- **Benefits:** The project identified that Minnesota homes are built well, and will likely be able to meet the ARRA minimum energy code requirements once the Minnesota energy code is amended and enforced in 2013.
- **Eligibility:** Eligible participants included any Minnesota city, county, or joint power of two or more cities and counties; Minnesota certified building official(s); or a company employing Minnesota certified building officials. New and renovated buildings for which a building permit was issued on or after June 1, 2009 were eligible to be included in a self-assessment survey.

  Eligible activities included:
  - Training costs for project participation and related travel costs;
  - Plan review;
  - Site inspection and related travel;
  - Blower door and duct tightness testing, including equipment purchasing and staff training, or contract expenses for these services;
  - Data entry; and
  - Report preparation.
- **Accomplishments:** Two sub-recipients were awarded grants enabling them to access and record the baseline energy code compliance of buildings permitted since June 1,

2009. The project also identified code enforcement procedural changes and/or training needs that will contribute to improved compliance rates.

One grantee conducted plan reviews of 105 homes, of which 40 included detailed site compliance surveys. This information was inputted into the Score and Store data collection tool; and conducted 6 plan reviews of commercial buildings, and these data were also inputted into the Score and Store system. The other grantee conducted 16 residential building plan reviews and detailed site reviews and inputted these data into Score and Store. Both grantees also identified the heating and cooling equipment efficiencies for each site investigated.

- **Timeline:** December 2011 – April 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- All of the goals achieved were consistent with the objectives of the project.

III. PROJECT MODIFICATION

- No modifications were made to either of the two original grants.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- Both projects achieved 100 percent of their planned accomplishments within the planned budget and met their expected completion time schedules.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Site visits were conducted when Commerce deemed it warranted.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The Woodbury investigation found that homes studied were 53.6% compliant with the 2009 IECC (the ARRA minimum energy code requirements). The report concluded that the percentage was low because of a number of differences between Minnesota's current energy code (since June 1, 2009) and the 2009 IECC. For example, the 2009 IECC requires more information on the construction documents than the Minnesota Energy Code. Both codes require insulation locations and R-values, fenestration U-factor and SHGC, mechanical system design criteria, mechanical system and hot water heater equipment types and sizes. In addition, the 2009 IECC requires area weighted U-factor and SHGC calculations, mechanical systems and hot water heater efficiencies, economizer description, fan motor horse power and controls, duct sealing details, duct and pipe insulation locations and R-values, lighting fixture schedule that includes wattage and controls, and air sealing details. There are some insulation values differences between the two codes as well.
- The Scott County investigation examined many more homes in greater detail than Woodbury, and also examined several commercial projects. The residential blower door tests averaged out at 2.13 air exchanges per hour which is well below the current 2009 IECC requirements of 7 Air exchanges per hour and meets the proposed code change of

3 air exchanges per hour. There was one outlier test result at 6.5 air exchanges per hour, which brought the average up, but may have been a testing error.

VII. POST-ARRA PROJECT SUSTAINABILITY:

- The lessons learned will assist Minnesota with implementation of the energy code requirements to be in compliance with the American Recovery and Reinvestment Act.

VIII. COST STATUS:

- Original budget: $49,574.17,
- Expenditures: $44,676.16
- Balance; $4,898.01

IX. MEDIA AND OUTREACH:

- On June 13, 2012 a presentation was made to about 40 members of the Riverbend Building Inspectors chapter of the International Council of Building Officials in Shakopee, Minnesota.

X. SUB-RECIPIENTS:

Sub-recipient: **Woodbury**
Dollar amount: $25,000
Performance Period: 12/20/2011 – 4/30/2012
Description of Project: Assess and record the baseline energy code compliance of buildings permitted since June 1, 2009 and identify code enforcement procedural changes and/or training needs that could improve compliance rates in Woodbury.

Sub-recipient: **Scott County**
Dollar amount: $24,574.17
Performance Period: 1/10/2012 – 4/30/2012
Description of Project: Assess and record the baseline energy code compliance of buildings permitted since June 1, 2009 and identify code enforcement procedural changes and/or training needs that could improve compliance rates in Scott County.

XI. ATTACHMENTS: No attachments.

Training and Workforce Development

DOE Award Number: DE-EE 0000164
Market Title: Training & Data
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 5, Section 1, Training and Workforce Development, of the 2009 Minnesota State Laws states:

  Subdivision 1. **Training plan and procedures.** (a) *The commissioner, in conjunction with the Department of Employment and Economic Development, the Office of Higher Education, and Minnesota State Colleges and Universities shall develop and implement a plan and procedures to:*
  (1) train energy professionals needed to implement the energy programs described in articles 2 to 4 including but not limited to energy auditors, energy managers, and building operators;
  (2) coordinate, oversee, and monitor the training and certification of energy professionals;
  (3) allocate stimulus funding for the purposes of clauses (1) and (2) and to train providers; and
  (4) provide energy code compliance and enforcement training necessary to comply with section 410 of the American Recovery and Reinvestment Act of 2009, Public Law111-5.
  (b) Training strategies must be designed to meet the wide range of facilities managers and building sizes and types, and must protect the occupational health and safety of workers employed on these energy projects. Technical skills training must include insulation, air sealing, and mechanical work. Training may include an on-the-job component where the trainee travels to job sites with trained crews.
  (1) Train individuals already employed in implementing energy programs;
  (2) Recruit individuals to be trained to perform work in energy projects using stimulus funding who are unemployed, especially targeting communities experiencing disproportionately high rates of unemployment, including, but not limited to, low-income, youth, rural, or tribal communities and individuals in construction trades and crafts;
  (3) Ensure that the full capacity of current training providers is utilized, including, but not limited to, opportunities industrialization centers, skilled trades labor unions, tribal colleges or nonprofits working in tribal communities, community action partnerships, utility companies, higher education institutions, and nonprofit organizations with demonstrated expertise in energy efficiency;
  (4) Publicize job and contract opportunities through cost-effective dissemination via traditional and nontraditional media outlets, including, but not limited to, public service

announcements and radio advertisements; and
(5) Disseminate information about contract and employment opportunities generated by the programs. Particular effort must be made to publicize employment, job training, home energy auditing, weatherization, outreach, and other opportunities to community organizations, nongovernmental organizations, and media outlets that target disadvantaged groups, including, but not limited to, low-income, rural, tribal communities, and communities of color.

Out of this legislation, three sub-programs emerged within SEP:

- Code Assessment (discussed above);
- Energy Training Plan & Infrastructure Development (discussed below), and
- Innovative Training RFP (discussed below).

- **Goals:** There were two primary goals of this program:
  - Develop infrastructure to support the training of energy professionals, and
  - Develop innovative and transformative training models to strengthen capacity of energy efficiency and renewable energy workforce.
- **Benefits:** Benefits include long-term infrastructure developed for training energy professionals after stimulus funding; a highly trained workforce; and improved efficiency of the built environment.
- **Eligibility for Training Plan Contracts:** These contracts were developed with specialized entities with the capacity to strengthen the already established training infrastructure in Minnesota.
- **Eligibility for Innovative Training RFP:**

  Eligible Applicants: Any entity was eligible to apply.
  Eligible Activities: Examples of eligible activities include, but are not limited to:
  - Development of new classroom, field, or web-based youth or adult training not currently available in Minnesota.
  - Program, curriculum, or credential development. Development limited to areas where existing programs are inadequate, cost prohibitive or not readily accessible from another recognized source.
  - Replication of unique training strategies not currently available to the target audience.
  - Additional innovative activities may be eligible and responders were encouraged to propose.
- **Accomplishments:** Please see TRAINING PLAN attachment for a full overview of accomplishments, strategies development, and highlights of success. Additional attachments to the training plan and online resources reflect additional accomplishments. In addition, four training institutions received awards from Commerce to provide innovative training and build up specific workforce areas where Minnesota was most lacking.
- **Timeline:** The statewide energy training plan for energy efficiency and renewable energy development began in 2009 with initial meetings of the Department of Commerce – Division of Energy Resources and the Department of Employment and

Economic Development – Division of Workforce Development. The momentum increased with the hiring of a training coordinator in late August. By December, all parties were at the table and by early 2010, the team expanded to include multiple state agencies as well as foundations and non-governmental training institutions. The majority of funded activities then took place between early 2010 and late 2011, with funding for training initiatives completing end of August 2012.

- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce. However, part of the effort was to develop a Statewide Energy Training Plan that included developing partnerships with the MN Department of Employment and Economic Development, the MN Office of Higher Education, and the MN State Colleges and Universities. See the TRAINING PLAN for a full list of governmental partners.

II. GOALS AND OBJECTIVES COMPARISON

- All of the goals achieved were consistent with the objectives of the project.

III. PROJECT MODIFICATION

- No major modifications were made to either of the programs.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- There was a solid infrastructure developed for individuals interested in obtaining high quality, unbiased career information and/or training for an energy efficiency or renewable energy career.
- Curriculum and training (statewide) was strengthened by State Colleges and the University of Minnesota as well as private training institutions.
- Long-term training networks were established, successfully engaging energy efficiency and renewable energy trainers in improving on existing curriculum, communicating information around a changing energy landscape, and providing high quality instruction to new, established, and transitioning workers in residential efficiency, small wind, solar (through a separate DOE grant), statewide.
- Commerce and its partners were successful in reducing duplication and leveraging multiple funding streams to reach a greater impact for Minnesota.
- Expended the Building Performance Institute (BPI) training functions and Fond du Lac Tribal College's BPI training delivery system within the State for residential auditors
- Developed an effective partnership with the Minnesota Department of Employment and Economic Development to maximize ARRA funding related to workforce development
- Strengthened information distribution through the Minnesota iSEEK Energy Portal and developed energy training information within the Department of Commerce's "Energy" website: www.energy.mn.gov

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Standardized monitoring documents were established with protocol for "sampling" sub recipients with such criteria as: multiple DOE grants,

contracts over $100,000, desk monitoring issues, and unique project circumstances led to over 50% of projects monitored. No significant issues were discovered.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- One of the major results from this funding was the alignment of state agencies around a common goal. Historically, each department has been silo'd in their efforts around energy workforce training, yet through this process, funds were better utilized as Commerce (Energy), DEED (Workforce Development), MOHE (licensing), and MNSCU (State Colleges), as well as Department of Education, Pollution Control, and ISEEK (joint powers agreement between DEED and MNSCU) came together and each provided their knowledge and information to improve the end product.

VII. BEST PRACTICES & LESSONS LEARNED:

- One of the Best Practices established was through the MN Building Performance Training Network. Training Networks can be effective when all parties are engaged in contributing to the success of the whole (vs. a top down approach). The MN Building Performance Training Network saw unprecedented success where historically instructors "own" their curriculum and therefore tend not to share resources freely. This initiative showed the power of collaboration and the resulting "end product" of not only certified instructors and better equipped training institutions, but also stronger curriculum that is vetted and used statewide.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The nature of this project was to develop infrastructure and therefore long-term sustainability for educational efforts in the State. With short term funding, projects were developed for easy updating and longevity, for instance:
- Career information development included on-line resources that can be easily updated once funding for print materials is gone.
- Train-the-trainer program was established on an institutional level, developing "shared" curriculum that will be available institution recognizing that instructor departures may take place. In addition, infrastructure was developed for BPI training that allows for collaboration between trainers and testing centers all within the training network.
- Technology curriculum provided on-line and free to teachers.

IX. COST STATUS:

- Original budget: $1,451,386..920
- Expenditures: $1,375,316.55
- Balance:$76,070.37

X. MEDIA AND OUTREACH:

- Press Releases:
    - AEOA Get SETT Program:
      http://mn.gov/commerce/energy/topics/resources/Success-Stories/Training/training-program-jobs-potential.jsp
      http://mn.gov/commerce/energy/media/newsdetail.jsp?id=207-46701

- MN Project's Farm Energy Auditor Training Program: http://mn.gov/commerce/energy/media/newsdetail.jsp?id=207-40710 http://www.cleanenergyresourceteams.org/blog/farm-energy-auditor-training-program-begins-soon-november
- ISEEK Energy Training Map: http://mn.gov/commerce/energy/media/newsdetail.jsp?id=207-31047

- Publications:
  - Clean Energy Workforce Conference Presentation 2011:
    - http://irecusa.org/wp-content/uploads/2011/03/Gransee-Bowman.pdf
  - Clean Energy Workforce Conference Presentation 2012
    - http://www.irecusa.org/wp-content/uploads/Werth_1330_CEWEC-Career-Paths.pdf
- Websites: The Commerce website was expanded through this effort to include a new "careers" section: http://mn.gov/commerce/energy/topics/careers/. In addition, the Minnesota Building Performance Training network that was established through this funding has partnered with the previously established MN Building Performance Association to strengthen their training efforts and support long-term sustainability of both efforts. As part of the collaboration, MBPA has redeveloped their website, incorporating MBPTN into their training information: http://mbpa.us/mbptn-info/MNBPTN
- Technologies/Techniques: FDLTCC and Windustry both led (unprecedented in the MNSCU system) initiatives to share curriculum cross-college. This shared approach provided approved curriculum early in the process, with feedback from the most recognized colleges, strengthening the curriculum for everyone.
- Inventions/Patent Applications: not applicable
- Other products: the CARET program allowed for training institutions to build up their equipment and teaching tools as well as establish nationally recognized accreditation for their institutions. In addition, every participating educational institution received high quality curricula for immediate use in their classes.

XI. SUB-RECIPIENTS:

Training Plan Sub-Recipients:

Sub-recipient: **MnSCU-Fond du Lac Tribal and Community College (B42965)**

Dollar amount: **$405,303.72**

Performance Period: **05/03/2010 – 08/31/2012**

Description of Project: This contract focused on building an extensive Building Performance Institute (BPI) training course program. It also provided for mentoring for both instructors and students. It formed the Minnesota Building Performance Training Network and worked closely with the Minnesota Building Performance Association (MBPA) to design and evaluate the training courses and form planning and advisory committees. The college staff was responsible for proctoring all on-line written exams and field exams. The BPI curriculum focused on providing specific training in the following

performance categories: Building Analyst, Envelope Professional, Residential Building Envelope, Whole House Air Leakage Control Installer, and Manufactured Homes certification. Additional training resources were also provided to instructors covering; Heating Professional, Air Conditioning and Heat Pump Professional, as well as ASHRAE 62.2 ventilation training.

Sub-recipient: **Windustry (B49636)**
Dollar amount: **$79,955**
Performance Period: **10/06/2010 – 04/30/2012**
Description of Project: This contract provided for two small wind experts to modify an existing curriculum and design supporting instruction materials for the Small Wind Installer training course. The supporting materials included a workbook provided to train-the-trainer participants. The curriculum was provided to six training providers and 16 instructors, complimenting existing renewable energy curriculum materials. The training took place at the University of Minnesota-Morris and was comprised of 64 in-person hours of curriculum. The contract also provided for on-going training support by phone and webinar. Overall, the network helped provide the industry with qualified small wind installers and site assessors as well as provide training opportunities for individuals interested in entering the small wind field.

Sub-recipient: **iSeek Solutions (B42660)**
Dollar amount: **$104,757**
Performance Period: **4/30/2010 – 11/30/2011 (2/29/12)**
Description of Project: This grant provided funding to design multiple energy related career paths as an online tool that allows users to explore labor market and education information about individual careers and possible ladders between careers. The grant funded the development of six career paths: Energy Efficiency-Residential, Energy Efficiency Commercial, Energy Transmission, Solar Electric, Solar Thermal, and Ground Source Heat careers. See: www.energycareerpaths.org

Sub-recipient: **iSeek Solutions (B53294)**
Dollar amount: **$10,000**
Performance Period: **2/14/2011 – 6/30/11**
Description of Project: This grant developed content and provided resources for individuals interested in starting their own green-related business through development of the iSEEk website green portal. Project included the creation of career profiles of successful green, energy-related small business start-ups.
See: www.iseek.org/industry/green/jobs/green-entrepreneurship.html

Sub-recipient: **iSeek Solutions (B53298)**
Dollar amount: **$20,000**
Performance Period: **2/14/2011 – 9/30/11**
Description of Project: This grant publicized energy-related career, employment, and training information to underserved Minnesota audiences, including low-income, tribal, and minority populations. Partnering took place with community organizations to develop

web-based content on entry-level green energy careers in Minnesota for the iSeek green portal and for outreach effort to reach underserved communities. See: www.enteringenergy.org

Sub-recipient: **NowData (B49328)**
Dollar amount: **$5,000**
Performance Period: 10/1/10-1/31/11
Description of Project: This grant was for IT technical services and work on a flash-based web component project for the development of an interactive training map.
See: www.iseek.org/industry/energy/education/energy-training-programs-map.html

Sub-recipient: **Rowekamp and Associates (B49492)**
Dollar amount: **$5,000**
Performance Period: **10/4/10-11/31/11**
Description of Project: This grant was for IT technical services and work on a training website project developing an interactive training map.
See: www.iseek.org/industry/energy/education/energy-training-programs-map.html

Sub-recipient: **Minnesota Department of Education (B54272)**
Dollar amount: **$19,500**
Performance Period: **4/15/11-2/29/12**
Description of Project: The Education Department's Energy Career development specialist reviewed and selected secondary Science, Technology, Engineering and Math (STEM) programs across Minnesota to identify energy components that are currently embedded within the curriculum. The grant also worked with external entities to develop a K-12 Energy Education Network for future energy educational activities. It also organized an Energy Education Curriculum team to develop energy curriculum units to be used in middle high schools in the state.

Sub-recipient: **Credentialing Assistance Rebate for Energy Training (CARET)**
Dollar amount: **$250,000 (reserved; not fully expended)**
Performance Period: **June 21, 2010 – July 31, 2012**
Description of Project: Minnesota's Credentialing Assistance Rebate for Energy Training (CARET) was an ARRA funded credentialing assistance program for energy training providers. The CARET was established with the goal of providing financial support for the credentialing of Minnesota-based energy efficiency and renewable energy training providers and instructors. Training programs were required to be established MN State College and Universities, the University of Minnesota, or a training institution that was licensed through the MN Office of Higher Education. Selected institutions ensured that their training program would prepare students for national, industry recognized, certification in energy efficiency or the renewable energy sector. Training providers could receive up to $10,000 to cover the cost of fees and equipment related to the credentialing.

Sub-recipient: **Univ. of MN -Center for Sustainable Building Research (B43502)**
Dollar amount: **$74,700**
Performance Period: **September 7, 2011- March 31, 2012**

Description of Project: The goal of this grant was to contribute to the Statewide Training Plan a training report highlighting ways to reduce energy consumption in buildings by identifying training needs for person involved in the design of new and remodeled buildings and in the operation of existing buildings.

Innovative Training Sub-Recipients:

Sub-recipient: **University of Minnesota – University Extension (32115)**
Dollar amount: **$50,000**
Performance Period: **September 7, 2011 – March 31, 2012**
Description of Project: This program was designed to increase demand for energy efficiency and building performance professionals in the residential sector. The grantee developed, delivered, and evaluated two pilot workshops for residential builders and remodelers. The grantee also developed long-term sustainability of educational outreach by adapting innovative workshop content and publishing content to public website.

Sub-recipient: **The Minnesota Project, Inc. (32854)**
Dollar amount: **$98,892**
Performance Period: **September 12, 2011 – March 31, 2012**
Description of Project: The Minnesota Project, along with GDS Associates, trained energy auditors on farm specific issues toward providing efficiency resources to the large farm population in MN. Trainees acquired skills to meet reporting requirements of federal efficiency funding programs like USDA's Rural Energy for America Program (REAP) and Environmental Quality Incentives Program (EQIP) and provided resource options to Minnesota's rural electric cooperatives. A blog they wrote describes the program: http://minnesotaproject.wordpress.com/2011/10/27/farm-energy-auditor-training-program-off-to-a-great-start/

Sub-recipient: **Arrowhead Economic Opportunity Agency (33997)**
Dollar amount: **$231,629**
Performance Period: **October 14, 2011 - April 30, 2012**
Description of Project: Arrow Economic Opportunity Agency partnered with Hibbing Community College and Mesabi Range Community & Technical College to provide 40 low-income individuals with energy efficiency training, case management, and placement support through classroom training and paid internships.

Sub-recipient: **University of Minnesota (34569)**
Dollar amount: **$50,000**
Performance Period: **October 28, 2011 - April 30, 2012**
Description of Project: Developed an educational program that builds upon the national Architecture 2030 program and the Seattle American Institute of Architects (AIA)

software, preparing MN architects and designers to set accurate and meaningful energy consumption goals and ultimately meet legislation that mandates that state-bonded buildings be designed to meet the 2030 standard.

XII. ATTACHMENTS:

- Statewide Energy Training Plan
- CARET outreach document
- ISEEK residential brochure

Training Access & Affordability

DOE Award Number: DE-EE 0000164
Market Title: Training & Data
Date: December 28, 2012
Reporting Period Dates: February 2011 – April 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 5, Section 2, Training and Workforce Development, of the 2009 Minnesota State Laws states:

  (2) Support job training opportunities for low-income persons in residential and commercial energy efficiency and renewable energy-related trades.
  (d) Training funds to support residential and commercial energy efficiency and renewable energy-related trades must be distributed through a competitive application process.

  Within the Access and Affordability Program, two requests for proposals were issued as noted in Goals below.
- **Goals:** The goal of this program was to train individuals, at low or no cost to the participant, for the EERE workforce through recognized, approved training that prepared the participant to obtain an industry related credential. Two Request for Proposals were developed to meet the stated goals:
  1) Training for Dislocated and Disadvantaged Energy Professionals RFP
  2) Low-Income Training RFP
     - Within the Low-Income Training RFP, additional goals were identified:
       - Training that raises knowledge in energy modeling or in using building science principles in construction/remodeling.
       - Training that supports qualification of energy auditors and/or renewable energy site assessors.
       - Training that leads to industry recognized certification in the energy efficiency or renewable energy sector.
       - Training that systematically transforms an established training program (e.g. building construction) to raise institutional and participant knowledge in energy efficiency and/ or renewable energy
- **Benefits:** This funding supported training programs in providing disadvantaged Minnesota residents with the skills need to perform work in the EERE sector.
- **Eligibility:**
  Eligible Applicants: Included an eligible training provider and an EERE industry partner or employer. Eligible training providers included:
     - An institution that is operated by this state;
     - Public school districts;

- The Board of Regents of the University of MN;
- A licensed or registered private, for profit or not-for profit training provider; or
- A training provider that is exempt from licensure or registration.

Eligible Activities varied between the two RFPs:

Training for Dislocate and Disadvantaged Energy Professionals RFP

- Classroom, field, or web-based skills training in energy efficiency or renewable energy (EERE).
- Short-term job training opportunities (i.e. mentorships, apprenticeships) in EERE industry.
- Testing for industry-supported, nationally recognized credentials in EERE.
- Placement and support services necessary for participant success.
- Entrepreneurial or business skill training, if applicable, for emerging EERE industries.
- Curriculum development. Costs limited to the lesser of 25% of grant funds or $20,000.
- Equipment costs necessary to support training delivery identified in the proposal.

Low-Income Training RFP

- Classroom, field, or web-based skills training.
- Short-term job training opportunities (e.g. mentorships, apprenticeships).
- Entrepreneurial or business skill training, if applicable, for emerging EERE industries.
- Testing for nationally recognized credentials in the EERE industry.
- Placement and support services necessary for participant success.
- Curriculum development: limited to areas of training where already developed curriculum is inadequate, cost prohibitive, or not readily accessible from another source.
- Incumbent worker training: limited to underemployed workers and must be justified by applicant.
- Program evaluation: limited to no more than 5% of the grant request.

- **Accomplishments:** Fourteen awards were given to support low-income training activities by sub-recipients.
- **Timeline:** February 2011 – April 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON:

- The goals as set forth and the actual goals met and accomplishments that resulted aligned.

III. PROJECT MODIFICATION:

- There were no major modifications made to this program.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- See attached TRAINING PLAN for highlighted successes.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Standardized monitoring documents were established with protocol for "sampling" sub recipients with such criteria as: multiple DOE grants, contracts over $100,000, desk monitoring issues, and unique project circumstances led to over 50% of projects monitored. No significant issues were discovered.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- An unanticipated challenge for this funding was the overall lack of interest shown by disadvantaged/unemployed workers and the demand by "higher" income and employed workers for training. Due to the nature of the funding, some programs met fewer participants than expected as those that were interested did not meet low-income requirements.

VII. BEST PRACTICES & LESSONS LEARNED:

- **When** meeting low-income training needs, programs that were highly established workforce programs with a job placement strategy were found to be much more successful at recruitment and placement than those training programs without these built in externalities that attract low-income individuals.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The nature of a high quality education is one that provides long-term knowledge for all who participate. However, as this program was geared toward a low-income population, ongoing funding for training providers needs to continue post-ARRA.

IX. COST STATUS:

- Training for Dislocate and Disadvantaged Energy Professionals RFP
  - Original budget: $290,579.94
  - Expenditures: $148,693.65
  - Balance:$141,886.29
- Low-Income Training RFP
  - Original budget: $640,982.00
  - Expenditures: $463,192.81
  - Balance:$144,789.19

X. MEDIA AND OUTREACH:

- Media and outreach were handled by sub recipients for this program.

XI. SUB-RECIPIENTS:

- Training for Dislocate and Disadvantaged Energy Professionals RFP

Sub-recipient: **Neighborhood Energy Connection**
Dollar amount: **$103,554**
Performance Period: **February, 2011 – January, 2012**

Description of Project: The Neighborhood Energy Connection worked to improve the Energy Efficiency of Saint Paul's foreclosed housing stock during rehabilitation. In doing so, they provided training and professional certification to low-income, Housing and Urban Development (HUD) Section 3-qualified residential building contractors in Saint Paul, Minnesota. They also supported the success of low-income building contractors as they apply energy-efficiency improvement skills in the field.

Sub-recipient: **MNSCU Central Lakes College**
Dollar amount: **$91,949 (cancelled due to staff turnover)**
Performance Period: **February, 2011 – January, 2012**
Description of Project: The project goal was to deliver quality Energy Efficiency and Renewable Energy (EERE) related training to 20 (10 dislocated/unemployed and 10 disadvantaged/underemployed) individuals in Region Five (Cass, Wadena, Crow Wing, Todd, and Morrison counties) in central Minnesota. Training was to be delivered at no cost to the trainees and would have either prepared participants to obtain industry-recognized credentials or provide for educational laddering opportunities.

Sub-recipient: **Dunwoody College of Technology**
Dollar amount: **$95,076**
Performance Period: **February, 2011 – January, 2012**
Description of Project: Dunwoody College of Technology provided credential based training and job placement resources to low income, displaced, unemployed and/or underemployed persons from throughout the Minnesota Twin Cities metro area in careers in the energy efficiency and renewable energy sectors. Dunwoody provided hands-on applied training that was designed to educate on specific skill sets necessary to perform key jobs within the energy auditing, weatherization, solar & wind installation, and/or commercial construction industry. The educational platforms proposed would consist of two "tracks". Dependent on educational background and work history, trainees had the choice of:

- Energy Efficiency platform consisting of Building Performance Institute (BPI) credentialed energy auditor, Weatherization, and Construction & Demolition Recycling training; or,
- Renewable Energy platform consisting of Small Wind Installer and Solar/Photovoltaic Training.

- Low-Income Training RFP

Sub-recipient: **MnSCU – Fond du Lac Tribal and Community College**
Dollar amount: **$24,786**
Performance Period: **April 10, 2011 – April 30, 2012**
Description of Project: The grant was to deliver a Building Performance Institute (BPI) approved 'Building Analyst Training and Testing' program for 15 individuals, including recruiting participants for program, delivering classroom and field training and proctoring the online written exams. Additionally, the Tribal College staff provided one-to-one mentorship and follow up training for a total of eight individuals who received the BPI training.

Sub-recipient: **MnSCU – Fond du Lac Tribal and Community College**
Dollar amount**: $21,697**
Performance Period**: April 10, 2011 – April 30, 2012**
Description of Project: This grant provided a Building Performance Institute (BPI) approved 'Building Analyst and Envelope Professional or Heating Professional' specific training and certification testing program to low income students. The Tribal College staff recruited the students and provided the BPI training and testing to 24 individuals, in addition to providing both classroom and field instruction and also proctoring the exams

Sub-recipient: **Southeastern Minnesota Private Industry Council, Inc. and Southeaster Minnesota Workforce Development**
Dollar amount: **$97,085**
Performance Period: **April 28, 2011 – February 29, 2012**
Description of Project: The grant was entitled "Enhancing the Energy Industry's Pathway to Employment," and the project served 40 low income individuals in the Pre-Employment Trades Energy Academies. The program enabled students to obtain both a National Career Readiness Certificate (NCRC) through ACT, and Occupational Safety & Health Administration (OSHA) certification as part of the classes. Twelve on-the-job (OJT) contracts were written with local employers looking to expand their business and willing to provide training to new employees. Work-Force Center (WFC) staff recruited and matched skill requirements for each employment situation. Student progress was tracked on the Minnesota 'Workforce One' data system.

Sub-recipient**: Summit Academy OIC**
Dollar amount**: $100,000**
Performance Period**: April 28, 2011 – February 29, 2012**
Description of Project: The grant was to recruit and train 75 low-income students in the Academy's Energy Efficient Technician Training Program and give urban low-income young people vocational career training and job placement and retention services. The goal was to increase the number of technicians trained in energy efficiency construction as well as boost student income and stabilize the families of the low income vocational students enrolled in the training. The grants also had the goal of investing in vocational training and improve the infrastructure around green and energy efficient construction

Sub-recipient: **University of Minnesota**
Dollar amount**: $100,000**
Performance Period**: May 16, 2011 – April 30, 2012**
Description of Project: The grant provided training to 100 unemployed or underemployed designers and engineers to understand energy performance and how to conduct energy modeling analyses early in the design process, and in parallel with traditional schematic design activities. The grant also provided training on energy modeling software and prepared curriculum on building science, energy flows and building envelop issues in energy

conservation. The grant also provided for 16 hours of instruction in how to use energy modeling tools for designers and engineers.

Sub-recipient: **MNSCU IAP Mankato**
Dollar amount**: $21,310**
Performance Period: **May 7, 2011 – April 30, 2012**
Description of Project: This grant was a pilot project to assist in creating an Energy Specialist Training program for university students at the undergraduate and graduate levels. The project developed procedures for recruiting students, and providing training on both 'Energy Star' and the DOE Portfolio Manager. It also facilitated the study of several regional buildings and provided specific feedback to the building owners. Nine low-income students were recruited and identified for the scholarships and training activities.

Sub-recipient**: MNSCU IAP Mankato**
Dollar amount**: $59,970**
Performance Period**: May 7, 2011 – April 30, 2012**
Description of Project: This grant provided skills based training, continuing education, and professional development opportunities for 120 individuals in energy efficiency. It centered on the residential building sector and created four training modules for building technology with industry input and experience. It created online instruction course materials for the 'Fundamentals Online Review' and the 'Fundamentals of Heating, Ventilation and Air Conditioning (HVAC) Loads Calculations'and were done as online review courses. The course material will included: self-study materials, student exercises, and feedback mechanisms with the instructor. It was also designed to prepare the selected students to qualify for and take the Leadership in Energy and Environmental Design (LEED) Green Associate certification examination.

Sub-recipient**: Sustainable Resource Center, Inc.**
Dollar amount**: $23,140**
Performance Period**: May 16, 2011 – February 29, 2012**
Description of Project: This grant provided full scholarships to train 28 unemployed weatherization workers. The goal was for each individual chosen to be certified by the Building Performance Institute (BPI) and obtain the specific BPI 'Envelope Professional Certification' (EPC). The scholarships included a Krieger book, 32 hours of coursework from SRC, take the BPI field and written exams, and receive mileage reimbursement, all free of charge for each student.

Sub-recipient: **Sustainable Resource Center, Inc.**
Dollar amount**: $23,206**
Performance Period: **May 17, 2011 – February 29, 2012**
Description of Project: This grant provided full scholarships to train 27 unemployed weatherization workers. The goal was for each individual chosen to be certified by the

Building Performance Institute (BPI) and obtain the specific BPI 'Building Analyst Certification' (BAC). The scholarships included a Krieger book, 40 hours of coursework from SRC, taking the BPI field and written exams, and receiving mileage reimbursement, all free of charge for each student.

Sub-recipient**: Sustainable Resource Center, Inc. (55882)**
Dollar amount: **$80,600**
Performance Period**: May 16, 2011 – February 29, 2012**
Description of Project: This grant provided full scholarships to train 70 unemployed weatherization workers. The goal was for each individual chosen to be certified by the Building Performance Institute (BPI) and obtain the specific BPI 'Building Analyst Certification' (BAC). The scholarships included a Krieger book, 40 hours of coursework from SRC, take the BPI field and written exams, and receiving mileage reimbursement, all free of charge for each student.

Sub-recipient**: Minnesota Renewable Energy Society**
Dollar amount**: $89,188**
Performance Period: **June 1, 2011 – April 30, 2012**
Description of Project: Train Site Assessors Instructors to be able to provide training to a minimum of 20 low income individuals in solar hot water and photovoltaic site assessment skills, with an end goal of becoming certified in MREAs site assessor certification. Students were to receive free of charge, Site Assessor training, consisting of a hands-on course that will cover Photovoltaic and Solar Hot Water 101, PV and Solar Hot water Site Assessor 201. As part of the course, students received a Solar Pathfinder and a textbook copy of *Solar Water Heating* by Ramlow *and Power from the Sun* by Chiras.

XII. ATTACHMENTS: No attachments.

C&I Competitive Grants – Program

DOE Award Number: DE-EE 0000164
Market Title: Commercial & Industrial
Date: December 28th, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** The Minnesota Department of Commerce (Commerce) issued an RFP seeking proposals from eligible applicants for cost-effective energy efficiency and renewable energy improvements in commercial, industrial, and nonprofit facilities. Proposals were requested from economic development authorities and nonprofit entities to establish and operate revolving loan programs or similar financing mechanisms to finance cost-effective energy efficiency and renewable energy improvements in commercial, industrial, and nonprofit facilities in Minnesota.
- **Goals:** Commerce intended to promote activities that would have the greatest impact on energy savings, renewable energy deployment, and jobs created or retained. Proposal evaluation and ranking was based primarily on a proposed activity's potential to achieve these goals and on an applicant's capacity to effectively implement a proposed activity.
- **Benefits:** By providing funding for these purposes, Commerce sought to promote activities that would have the greatest impact on energy savings, renewable energy deployment and jobs created or retained. Additionally, financing programs like revolving loan funds and loan loss reserves are programs that have the potential to be carried on past ARRA funding and continue to provide economic stimulus through the realization of energy savings.

- **Eligibility:**
  - Applicants: Economic Development Authorities established under Minnesota Statutes Chapter 469 and nonprofit entities organized under section 501(c)(3) of the Internal Revenue Code were eligible to apply for grant funds under this category.
  - Activities: Eligible applicants were those that proposed revolving loan programs or similar sustainable financing mechanisms to finance eligible cost-effective energy efficiency and renewable energy improvements in commercial, industrial and nonprofit facilities. Eligible improvements included:

1. **Energy efficiency measures including:**
   a. Facility systems optimization (commissioning or re-commissioning);
   b. Facility systems control improvements;
   c. Lighting efficiency improvements;
   d. Heating, ventilation and air conditioning systems modifications;
   e. Exterior envelope improvements;
   f. Motor and pump efficiency improvements; and

g. Ground-source heat pump systems of no more than 5.5 ton rated capacity used to heat or cool a facility.

2. **Installation of equipment or devices that use renewable energy sources to generate electricity or heat or cool a building or facility including:**
   a. Solar Electricity/Photovoltaic: Building-mounted systems appropriately-sized to load; or a 60 KW system or smaller installed on the ground within the boundaries of an existing facility.
   b. Wind Turbine: 35 KW or smaller
   c. Solar Thermal – ground mounted systems are limited to 400 collector square feet; building mounted must be appropriately sized to building load.

- **Accomplishments:** Under this program, Commerce awarded 3 grants to set-up revolving loan funds. The awards went to: The Center for Energy and Environment ($275,000), the Community Reinvestment Fund ($500,000), and the Minneapolis Community Planning and Economic Development department ($300,000). All of these awards were initially set up as revolving loan funds.
- **Timeline:** March 2010-September 2012 (2 are on-going)
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- The main goal of this program was to have multiple function loan programs that allowed commercial, industrial, and nonprofit entities access to low interest financing in order to advance energy efficiency goals. Unfortunately, these programs were slow to get going. This was believed to be due to the reluctance of prospective borrowers to incur debt because of the general state of the economy.

III. PROJECT MODIFICATION

- The contract with the Center for Energy and Environment (CEE) was modified to be a loan loss reserve fund for a commercial and industrial loan program. Additionally, the program was amended to included solar electric and solar thermal activities.
- The contract with the Community Reinvest Fund (CRF) had two modifications. The first modification increased the maximum principal allowed to be financed through CRF's program from $200,000 to $300,000. In the earlier stages of the grant, we had determined that increasing the principal amount would accommodate loans to borrowers who were seeking to complete larger energy retrofit projects, including equipment. The second modification was an extension of our expiration date. The expiration for CRF's grant has been extended twice; first to September 30, 2012 and most recently to June 30, 2013.
- The contract with the City of Minneapolis was canceled. It was difficult to attract interest in the program as the definition of multi-family housing was not consistent with the multi-family market in Minneapolis.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The CEE program has originated 46 loans for a total of $584,782 of improvements. It is expected that $195,788 will be saved each year and that 197,245,055 Btus will also be conserved.
- CRF has provided funding for one project totaling $303,500. The capital provided by CRF allowed a small resort located in Baudette, Minnesota to attain significant energy savings by installing a geothermal heating system.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The CEE loan loss reserve mitigated the risk to the grantee for loan losses and thereby allowed the grantee to fund a larger loan pool and issue more loans.

VII. BEST PRACTICES & LESSONS LEARNED:

- The CEE loan loss reserve fund was successful in that it leveraged funds in order to provide a larger pool of financing for local nonprofits. CEE originated loans using their own funds and in addition established a nonprofit grant program to further incentivize nonprofits to participate. The program has been so popular that the grantee has continued to provide financing even though no additional grant funding will be provided.
- It was learned that borrowers desire processes that are relatively hassle-free from their perspective and have a quick turnaround time. Given the parameters of this program, there has been difficulty deploying funds; therefore, we have begun to work closely with community development organizations that have had successful programs. Through these partnerships, it is hoped that borrowers would be found who have larger energy projects that our partner organizations are unable to fund.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- The Loan Loss Reserve Fund with the Center for Energy and Environment will remain in place after the closing of SEP ARRA. Commerce will continue to monitor performance on this reserve fund and CEE will be responsible for submitting quarterly reporting. The goal of continuing this program is to keep financing in place for commercial & industrial entities seeking to improved energy efficiency.
- The revolving loan fund with the Community Reinvestment Fund will also continue beyond the SEP ARRA grant period. Commerce will continue to monitor performance on this program to ensure it remains active and abides by the ARRA requirements.

IX. COST STATUS:

- Original budget: $1,070,000
- Revised budget: $757,432.53
- Expenditures: $757,432.53
- Balance: $0.00

X. MEDIA AND OUTREACH:

- CEE's marketing services were provided in the form of direct mail pieces. Advertising was targeted to local nonprofits and contractors.
- CRF used and integrated marketing approach for this program. CRF marketed directly to potential borrowers through a variety of marketing channels to create awareness and generate leads. CRF has implemented media relations strategies, direct marketing, and utilized advertising and promotions, including:
  - Announcement in CRF newsletter (Aug. 2010)
  - Collateral material creation (Dec. 2010
  - Direct marketing campaign to 200 small business borrowers in MN: direct mail, email follow-up, sales staff follow-up. (May 2011).
  - Media relations: press release distribution (August 2011)
  - Direct marketing campaign to 250 independent grocers in MN: direct mail, e-mail follow-up, sales staff follow-up. (October 2011)
  - 1-page advertisement in Enterprise MN Magazine (October 2011 issue). Additionally CRF staff has attended conferences regarding green lending, including:
  - CDFI Green Lending Workshop in Chicago in May 2012
  - Opportunity Finance Network Annual Convention in San Antonio, TX in October 2012. This conference featured a "Green Lenders" panel discussion.

XI. SUB-RECIPIENTS:.

Sub-recipient: **Center for Energy and Environment (CEE)**
Dollar amount: **$270,000**
Performance Period: **6/30/2010 - Present**
Description of Project: CEE developed and operates a program to provide financing to eligible borrowers to design, acquire, and install energy efficiency improvements in existing facilities owned or occupied by organizations exempt from taxes under section 501©(3) of the Internal Revenue Code. SEP ARRA Funds were used to establish and operate a loan loss reserve.

Sub-recipient: **Community Reinvestment Fund (CRF)**
Dollar amount: **$500,000**
Performance Period: **6/30/2010 - Present**
Description of Project: Develop and operate a revolving loan program to provide loans to eligible borrowers to design, acquire, and install energy efficiency and renewable energy improvements in eligible facilities owned by commercial or industrial entities or organizations exempt from taxes under section 501©(3) of the Internal Revenue Code.

Sub-recipient: **City of Minneapolis, Department of Community Planning and Economic Development**
Dollar amount: **Dropped Out**
Performance Period: **7/19/2010 – 1/23/2012**
Description of Project: Develop and operate a revolving loan program to provide loans to eligible borrowers to design, acquire, and install energy efficiency and renewable energy improvements in existing multi-family housing facilities. The aim of this project was to target a sector – multi-family housing – that is often overlooked and provide a

financing tool for energy efficiency improvements. Unfortunately, the definition of multi-family in the RFP was not consistent with the character of Minneapolis. Many Minneapolis multi-family units are 3-story buildings or less; the definition in this RFP required 4-stories or higher, which severely limited the number of housing units that could take advantage of the program.

XII. ATTACHMENTS:

- No attachments.

Commercial & Industrial Competitive Grants – Projects

DOE Award Number: DE-EE0000164:
Market Title: Commercial & Industrial
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** The Minnesota Department of Commerce (Commerce) issued an RFP seeking proposals from eligible applicants for cost-effective energy efficiency and renewable energy improvements in commercial, industrial, and nonprofit facilities. Proposals were requested from owners of commercial, industrial, and nonprofit facilities to make cost-effective energy efficiency and renewable energy improvements in their facilities. An applicant could have proposed one or more improvements in one or more commercial, industrial, or nonprofit facility owned by the applicant and located in Minnesota.
- **Goals:** Commerce intended to promote activities that would have the greatest impact on energy savings, renewable energy deployment, and jobs created or retained. Proposal evaluation and ranking was based primarily on a proposed activity's potential to achieve these goals and on an applicant's capacity to effectively implement a proposed activity.
- **Benefits:** By providing funding for these purposes, Commerce sought to promote activities that would have the greatest impact on energy savings, renewable energy deployment, and jobs created or retained.
- **Eligibility:**

  Applicants: Owners of commercial, industrial, and nonprofit facilities located in Minnesota were eligible to apply for funds.
  Activities: **Energy efficiency measures including:**

  h. Facility systems optimization (commissioning or re-commissioning);
  i. Facility systems control improvements;
  j. Lighting efficiency improvements;
  k. Heating, ventilation and air conditioning systems modifications;
  l. Exterior envelope improvements; and
  m. Motor and pump efficiency improvements.
  n. Ground-source heat pump systems of no more than 5.5 ton rated capacity used to heat or cool a facility.

  Installation of equipment or devices that use renewable energy sources to generate electricity or heat or cool a building or facility including:

  - Solar Electricity/Photovoltaic: Building-mounted systems appropriately-sized to load; or a 60 KW system or smaller installed on the ground within the boundaries of an existing facility.
  - Wind Turbine: 35 KW or smaller

    - Solar Thermal: ground mounted systems are limited to 400 collector square feet; building mounted must be appropriately sized to building load.
- **Accomplishments:** Achieved energy efficiency upgrades in 36 commercial, industrial, or non-profit facilities in Minnesota.
- **Timeline:** March 2010-September 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- The primary goals and objectives of achieving energy efficiency upgrades and at the same time, increasing demand for manufactured materials and construction sector work was met by the program. This has the enduring benefit of reduction of energy consumption and associated benefits for the long term.

III. PROJECT MODIFICATION

- A number of project modifications were made over the course of the grant, however they were primarily administrative in nature related to flow down and grant requirements. Changes in scope of work or technical aspects of projects were minimal.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- Major program successes and achievements were the attainment of energy efficiency upgrades, increasing demand for manufactured materials, and construction sector work. The projects will also have a prolonged benefit of reducing energy consumption and associated benefits for the long term.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. Additionally, Commerce conducted site visits to ensure projects were executed as agreed upon and that grantees were keeping proper records on file.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Grantees voiced their gratitude for the funding assistance which incentivized them to move ahead with energy efficiency upgrades. This also generated various levels of matching spending by the grantees for the work as well as related work which they otherwise may not have undertaken.
- A variety of completed construction of energy efficiency upgrades were the deliverables.

VII. BEST PRACTICES & LESSONS LEARNED:

- The Mall of America performed a very significant upgrade of parking ramp lighting from previously existing sodium and metal halide lighting to Light Emitting Diode (LED) lighting. It will be of interest to follow the project results in terms of energy consumption savings, longevity, and maintenance of the project in coming years and provide insight into effectiveness of large scale LED lighting application to parking ramps.

a. Similarly, a variety of projects achieved differing energy efficiency measures and grantee reporting of energy savings achieved will be followed from remaining annual reports from grantees. These 'after action' reports will be of interest in evaluating the effectiveness of the various types of projects from which conclusions may be drawn.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- It is difficult to sustain a grant program without funding, but Commerce is certain that energy savings from these projects will continue for years to come. Also, a few of the commercial and industrial revolving loan funds will continue beyond ARRA and will provide financing to organizations wishing to improve energy efficiency. So, while there is no longer grant money, there are affordable options to achieve energy improvements. Commerce will work to make sure that eligible entities are aware of the existing programs and help them take advantage.

IX. COST STATUS:

- Original budget: $4,100,000
- Revised budget: $4,574,087.50
- Expenditures: $4,278,534.53
- Balance: $295,552.97

X. MEDIA AND OUTREACH:

- A number of the grant recipients issued press releases or other public releases relating to their energy efficiency upgrade projects. Grantees were required to include the following statement in promotional and informational materials, unless waived in writing by the state: "This project was made possible by a grant from the U.S. Department of Energy and the Minnesota Department of Commerce through the American Recovery and Reinvestment Act of 2009 (ARRA)."

XI. SUB-RECIPIENTS:

Sub-recipient: **Walker Art Center**
Dollar amount: **$151,011 Grant**
Performance Period: **May 2010 – July 2011**
Description of Project: Replaced 2 existing LP steam boilers with 3 heating water boilers (Columbia MPH-80 Boiler), and 2 LP steam boilers (Columbia MPH-50).

Sub-recipient: **Clear Waters Life Center**
Dollar amount: **Canceled**
Performance Period: **N/A**
Description of Project: **N/A**

Sub-recipient: **Fairview Health Services**
Dollar amount: **$55,000**
Performance Period: **August 2010 – December 2010**
Description of Project: 1)Recommission VAV Boxes, Modify AHU schedules, Provide CO2 monitoring at (4) AHU, modify existing fan schedules, provide discharge air temp reset; 2) Modify humidification boilers schedule; 3) Integrated HW Pumps VFD; 4) Energy

Management and controls, energy management system integration & upgrades to accommodate ECO strategies; 5) Lighting Retrofit: Replace 32 W lamps with 25 W lamps.

Sub-recipient: **Resource, Inc.**
Dollar amount: **$38,370**
Performance Period: **July 2010 – September 2010**
Description of Project: Project A - Penthouse AHU modifications and controls for Outside Air Reduction, Economizer, Unoccupied Setback, VFD and dampers, Exhaust Fans scheduling. Project B - Computer Room Air Conditioning Unit Replacement. Project C – Boiler Improvements – Insulate approximately 30 LF of hot water and steam lines and replace Tri-cock Valve.

Sub-recipient: **Gerdau Ameristeel U.S. Inc.**
Dollar amount: **$95,000**
Performance Period: **July 2010 – December 2011**
Description of Project: Replace two 30 year old 900 kW power supplies on production line 1 with two new energy efficient 1,125 kW power supplies

Sub-recipient: **Rolco, Inc**
Dollar amount: **$16,174**
Performance Period: **July 2010 – December 2010**
Description of Project: Replace 106 ea. 320 to 400 W multivapor lamps with T-Bay fixtures with standard lamps and acrylic lenses; Replace 8 ea. high output strip fixtures with T-8 open strip fixtures.

Sub-recipient: **Earle Brown Tower, LLP**
Dollar amount: **$23,110**
Performance Period: **July 2010 – December 2010**
Description of Project: Installation of 12 ea. 48”x48” and 24 ea. 48”x96” volume dampers, 36 ea. damper actuators, and energy management system programming with new energy control strategies, calibration, and commissioning.

Sub-recipient: **Spruce Tree Center, LLP**
Dollar amount: **$26,456**
Performance Period: **July 2010 – December 2010**
Description of Project: Modernize existing energy management system with an Alerton Ibex upgrade as outlined in Spruce Tree Grant Proposal.

Sub-recipient: **Prospect Foundry**
Dollar amount: **$43,500**
Performance Period: **July 2010 – February 2011**
Description of Project: Energy management controls for melting operation.

Sub-recipient: **Health East Care System**
Dollar amount: **$300,000**
Performance Period: **July 2010 – April 2012**
Description of Project:

- Replace all non-NEMA premium 10 HP and larger motors with NEMA premium motors. Install VFD's and demand based speed control on all motors with an appropriate application.
- Engineering design and project management fees.
- AHU controls upgrade to ensure complete system coordination for efficiency and optimization- Retro-commission and rebalance systems, to provide appropriate ventilation and air change rates for the spaces served.
- Replace all AHU chilled water valves with Delta P chilled water valves
- Implement chilled water system control algorithm based on demand forecast daily maximum demand and outdoor air enthalpy. Implement variable speed controls on chilled water pumps and cooling towers.
- Heating system controls to ensure complete system coordination for efficiency and optimization - Implement boiler efficiency monitoring and control systems, variable speed pumps and controls
- Replace terminal unit controls with DDC systems to control air flow demand based on occupancy and temperature
- Evaluate, all AHU dampers, actuators, coils, and valves and repair or replace to meet maximum performance and efficiency

Sub-recipient: **J&B Group, Inc**
Dollar amount: **$290,187**
Performance Period: **July 2010 – September 2011**
Description of Project: Upgrade 1,174 light fixtures and ballasts; Replace 3 dock doors with insulated concrete wall; Install 2 Smart Meters for electrical metering and monitoring; Install 80 ton air-handling/cooling system; Install 74 new VFD motors on 19 refrigeration evaporators; Hot Water System Upgrade – Replace 6 hot water heaters; Upgrade 150 light fixtures and ballasts.

Sub-recipient: **National Sports Center Foundation**
Dollar amount: **$242,500**
Performance Period: **July 2010 – December 2010**
Description of Project: Blaine NSC Rinks 1 through 4 – Replace natural gas fired dehumidification technology system with “free dehumidication” refrigeration waste heat recovery system technology.

Sub-recipient: **SuperValu Inc**
Dollar amount: **$416,207**
Performance Period: **August 2010 – September 2011**
Description of Project: Led Door Lighting, Walk in ECM’s, Re-Commissioning in 22 stores.

Sub-recipient: **YWCA of Minneapolis**
Dollar amount: **$21,146**
Performance Period: **July 2010 – December 2010**

Description of Project: Replace 24 existing MH fixtures with fluorescent fixtures, install 4 sensors with guards, and upgrade 776 existing fluorescent fixture/lamps with lower wattage fluorescents in Midtown YWCA. Upgrade 320 existing fixtures/lamps with lower wattage CFL's, T-8 fluorescents, and LED's in Downtown YWCA.

Sub-recipient: **Coastal Seafoods**
Dollar amount: **$5,825**
Performance Period: **August 2010 – March 2011**
Description of Project: Install heat reclamation unit to preheat input to the water heater.

Sub-recipient: **City Center Retail/AG 800 Washington, LLC**
Dollar amount: **$148,911**
Performance Period: **July 2010 – March 2011**
Description of Project: Convert pneumatic controls on 32 air handler units to digital controls. Install variable speed drives on motors of 32 air handling units.

Sub-recipient: **Aitkin Iron Works**
Dollar amount: **$26,950**
Performance Period: **July 2010 – December 2010**
Description of Project: Replace 220 high bay MH fixtures with T8 fluorescent high bay fixtures.

Sub-recipient: **Arrowhead Promotion and Fulfillment Co. Inc.**
Dollar amount: **$25,445**
Performance Period: **July 2010 – December 2010**
Description of Project: Replace 130 T12 - 40W lamps and magnetic ballasts with T8 28W lamps and electronic ballasts; Replace 9 - 40W exit fixtures with 4W LED exit fixtures in Administration and Processing Building. Replace 134 high bay 400W MH fixtures with T5 234W high bay fixtures with occupancy sensors. Replace 11 - 40W exit fixtures with 4W LED exit fixtures in Warehouse and Production Building.

Sub-recipient: **Caledonia Care and Rehab**
Dollar amount: **$41,936**
Performance Period: **August 2010 – March 2011**
Description of Project: Upgrade HVAC system temperature controls and steam boiler burner controls. Change out T12 fluorescent lamps and magnetic ballasts in 265 fixtures to T8 lamps and electronic ballasts.

Sub-recipient: **Habitat for Humanity of South Central Minnesota**
Dollar amount: **$1,075**
Performance Period: **July 2010 – December 2010**
Description of Project: Install 5 ceiling fans and 1 programmable thermostat.

Sub-recipient: **3M Company**
Dollar amount: **$133,750**
Performance Period: **July 2010 – June 2011**

Description of Project: Convert four steam turbines to automated governor speed control systems. Install a heat recovery system for five boilers to recover energy lost to blowdown.

Sub-recipient: **Wausau Paper Mills LLC**
Dollar amount: **$59, 614**
Performance Period: **June 2010 – January 2011**
Description of Project: Furnish and install 2 each: WWTP Lift Station VFD's and associated wiring, controls and programming. Lighting upgrades for Paper Crane Bay, Shipping Area, Core Cutter, Hydro, and Finishing Areas.

Sub-recipient: **Douglas Machine Inc.**
Dollar amount: **$21,388**
Performance Period: **September 2010 – February 2011**
Description of Project: Remove & Replace 200 ea. 400 W Metal Halide light fixtures with 200 ea. 168 W motion controlled high bay fluorescent light fixtures.

Sub-recipient: **Seagate Technology, LLC**
Dollar amount: **$58,400**
Performance Period: **October 2010 – March 2011**
Description of Project: Install waste heat recovery system to capture heat from the site nitrogen generation plant and deliver it to the reverse osmosis/deionization water generation plant.

Sub-recipient: **North Memorial Health Care**
Dollar amount: **$100,000**
Performance Period: **February 2011 – December 2011**
Description of Project: Recommission VAV boxes, modify RTUs and EF schedules, provide OA and CO2 monitoring at 5 RTUs, install discharge air temp reset; Modify humidification boilers schedule; Integrate HW pumps, VFD, snowmelt sensors, and outdoor reset controls; Energy management system integration and upgrades; Replace 32W T8 lamps with 25W T8 lamps, install day lighting controls; Install power factor correction to bring power factor to 90%+.

Sub-recipient: **Simon Property Group, L.P. dba Miller Hill Mall**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

Sub-recipient: **Gander Mountain**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

Sub-recipient: **Park View Terrace Apartments**
Dollar amount: **$0.00**
Performance Period**:** **Dropped Out**
Description of Project:

Sub-recipient**: United States Steel Corporation**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

Sub-recipient: **YMCA of Greater St. Paul**
Dollar amount: **$80,574**
Performance Period: **July 2010 – April 2012**
Description of Project: Lighting replacements and energy management systems installation in 7 metro YMCAs.

Sub-recipient: **Mall of America**
Dollar amount: **$500,000**
Performance Period: **July 2010 – April 2012**
Description of Project: Replace 3,285 existing High Pressure Sodium lighting fixtures in existing parking structures with LED fixtures; Replace 1,241 existing Metal Halide lighting fixtures in existing parking structures with LED fixtures; Replace 110 existing Metal Halide lighting fixtures in existing parking structures with AME2 Induction Fixtures; Replace 184 existing Metal Halide lighting fixtures in existing parking structures with AME2 Induction Fixtures; Replace 357 existing High Pressure Sodium lighting fixtures in existing parking structures with AME2 Induction Fixtures; Replace 508 existing Metal Halide lighting fixtures in existing parking structures with AME2 Induction Fixtures; Replace 60 existing Wall Pack lighting fixtures in existing parking structures with Wallpack Induction Fixtures.

Sub-recipient: **Aeon**
Dollar amount: **$170,471**
Performance Period: **July 2010 – December 2011**
Description of Project: Lighting upgrades in seven apartment complexes.

Sub-recipient: **Life Care Medical Center**
Dollar amount: **$24,655**
Performance Period: **July 2010 – April 2012**
Description of Project: Replace air handler motors with VFD's to control 60 HP.

Sub-recipient: **Davisco Foods International, Inc**
Dollar amount: **$284,418**
Performance Period: **September 2010 – August 2012**
Description of Project:
Install low pressure steam control package, removable heat coils, flash steam recovery system, condensate tank/pump set, and steam separator package and steam trap stations; Replace 374 HID light fixtures with T5 fluorescent fixtures and occupancy sensors; Install air-to-air heat exchanger to recover waste heat from steam heating system to provide heat to lactose dryer; Install E-Tech condensing stack economizer for plant boiler; Install O2 trim control system on plant boiler in the LeSueur Cheese Plant.

Replace and/or upgrade 134 existing HID lights with new energy efficient T-5 lights and occupancy sensors in LeSueur Food Ingredients Plant.
Replace or upgrade 134 existing T12 and HID lights with efficient T8 lights and occupancy sensors in Nicollet Food Ingredient Plant.

Sub-recipient: **Northern Plains Dairy**
Dollar amount: **$65,522**
Performance Period: **September 2010 – April 2012**
Description of Project: Replace 430 HID light fixtures with T5 fluorescent fixtures with electronic ballasts.

Sub-recipient: **Four Crown, Inc**
Dollar amount: **$82,366**
Performance Period: **November 2010 – April 2012**
Description of Project: Lighting upgrades in 61 stores throughout the Twin Cities Metro.

Sub-recipient: **LeSueur, Inc**
Dollar amount: **$95,000**
Performance Period: **November 2010 – March 2012**
Description of Project: Insulation of process equipment-add custom fit removable insulation to sidewalls, tops, and doors of furnaces, transport vessels, and metal holders; Make up Air Control System, airflow reduction via 23 VFD's, 2 MUA burners control by room temperature; Heat Recovery System to recover thermal energy from exhaust to pre-heat combustion air for 10 furnaces.

Sub-recipient: **Cambria**
Dollar amount: **$113,376**
Performance Period: **November 2010 – August 2012**
Description of Project: Add sensors and controls to 273 warehouse light fixtures; Lighting Upgrade - replace 291 existing HID light fixtures with new T-5 lamp fluorescent fixtures.

Sub-recipient: **Chippewa Valley Ethanol Company LLLP**
Dollar amount: **$500,000**
Performance Period**: July 2010 – September 2011**
Description of Project: Regenerative Thermal Oxidizer (RTO) Heat Recovery Project to include all design, demolition, material & equipment (heat exchangers, fans, pumps, piping, insulation, valves, tanks, etc.,) labor, installation, instrumentation, controls, etc., for complete construction and commissioning of heat recovery system.

Sub-recipient**: Honeywell**
Dollar amount: **$268,750**
Performance Period: **July 2010 – June 2012**
Description of Project: Compressed Air Improvements - Install 250 HP VSD compressor, drier, filter, central controls and interfaces, 2000 gal receiver, mixers, pressure/flow controller, and repair leaks; Variable Speed Chiller Installation - Install new variable speed 600 ton chiller, controls, electrical, piping/pump revisions, and demolition; High

Efficiency Hot Water Boilers – Replace 3 steam to hot water heat exchangers with new high efficiency condensing hot water boilers including controls, pumps, piping revisions, electrical, and demolition.

Sub-recipient**: Pequot Tool & Mfg., Inc.**
Dollar amount: **$47,000**
Performance Period: **June 2010 – April 2012**
Description of Project: Replace 250 T12 2L HO 8ft light fixtures with T8 4 lamp strip fixtures and replace 25 400W MH fixtures with T8 6 lamp Fbay fixtures; Replace existing QMB-25 air compressor with a new QSI-370 PowerSync compressor. Use existing QMB-25 for backup. Increase size of air dryer filters and condensate drains for new compressor.

XII. ATTACHMENTS:

- Minnesota Success Stories: St. Johns Hospital

Trillion BTU

DOE Award Number: DE-EE0000164
Market Title: Commercial & Industrial
Date: December 28, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138 Article 4, Section 1 of the 2009 Minnesota State law states:

  (a) The commissioner shall award a grant to a port authority located in the electric service area of the electric utility with the largest number of commercial and industrial customers in this state for a program to provide for the design, financing, and installation of energy efficiency improvements and renewable energy systems in commercial facilities, industrial facilities, and facilities owned by a nonprofit organized under section 501(c)(3) of the Internal Revenue Code. Program financing must include a revolving loan fund component.
  (b) Grant recipients may enter into agreements necessary to develop and implement a program under this section. A grant recipient may use up to two percent of the grant award for administrative costs of the energy project.
  (c)A utlity participating in projects receiving a grant under this section is entitled to claim the project's energy savings toward its energy savings gal under Minnesota Statutes, section 216B.241, subdivision 1c.

  The legislature appropriated funds to the St. Paul Port Authority for the purpose of setting up a revolving loan fund available to commercial and industrial facilities. The Saint Paul Port Authority officially launched an innovative program that is one of the first in the nation to use energy conservation as an economic development tool.

  The Port Authority utilized $5 million federal stimulus grant, funds from Xcel Energy as well as local Economic Development Agencies (EDAs) to create a revolving loan fund that helps finance energy efficiency improvements in commercial and industrial businesses and non-profits.

  Minnesota businesses and non-profits voluntarily agree to energy audits paid for entirely by Xcel Energy. Engineering studies follow, providing a blueprint for specific improvements that would reduce a company's energy usage. The monthly loan repayment by businesses is structured to be less than the expected energy savings. This structure will provide the business with an immediate positive cash flow from the project without the use of any of its own capital.
- **Goals:** The overall goal of the Trillion Btu program is to help save one trillion BTUs of energy and increase participation in Xcel's existing commercial/industrial energy efficiency programs. The Program was designed to leverage American Recovery and Reinvestment Act of 2009 (ARRA) funding by matching them with funds from the EDAs

and municipalities in Xcel's service territory to create a RLF; expand EDA's loan programs; and provide technical assistance to participating businesses.

- **Benefits:** By providing funding for this revolving loan fund, the State sought to finance activities that would have the greatest impact on energy savings, renewable energy deployment and jobs created or retained. Additionally, financing programs like revolving loan funds are programs that have the potential to be carried on past ARRA funding and continue to provide economic stimulus through the realization of energy savings.
- **Eligibility:**
    - Eligible Costs:

      Funds authorized under this program are used for loan principal disbursed to eligible borrowers. Grant funds include program income earned and repayments of loan principal received. Program income included interest earned on grant funds held by the grantee, interest payments received on outstanding loan balances, and funds received through recovery actions on defaulted loans and allocated to outstanding interest.
    - Eligible borrowers and facilities:

      Eligible borrowers include: business entities or non-profits exempt from taxes under section 501(c)(3) of the Internal Revenue Code. An eligible facility must be an existing building owned by an eligible borrower.
    - Eligible Improvements:
        - Facility systems optimization (commissioning or re-commissioning);
        - Facility systems control improvements;
        - Lighting efficiency improvements;
        - Heating, ventilation, and air conditioning systems modifications;
        - Exterior envelope improvements;
        - Motor and pump efficiency improvements;
        - Process heat improvements or other improvements with prior written approval from Commerce;
        - Must be identified and recommended in an energy audit performed be an auditor certified to perform energy audits under a utility Conservation Improvement Program plan;
        - Must have a simple payback of no greater than 15 years;
        - Must have a useful life that is greater than its simple payback period;
        - New construction is not eligible.
- **Accomplishments:** Initiated 32 projects totaling over $17,000,000 in construction. Economic stimulus and the realization of energy savings will continue through the revolving loan program beyond the funded project end date.
- **Timeline:** February 2010 – On Going
- **Implementing Partners:** The Department of Commerce works with the St. Paul Port Authority to deliver the Trillion BTU program. Additional partners include Xcel Energy and Economic Development Authorities in Xcel territory.

II. GOALS AND OBJECTIVES COMPARISON

- The approved projects to date are estimated to have generated annual energy savings of 100 Billion TBU's which is 10% of the overall goal of the Trillion Btu Program. The program has increased participation in Xcel's existing commercial/industrial energy efficiency programs. The Program has also leveraged American Recovery and Reinvestment Act of 2009 (ARRA) funding by matching with a greater amount of funding from the EDAs and municipalities in Xcel's service territory than ARRA funds, expanded EDA's loan programs, and provided technical assistance to participating businesses. Goals are being met and the St. Paul Port Authority TBTU Revolving Loan Program has been successful during difficult economic times when businesses have been reluctant to invest. It is also estimated that 647 employees have been retained and 173 construction jobs have been generated as a result of the funding of energy efficiency improvements.

III. PROJECT MODIFICATION

- Due to the success of the TBTU Revolving Loan Program, the original grant has been financially modified to increase funding two times adding $9.972 million to its original $5 million to bring funding to a total of $14.972 million.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- The SPPA TBTU Revolving Loan Program has been able to attract borrowers during a time when many similar programs had met with limited success.
- Initiated 32 projects totaling over $17,000,000.
- Annual estimated energy consumption has been reduced by over 100,000,000,000 BTUs.
- Fully utilized all ARRA funding received through 10/31/12.
- No loan losses have occurred.
- Obtained a greater amount of matching funds than ARRA funds.
- Improved over 6,400,000 building square feet.
- Retained or created 647 jobs at the borrower's locations.
- Created 173 construction jobs.
- Economic Development Association of Minnesota partnership of the year award.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices. The St. Paul Port Authority has been especially diligent in the review and submission of Davis Bacon Payroll forms.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- Businesses and building owners were reluctant to take on debt during the recession and its recovery. It was important to make the process easy for the borrower, to provide positive cash flow and to bring in unbiased third party experts to assure the building owners that the projects are indeed good investments.

VII. BEST PRACTICES & LESSONS LEARNED:

- The Port Authority altered the program early on so that they did not charge interest or have any payments due during the construction period. If payments were required during the build out phase, the promise of immediate positive cash flow would not be true.
- A building owner that has multiple tenants, that pay their own energy bills, will not see a positive cash flow from an investment because the tenants are receiving the benefit of lower energy bills. PACE may be an answer in some situations.

VIII. POST-ARRA PROJECT SUSTAINABILITY:

- Trillion BTU will be able to continue to fund projects well into the future. When all of the ARRA funds are utilized, the program funds will grow from the interest earned on the loans and approximately $3,500,000 will revolve into new projects each year. This should translate into the initiation of over $7,000,000 of new projects each and every year.

IX. COST STATUS:

- Original budget = $5,000,000
- Revised budget = $14,972,000
- Expenditures = $14,972,000
- Balance = $0.00

X. MEDIA AND OUTREACH:

- More than two dozen large seminar presentations have been made. Articles on the program have been in every major newspaper in the area as well as some television coverage. Both US Senators promote the program and have attended media events at projects.

XI. SUB-RECIPIENTS:

Sub-recipient: **St. Paul Port Authority (SPPA)**
Dollar amount: **$ 14,972,000**
Performance Period: **6/30/2010 - Present**
Description of Project: SPPA administers and delivers the Trillion BTU program.

XII. ATTACHMENTS:

- Finance and Commerce TBTU Article
- SPPA Newspaper Article

Emerging Renewables

DOE Award Number: DE-EE0000164
Market Title: Commercial & Industrial
Date: December 21st, 2012
Reporting Period Dates: April 2009 – September 2012

I. PROJECT ACTIVITIES:

- **Synopsis:** Chapter 138, Article 3, Section 6 of the 2009 Minnesota State Laws states:
  Definitions. *(a)For the purposes of this section, the terms defined in this subdivision have the meanings given to them.*
  (b)"Eligible business" means an organization that is engaged in or will engage in the manufacture of renewable energy systems, energy storage systems, or geothermal energy systems for heating and cooling, or components for renewable energy systems, energy storage systems, or geothermal energy systems for heating and cooling.

  Subd. 2. ***Program established.*** *The commissioner shall use stimulus funds under this section to award grants to an eligible business.*

  Subd. 3. ***Grant purpose.*** *The commissioner may make grants to eligible businesses to assist in the development of renewable energy systems, energy storage systems, geothermal energy systems for heating and cooling, and businesses that manufacture components for these types of energy systems in this state.*

  Subd. 4. ***Applications.*** *An applicant shall prepare and submit to the commissioner a written proposal detailing how the applicant will meet the purpose of the grant program and will meet the criteria listed in subdivision 5. An applicant must submit information that demonstrates the financial viability of the eligible business.*

  Subd. 5. ***Selection criteria.*** *When awarding grants, the commissioner shall consider whether the applicant's proposal will:*

  (1) help establish Minnesota as a center for the manufacturing of renewable energy, energy storage, or geothermal system parts and systems;
  (2) leverage both private and other public funds, including federal programs;
  (3) develop renewable energy, energy storage, or geothermal technology supplier activity in this state;
  (4) increase manufacturing that promotes or advances the green economy, as defined in this section 116J.437, subdivision 1; and
  (5) create jobs that will contribute to the green economy as defined in section 116J.437, subdivision 1, including jobs in rural areas and areas with high unemployment.

The purpose of this grant program is to provide funding for a portion of the cost of one or more activity necessary to enable an applicant to enter into the manufacture in Minnesota of an eligible technology, to improve or expand an existing Minnesota manufacturing activity, or to modify a manufacturing facility or activity in Minnesota to enable greater utilization of Minnesota suppliers. By providing funding for this purpose, the State intends to promote improved economic performance of both the direct recipient and its Minnesota suppliers and customers. The number, quality, and sustainability of jobs created or retained in Minnesota will be a primary factor in assessing an applicant's potential to achieve this purpose.

- **Goals:** In providing grants under this program, the State seeks to:
  - Help establish Minnesota as a center for the manufacturing of renewable energy, energy storage, or geothermal system parts and systems;
  - Develop renewable energy, energy storage, or geothermal technology supplier activity in this State;
  - Increase manufacturing that promotes or advances the green economy, as defined in Minnesota Statutes section 116J.437, subdivision 1; and
  - Create jobs that will contribute to the green economy as defined in section 116J.437, subdivision 1, including jobs in rural areas and areas with high unemployment.
- **Benefits:** The benefits of this program included economic stimulus in the state, especially in rural areas and areas with high unemployment. Benefits also include longer-term economic sustainability as this program helps to grow the green economy in Minnesota.
- **Eligibility:**
  - Eligible Applicants: To be eligible to apply, an applicant must be an organization that is engaged in or will engage in the manufacture of renewable energy systems or fuels, energy storage systems, geothermal energy systems for heating and cooling, components of such systems, or equipment for the manufacture of such systems (eligible technologies).
  - Eligible Scope of Work-Period of Performance: An applicant may propose one or more activity necessary to enable the applicant to enter into the manufacture in Minnesota of an eligible technology, to improve or expand an existing Minnesota manufacturing activity, or to modify a manufacturing facility or activity in Minnesota to enable greater utilization of Minnesota suppliers. All work to be performed within a proposed scope of work must be completed no later than June 30, 2011
- **Accomplishments:**
- **Timeline:** October 2009 – September 2012
- **Implementing Partners:** This program was run solely out of the Minnesota Department of Commerce.

II. GOALS AND OBJECTIVES COMPARISON

- By providing funding for this purpose, the State intends to promote improved economic performance of both the direct recipient and its Minnesota suppliers and customers. The number, quality, and sustainability of jobs created or retained in Minnesota will be a primary factor in assessing an applicant's potential to achieve this purpose.

III. PROJECT MODIFICATION

- This program was not modified.

IV. NOTABLE PROJECT SUCCESSES AND ACHIEVEMENTS:

- With the funding from the grant, Silent Power was able to reach several levels of UL certification, which brought them ahead of competitors in the solar industry. This was done through staff increases and the purchase of new computers, electronic test equipment, and various R&D tools, such as oscilloscopes and flukes. This leading edge put Silent Power at the forefront of the energy storage industry so muc so that in the summer of 2012 they received an $8M investment from the Hanwha Group, a South Korean industrial conglomerate. Hanwha planned to co-market Silent Power's OnDemand product with Hanwha SolarOne PV panels in September of 2012.

  In 2012, Silent Power's sales were at $52,000. In 2011, sales increased to $688,070 and for 2012, they are forecasting close to $750,000 in sales. Silent Power is looking forward to their first million dollar year in 2013.

V. PROJECT MONITORING EFFORTS:

- Commerce worked with grantees to ensure compliance and to help grantees meet reporting requirements. Grantees were required to submit monthly progress updates along with their invoices.

VI. RESULTS, MAJOR FINDINGS AND/OR CONCLUSION:

- The successes varied from project to project. Many of the companies are continuing to expand business and sell their products. However, due to changes in the market, it was difficult for all projects to be a success. For example, VEECO developed a CIGS thin film for solar panels. From 2009 to 2011, world PV manufacturing capacity increased from 18GW to 52GW, nearly a 3x increase. In 2011, due to poor economic conditions, the number of PB installations proved less than anticipated, resulting in a condition of large overcapacity with only 28GW demand, and a decrease in module prices from >$1.50/W to <$1/W. No CIGS thin film manufacturers expanded their capacity in 2011 because of the dramatic decrease in module pricing and uncertainty in the PV market in terms of government support and subsidies.

VII. BEST PRACTICES & LESSONS LEARNED:

- This program works best with companies that are well established and have a product that is not only marketable, but is timed right with what is needed in the market at the time. While several of these products will have staying power as renewable energy becomes a larger part of production, some are more dependent upon current market conditions including government incentives. This program was released at a time when there were a number of subsidies available for renewable energy production. As those

subsidies are less appealing or no longer available, demand for the technology will drop until either subsidies are again put in place or the cost is competitive with fossil fuel sources. This will result in more competition along the supply chains where there will be winners and losers.

VIII. POST-ARRA PROJECT SUSTAINABILITY: This program will not continue beyond ARRA.

IX. COST STATUS:

- Original budget: $2,658,000.00
- Expenditures: $2,588,569.88
- Balance:$69,430.12

X. MEDIA AND OUTREACH:

- http://silentpwr.com/blog/2012/07/11/silent-power-announces-8-million-investment-from-hanwha-solar-one/
- http://www.bloomberg.com/news/2012-07-09/hanwha-invests-in-silent-power-for-solar-energy-storage-system.html
- http://www.greentechmedia.com/articles/read/Silent-Power-Hanwha-to-Partner-on-On-Site-Solar-Batteries

XI. SUB-RECIPIENTS:

Sub-recipient: **Veeco Instruments, Inc.**
Dollar amount: **$800,000**
Performance Period: **5/04/2010 – 10/31/2011**
Description of Project/Goals: The grant was used to assist in the timely delivery of a thermal deposition source for the solar market that reduced the manufacturing costs of solar modules. The project involved the purchase of tooling and equipment, and added new personnel for high tech manufacturing and engineering positions.
Veeco Instruments, Inc. is a leading provider of process equipment and metrology equipment solutions used by manufacturers in the data storage, semiconductor, wireless, lighting and solar industries. Prior to the grant, Veeco had already enabled large scale CIGS (copper, indium, gallium, selenide) thin film manufacturing, bringing a highly sought after technology to mass production and supplying over 50% of the world wide CIGS solar cell manufacturers. The goal of the grant project was to assist in timely delivery of product to market and improve economic performance of third generation technology, reducing the production costs to bring the cost of electricity produced by thin film PV on par with that of fossil fuels.

Results: All tasks were completed and the project did not deviate from the intended scope. However, the expected market success did not occur and only seven sources are currently being used by customers today. The lower than anticipated product sales were a result of factors beyond the control of Veeco. From 2009 to 2011, world PV manufacturing capacity increased from 18GW to 52GW, nearly a 3x increase in two years. In 2011, due to poor economic conditions, the number of PV installations proved less than anticipated, resulting in a condition of large overcapacity with only 28GW demand, and a decrease in module prices from >$1.50/W to <$1/W. No CIGS thin film manufacturers expanded their capacity in 2011 because of the dramatic decrease in

module pricing and uncertainty in the PV market in terms of government support and subsidies, thus no additional sources were sold in 2011. The Veeco CIGS metal linear source product line that this funding helped support was terminated in December 2011, and will not be started again until further market demand occurs to adequately support it.

Sub-recipient: **Silent Power, Inc.**
Dollar amount: **$560,000**
Performance Period: **6/30/2010 – 8/31/2012**
Description of Project/Goals: Silent Power, Inc. (SPI) manufactures and markets smart grid solutions for integrating renewable energy systems into the electric grid. The company works with leading-edge electric utilities, commercial businesses and residential homeowners to provide battery-based energy storage solutions which are integrated with grid-connected, renewable energy systems such as solar photovoltaic (PV) or wind turbine systems. The grant was used to support the expansion of manufacturing systems and resources to meet the immediate demands of Utility Systems across the United States.
Results: As a result of the grant project, Silent Power increased staff by 13 full time employees in the engineering and testing departments in order to further develop their products and improve the design. Silent Power purchased test equipment worth approximately $150,000 to ensure that products meet company standards.
With the funding from the grant, Silent Power was able to reach several levels of UL certification which brought them ahead of competitors in the solar industry. This was done through staff increases and the purchase of new computers, electronic test equipment, and various R&D tools such as oscilloscopes and flukes. This leading edge put Silent Power at the forefront of the energy storage industry so much so that in the summer of 2012 they received an $8M investment from the Hanwha Group, a South Korean industrial conglomerate. Hanwha planned to co-market Silent Power's OnDemand product with Hanwha SolarOne PV panels in September 2012.
In 2010, Silent Power's sales were at $52,000. In 2011, sales increased to $688,070 and for 2012, they are forecasting close to $750,000 in sales. Silent Power is looking forward to their first million dollar year in 2013.

Sub-recipient: **Rural Renewable Energy Alliance**
Dollar amount: **$336,000**
Performance Period: **7/28/2010 – 7/31/2011**
Description of Project/Goals:
The Rural Renewable Energy Alliance (RREAL) is a Minnesota-based solar thermal Original Equipment Manufacturer which began manufacturing the patent-pending Solar Powered Furnace in 2007. Organized as a private 501c3 nonprofit corporation, RREAL has developed an innovative solar air heating technology that is increasing the deployment opportunity and applicability of this appropriate technology.

The Rural Renewable Energy Alliance seeks support to improve equipment and tooling, and expand its currently constrained manufacturing facility. To allow for increased market demand and meet production volume targets, RREAL had reached a point where physical

expansion and re-tooling was necessary. Due to constrained space, raw material shipping and handling was cumbersome. In some cases, receipt of raw materials was even weather-dependent, placing further constraints on production volume and efficiencies. Also due to spatial constraints, tooling and jigs had to be set up and torn down to perform specific stages of manufacturing. This had the consequence of inefficiently using staff time, creating potential materials waste and adding the burden of frequent re-calibration of tooling. Finally, the packaging and palletizing of product generated an additional block which interfered with normal manufacturing operation while waiting for freight vehicles. Solar Air Heat is a re-emerging market with extensive development potential, and the Rural Renewable Energy Alliance is poised to continue to take advantage of these expanding market opportunities. Strategic projections included need for increasing manufacturing capacity at a minimum of 200% annually over the next 5 years, creating Minnesota-based manufacturing, engineering, and sales positions.

Grant funding was used to remodel, expand and optimize the manufacturing facility and to purchase, build and install upgraded tools, equipment and fixturing.

Results: As a result of the grant project, RREAL was able to double the size of their manufacturing facility. This expansion allows RREAL to produce a greater volume of panels with less waste. Furthermore, improvements to tooling, fixtures, and work-flow enhance workplace safety and efficiency. The manufacturing facility is now leaner and greener than ever before and will serve as an effective template for RREAL to share with partner organizations across the country that are interested in developing solar thermal manufacturing capacity in their own communities.

As a part of the grant project, RREAL staff added 1438 labor hours and subcontractors added 686 labor hours for a total of 2124 labor hours, or the equivalent of just over one additional Full Time Employee. Grant funding of $199,008 was used to leverage additional funding of $223,742 for facility upgrades and $10,000 for design costs. Grant funding of $112,411 was used to purchase tools, equipment and fixturing.

Sub-recipient: **tenKsolar, Inc.**
Dollar amount: **$503,300**
Performance Period: **7/23/2010 – 9/30/2011**
Description of Project/goals: tenKsolar is a privately owned company established in early 2008 to develop, manufacture, and market solar photovoltaic products based on wholly owned proprietary technology protected by patent applications. A development operation was established early in 2009, in Bloomington, MN, where the core management, engineering and operations team developed the business and optimized the product design and manufacturing processes that produce it. The first generation product is currently undergoing certification testing for UL, CSA, and IEC listing. The proposed use of grant monies is to increase production capacity and process capability improvements needed to efficiently manufacture these products in high volume
Results: Grant funding was used to leverage private funding for 7535 labor hours, or the equivalent of over three additional Full Time Employees, for highly skilled engineering and professional staff positions. TenKsolar purchased test equipment worth

approximately $485,000 to increase production capacity and process capability improvements.

Sub-recipient: **Precision Coatings, Inc**
Dollar amount: **$382,700**
Performance Period: **7/30/2010 – 9/30/2011**
Description of Project: This project focuses on a critical step in manufacturing durable wind turbine components—application of corrosion-resistant protective coatings, including metalizing and painting, to enhance corrosion resistance. Grant funds will be used to Purchase and install production and testing equipment and supplies in order to expand capacity to provide corrosion-resistant coatings for wind turbine components at the Precision Coatings, Inc. St. Paul production facility.
Founded in Minnesota in 1988, Precision Coatings, Inc. (PCI) is full-service applicator of thermal spray coatings, non-stick coatings, and specialty paints. PCI serves many industries, including diesel engine manufacturing, packaging equipment, pumps, food processing and energy production. PCI is Minnesota's leading thermal spray coating provider and is a regional leader as well.
Thermal spraying is an industrial coating process that uses a heat source to melt coating materials, then propels the material in tiny droplets onto the part substrate. **This "spray welding" process is known by many names, including Plasma Spray, High-Velocity Oxygen Fuel (HVOF), Arc Spray, Flame Spray, and Metalizing.** Thermal sprayed coatings typically are applied to metal substrates, but can also be applied to some plastics.
PCI has been selected from the competitive field to provide coating services to the largest wind turbine Original Equipment Manufacturers (OEM) in the world beginning in 2010. This metalizing and painting is for various wind turbine components that require superior corrosion protection to achieve a 20-year life. PCI is also working with other direct customers who sell to other major wind turbine OEMs. PCI is positioned to become the primary regional supplier for these specialty coatings and the only supplier in Minnesota.
To offer these services competitively PCI needs to modify/expand a portion of its existing production facility and add specific production equipment. The new production capability will handle the projected demand for at least the next six years. The revenue increases projected from this expansion project are $802,000 for Year 1, $1.43 million for Year 2, and $1.435 million for Year 3. Thereafter, revenue is expected to grow by 10-25 percent per year for the next 7 to 10 years. This manufacturing activity will retain one (1) existing job and add three (3) jobs to 2010 employment ranks at the onset, and is anticipated to add two more jobs in Year 3 to handle additional demand.
Results grant funding was used toward approximately 7,000 labor hours for skilled operators, or the equivalent of over three Full Time Employees. Grant funds were used to purchase $7,600 in equipment and $7,500 in professional engineering services.

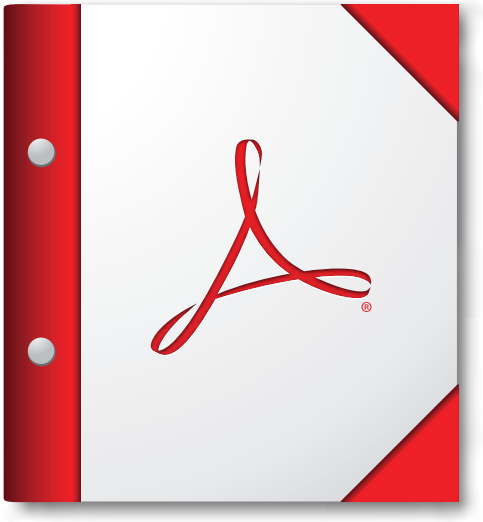
Sub-recipient: **Outland Renewable Energy, LLC**
Dollar amount: **$76,000**
Performance Period: **12/17/2010 – 8/31/2012**
Description of Project: Five farmers in southwest Minnesota formed Outland in 2005. Today, Outland develops, owns, operates, and maintains renewable energy projects in

partnership with landowners, rural communities, and municipalities throughout North America. The company has become one of the largest third-party providers of operations & maintenance (O&M) services for wind turbines in the U.S. Outland has approximately 140 employees, of which about 100 are O&M technicians who work directly on wind turbines.
Among its other business activities, Outland will soon process semi-manufactured components into finished components of a product that is required to generate electricity from wind. Specifically, Outland will process bearings and shafts into components of gearboxes, which in turn are essential components of wind turbines.
In a multi-phase process, Outland is investing in the future of rural Minnesota's renewable energy economy by building wind turbine gearbox manufacturing capabilities at its Canby, Minnesota facility. A leading gearbox manufacturer, Hansen Transmissions NV of Belgium, has chosen Outland to be its North American service provider. This role provides Outland with a massive business opportunity, but Outland must bear all costs of building the facility necessary to perform any work under the Hansen partnership. The work on that facility is as follows:
Phase 1: Outland has built a clean room in which newly-hired gearbox technicians can process and assemble semi-manufactured products into components of gearboxes. \
Phase 2: Outland will build the necessary work space to house the personnel necessary to hire, train, equip, keep safe, and supervise the newly-hired gearbox technicians.
Phase 3: Outland will strengthen its ability to recruit and retain high-quality gearbox technicians by making the facility a more comfortable place to work, through such steps as building adequate parking and break space.
Results: Outlands HR manager attended seven industry job fairs to recruit candidates and interviewed 58 candidates in Canby, MN. Outland trained 20 individuals in Hansen and Winergy gearbox repair techniques and procedures. To Outland's knowledge, Outland has more Hansen/Winergy-trained technicians than any other company in the entire United States. d. Having this training is a big deal for our employees, as Hansen and Winergy are the #1 and #2 manufacturers of gearboxes in the entire world, and the training is an industry-recognized training that our employees will be able to carry with them throughout their careers, whether they stay with Outland or not. Outland completed training for nine employees on rigging and signaling of heavy-lift cranes, such knowledge to be used in the process of maintaining and repairing gearboxes (among other wind turbine components).

Sub-recipient: **Cardinal Solar Technologies, LLC**
Dollar amount: **$0.00**
Performance Period: **Dropped Out**
Description of Project:

XII. ATTACHMENTS:

- No attachments.



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