America Saves: Energizing Main Street Small Businesses

2015 Building Technologies Office Peer Review

Demonstrate a community-based approach to small business and non-profit participation in utility energy retrofit programs and district-based sustainability initiatives.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

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Project Summary

Timeline:

Start date: 10/1/2013

Planned end date: 9/30/2016

Key Milestones:

1. Data collection pilot identified; 7/2014
2. Field survey tool complete; 7/2014
3. Launch Main Street engagement; 4/2014

Budget:

Total DOE $ to date: $506,327

Total future DOE $: $1,493,673

Cost Share: $2m

Target Market/Audience:

Small business customers in Main Street communities and older urban commercial cores.

Key Partners

National Main Street Center
Building Energy
Energy Center of Wisconsin
NREL
Lend Lease
EnergyRM

Project Goal:

- Demonstrate a community-based approach to business engagement that enhances small-business participation in energy retrofit programs.
- Evaluate technology-based tools to reduce cost and technical barriers to retrofit delivery in small businesses.

Purpose and Objectives

Problem Statement: Small businesses and small commercial buildings are underserved in the energy efficiency marketplace. Cost-effective delivery mechanisms are needed that leverage technical resources to provide no- and low-hassle solutions.

Target Market and Audience: Small businesses and owners of small buildings represent the great majority of commercial properties in the US. This project targets 7 use types that represent more than 2TBtu of annual energy consumption. The audiences are owners, business districts, and energy utilities that seek cost-effective ways to realize energy efficiency.

4.4 million small buildings

5.9 million small businesses

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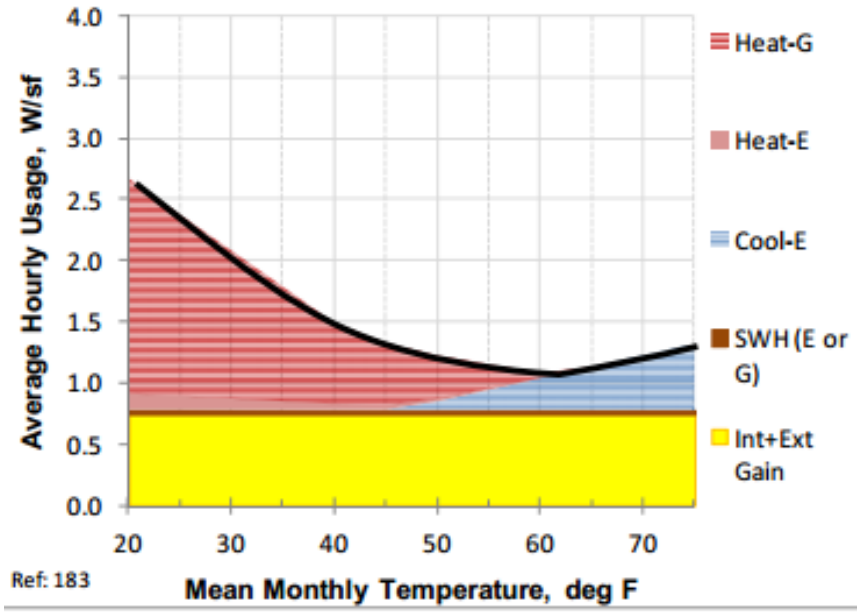
Purpose and Objectives

Impact of Project: This project is intended to create a model for retrofit implementation in millions of small businesses nationwide, by aligning small businesses and utilities through large-scale data acquisition, cost-effective building analytics, and community-based retrofit delivery.

1. Output: Collect and analyze building-specific energy consumption data from at least 5,000 small commercial buildings and businesses located in traditional business districts across at least five climate zones.
2. Metrics – Impact Path:
   a. Award Period: 5,000 businesses analyzed to target average 20% EE improvement.
   b. Intermediate (3-6 yrs): Regional pilot projects, conducted with the financial support of local utility partners, stimulate $50 million in energy conservation investments and save approximately 500 Billion Btu of site energy annually.
   c. Long-term (6+ yrs): Millions of small businesses save up to $30 billion per year in energy.

Approach

- Test national data standards that enable automatic collection of energy data from thousands of small commercial buildings;
- Evaluate low-cost applications that can assess the energy savings potential of numerous small commercial buildings within a traditional business district;
- Identify and promote national best practices in existing utility-supported retrofit programs that currently focus on small buildings and businesses;
- Deploy, test, and validate scalable, low-cost assessment and management tools for local program partners in regional pilot projects to achieve average energy savings in small commercial buildings of 20% or more.



Approach

Step 1

- **Data Collection**
  - Physical whole building/use data + signed utility authorization form

Step 2

- **Audits**
  - Partner with local utility or energy efficiency provider to conduct in-person, basic audits to complement Energy RM remote analysis.

Step 3

- **Feedback**
  - Return high-level reports to participating businesses summarizing building data, energy data, Energy RM analysis and in-person audit.

Step 4

- **Retrofits**
  - Facilitate and track implemented retrofits using Lend Lease project management guidance and oversight.

Approach

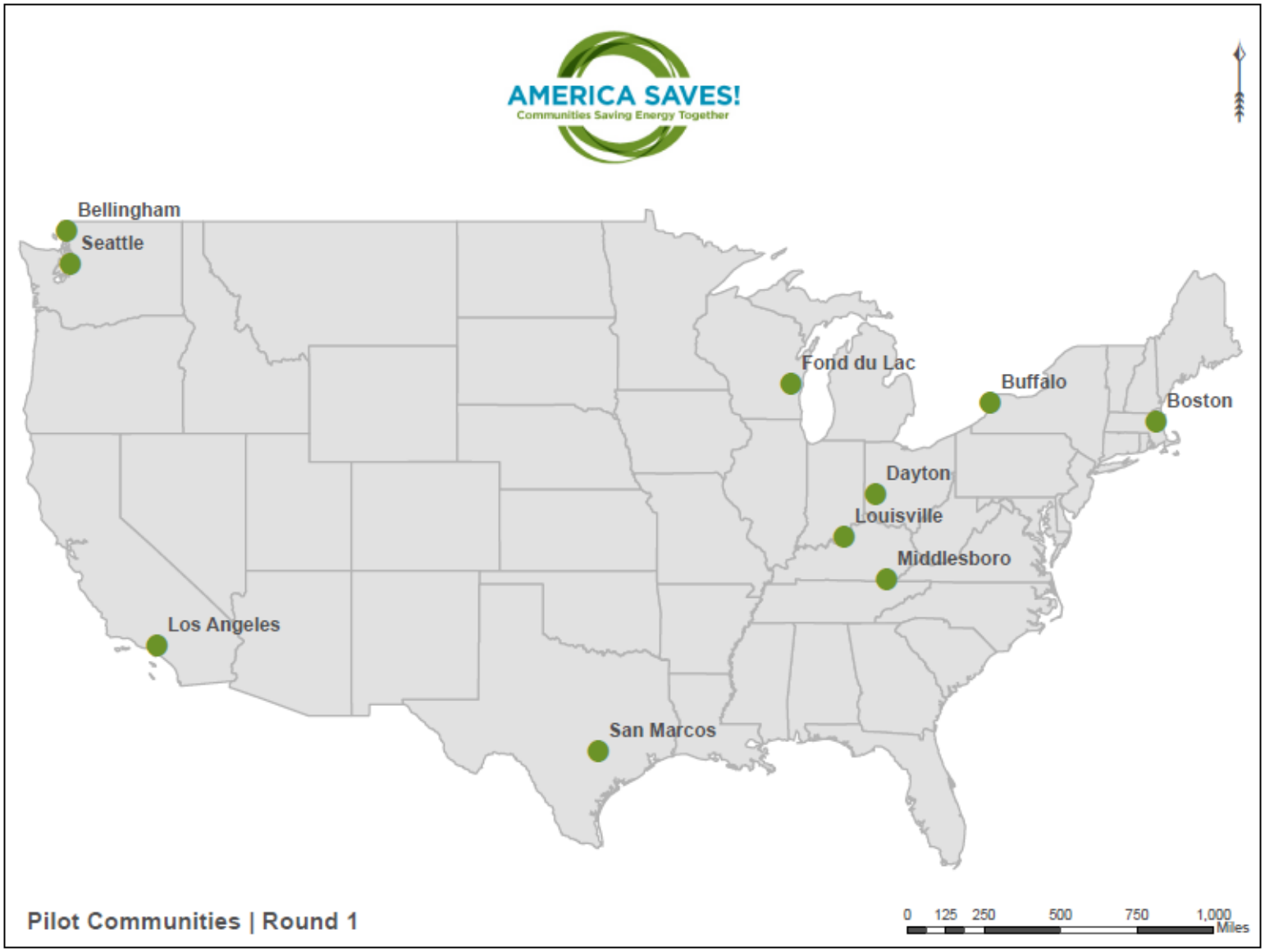
Key Issues:

- Technical and financial barriers for small businesses to adopt energy efficiency.
- Lack of cost-effective approaches for utilities to deliver EE to small businesses.
- No standardization of utility data acquisition and formatting.

Distinctive Characteristics:

- Create energy conservation relationships throughout the National Main Street Center's network – focus on district (aggregation) approach.
  - Engage small businesses in the Network with new content and resources.
  - Capitalize on the Preservation Green Lab's expertise in assessing the contributions that older buildings make to their communities.
- Design flexible engagement tools to work with a variety of utilities and their data.
- Leverage existing programs to analyze energy and finance building energy efficiency projects.
- Drive down the cost of measuring energy savings through innovative technologies

Progress and Accomplishments



Progress and Accomplishments: Lessons Learned

Data collection continues to be a greater challenge than anticipated.

- Existing national standards such as Green Button aren't commonly used.
- Utilities are protective of the security of customer utility data.
- Establishing these data sharing agreements takes considerable time.
- Leverage utility agreements by expanding the pilots to nearby districts.
- Some districts aren't able to participate yet due to uncooperative utilities.

Customer uptake varies by market

- Urban businesses - message fatigue
- Rural districts limited access to energy efficiency programs.
  - 1st opportunity for many businesses to participate.
- Business owners trust community leader more than volunteers.
- Districts will initiate local partnerships.
- Grad students create innovative solutions and tools.

Energy Efficiency Program Administrators

- Organic way to efficiently grow the market; leverages existing agreements, training, and procedures.
- Provides additional building and analysis data.
- *America Saves* provides access to district customers
- Study, facilitate, and enhance existing retrofit delivery models.

Progress and Accomplishments

Accomplishments:

- 36 completed retrofit projects in Downtown Fond du Lac's program.
- Data-acquisition & utility engagement pilots in 5 regions: WI, TX, WA, KY/OH, MA.
- Partnerships with Seattle City Light, Alliant, & Louisville Gas and Electric.
- Initial validation efforts of First View show that its analytical engine identifies end use loads with more than 90% accuracy.
- Pilot partnerships w/ 3 energy efficiency programs.
- Data exchange arrangements & protocols with 11 utilities.
- Secured data warehouse and developed standardized data collection format.
- Refined engagement and data platform, with input from pilot communities, utilities, and energy efficiency program administrators.

Progress and Accomplishments

Market Impact:

- Partnerships with Main Streets, CDCs (Community Development Corporations), business improvement districts (BIDs), EcoDistricts, and CBOs have tested different engagement models for small business customers.
- Main Street network > 1,200 communities (neighborhood, town, region, state, or urban neighborhood scale). Network provides medium for success stories to go viral. NMSC maintains outreach with 30 programs, with new inquiries every week.
- Sign ups & initial market data for 40+ business districts
- Focus groups with 5 utility service providers
- Cross collaboration among engagement models has encouraged innovation.
- Utilities are increasingly amenable to district requests for 3rd-party data access.
- Small districts have existing relationships with potential partners and utilities.

- Regional programs offer path to scale *America Saves* throughout region
- Validation & refinements of data analyses improve remote energy auditing, increasing the reliability and consumer confidence of future savings analyses.
- Enthusiastic early adopters tell their neighbors.

Project Integration and Collaboration

National Trust *for* Historic Preservation
Preservation Green Lab

EnergyRM | Energy Resource Management Corp.

National Main Street Center
a subsidiary of the National Trust *for* Historic Preservation

ENERGY CENTER OF WISCONSIN

BUILDING ENERGY™

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Lend Lease

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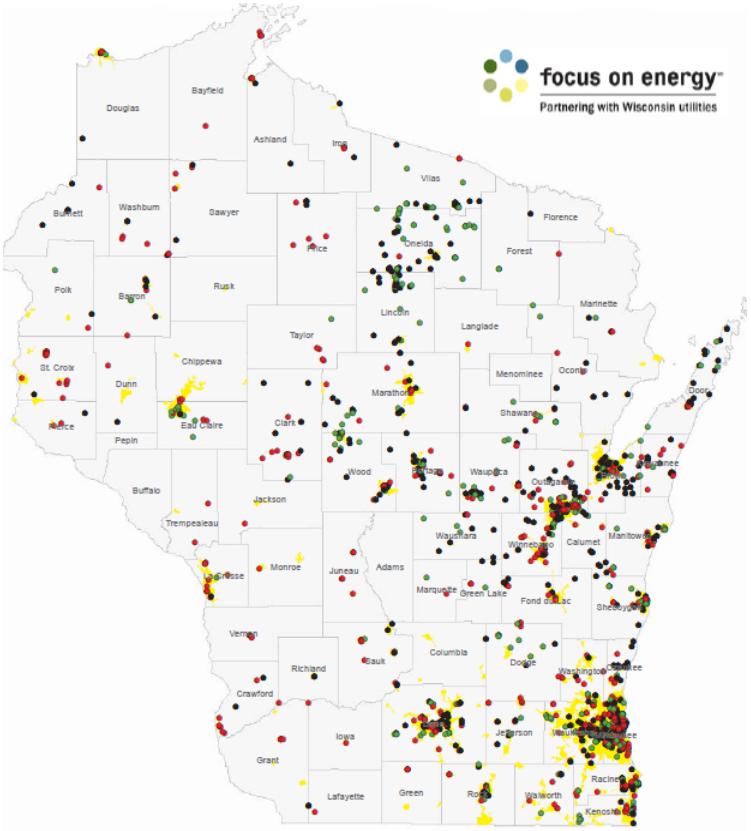
Project Integration and Collaboration

Project Integration:

- *Education & Outreach:* NTHP web development, stakeholder engagement practices, branding.
- *Community Engagement:* NMSC & ECW outreach and focus groups identifying best practices for small business customers.
- *Utility Engagement:* ECW & NTHP developing pilot programs for data collection & engagement.
- *Data Collection & Analysis:* NREL, BE & EnergyRM developing data platform and analysis protocol.
- *Local program partners:* Additional building & delivery data improve remote analysis & saving calculations.
- *Scalability*: Project team tracking projects' value propositions, ROI, costs of goods, transaction costs, & overhead. Regularly monitor & analyze procedures for data collection, remote energy analysis, and financial transactions remove operational waste and foster capacity building.



FOCUS ON ENERGY SMALL BUSINESS PROGRAM URBAN & RURAL CUSTOMERS

Project Integration and Collaboration

Communications to Date:

- National Main Street Conferences
- EcoDistricts Summit
- USGBC GreenBuild
- National Preservation Conference
- California Preservation Foundation Conference
- Dayton Green Expo
- Heritage Ohio webinar
- Miami AIA presentation
- Community presentations:
  Middlesboro, Boston, Louisville, Buffalo, Georgetown & San Marcos TX, Piqua & Dayton OH

Next Steps and Future Plans

Continue to collect data and establish baseline energy use throughout pilot communities.

- Integrate Green Button protocol – ready for potential increased adoption rates.
- Expand pilot program through established regional partners.
- Test of community-scale EE analysis and delivery in diverse contexts

Expand the validation efforts to additional building types and climate zones.

- Continue studying accuracy of the EnergyRM tool for remote auditing.
- Establish/track baseline energy use over time and by end use in districts' buildings.

Continue to customize, enhance, & test survey tool, apps, and dashboards.

- Platform-streamline retrofit process on a district scale to lower implementation cost.

Facilitate and track implemented retrofits

- Develop economically viable packages of energy efficiency measures/turnkey retrofits
- Establish cost database of installed measures.
- Continue to research and test different financing models.
    - *Note: Project team includes experience in advancing Metered Energy Efficiency Transaction Structure (MEETS) policy.*
- Verify pilot results, inc testing of RMV on ~10 existing retrofits.

REFERENCE SLIDES

Project Budget

Project Budget: The budget below is based on past expenses and approved budget at the time of this presentation submittal. A budget modification was approved in March 2014 and an extension of phase one was signed in Dec 2014.
Variances: Phase 1 expended $1,248,339 less than the originally planned budget of $2,309,489. A budget modification to move surplus phase 1 funds into phases 2 & 3 is in the approval process now. The project plan was modified to extend the data collection and in kind contribution throughout the three phases, instead of weighting 75% of the work in the first phase.
Cost to Date: 27% of the project budget has been expended to date.
Additional Funding: Foundation and in-kind funding (cost share): $554,823

Budget History					
10/01/2014– FY2014 (past)		FY2015 (current)		FY2016 – 9/30/2016 (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
$506,327	$554,823	$476,462	$476,462	$372,073	$372,073

Project Plan and Schedule

Project Start: 10/1/2013 Project End: 9/30/2016

Year 1

- Project Management Plan
- Automate Data Collection
- Engage Main Streets and business districts
- Establish Utility Pilot Location(s)

Year 2

- Continue to engage business districts and implement pilot program
  - Delayed market uptake to develop products & create alt data acquisition methods.
- Measure Baseline Energy Use
- Target Energy Saving Packages
- Evaluate Potential Savings
- Validate Technology
- Verify Utility Pilot Results

Year 3

- Expand Utility Pilot Program
- Verify Overall Program Results
- Project Management and Reporting

Project Plan and Schedule

Go/No-Go Decision Points

Task Name
PHASE 1 GO/NO-GO DECISION:
The project has made significant progress towards the following Phase 1 goals:
1. The project has implemented an information system to collect, store and analyze energy data from small commercial buildings, including customer consent, building characteristics, and utility billing data.
2. The project has collected data from at least 1000 sites in one climate zone, and is making progress towards the goal of 5000 sites in at least five climate zones.
3. At least one utility program that has committed incentives to a district-based energy conservation program and has agreed to pilot data collection and analysis in small commercial buildings in the district.

Task Name
PHASE 2 GO/NO-GO DECISION:
The project has made significant progress towards the following Phase 2 goals:
1. The project has established baseline energy performance of at least 1000 sites including at least three target types of small commercial buildings.
2. Using the data warehouse, the project has determined strategies for cost effective energy savings in at least three target types of small commercial buildings.
3. The project has quantified the potential energy savings of each surveyed building in at least one participating commercial district.
4. The project has tested at least one RMV product to validate the applicability of the approach within at least one building type.

Project Plan and Schedule