



## Energy Management Package Demonstration Factsheet

### The Package

While buildings smaller than 50,000 square feet account for nearly half of the energy used in US commercial buildings, energy efficiency programs to-date have primarily focused on larger buildings. Interviews with stakeholders indicate interest in energy efficiency from the small commercial building sector, provided solutions are simple and low-cost. In this approach, HVAC contractors deliver energy management services to small commercial buildings as part of service contract offerings. The energy management package (EMP) developed includes five technical elements: benchmarking and analysis of monthly energy use; analysis of interval electricity data (if available), a one-hour onsite walkthrough, communication with the building owner, and checking of results. This data-driven approach tracks performance and identifies low-cost opportunities, using guidelines and worksheets for each element to streamline the delivery process and minimize the formal training required. This energy management approach is unique from, but often complementary to conventional quality maintenance or retrofit-focused programs targeting the small commercial segment.

### The Business Model

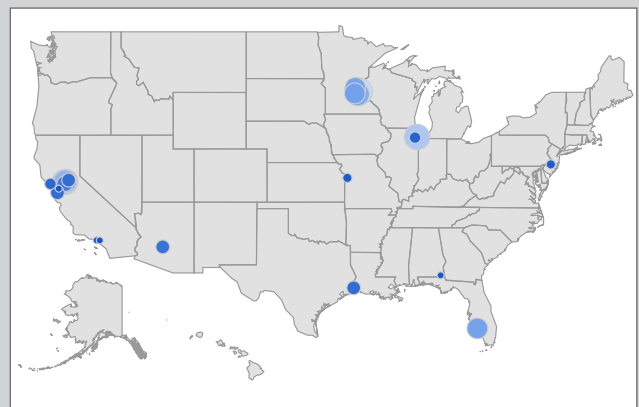
The Energy Management Package is designed to be delivered by HVAC contractors as part of a maintenance contract. Because HVAC contractors already serve small commercial clients, the transaction cost to market and deliver energy management services can be reduced to the order of hundreds of dollars per year by adding this service to conventional offerings. This business model enables the offering to benefit the contractor and client even at the modest expected energy savings in small buildings. Results from a small-scale pilot of this approach validated that the EMP could be delivered by contractors in 4-8 hours per building per year, and that energy savings of 3-5% are feasible through this approach.



### The Demonstration

The 2014 demonstration of the Energy Management Package was designed to refine the business model for the package: specifically, to validate whether contractors and their clients find value in this offering. 16 partner contractors nationwide identified a total of 24 sites for the demonstration. Sites included office, retail, food service, and food sales buildings, ranged from 2,000 to 49,000 square feet and totaled over 400,000 square feet.

The majority of demonstration sites are owner occupied, which was preferred, with the remainder having a single tenant. A number of contractors chose to include their own office buildings as demonstration sites to pilot the EMP.



Demonstration sites identified by partner contractors. Circle size scales with building floor area.

# Energy Management Package in Action

## Economics of the Business Model

Benefits to the contractor include:

- Value-add to service contracts
- Differentiation relative to competitors
- Strengthen customer relationships
- Credibility
- Additional service/labor opportunities

Benefits to the customer include:

- 3-5% energy savings
- 200-900\$ annual utility cost savings

**WHY WOULD AN HVAC CONTRACTOR OFFER The Package?**

How does it pencil out?

- + \$300 Recruitment of an another customer
- + \$200 Premium on contract
- = \$500 Total revenue
- \$400 Labor cost (8hrs, mostly salaried staff)
- = \$100 Profit per year for each customer

- Add value to service contracts through energy savings and strengthen customer relationships/dependence on your firm
- Differentiate your firm
- Gain credibility through program affiliation
- Identify additional service opportunities

## Contractor Experiences

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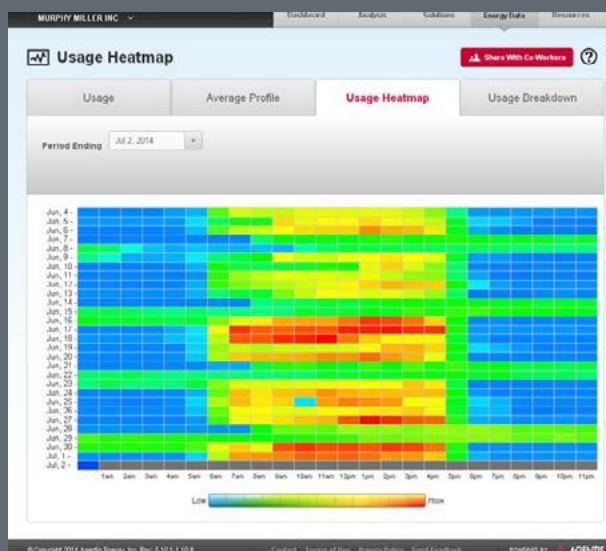
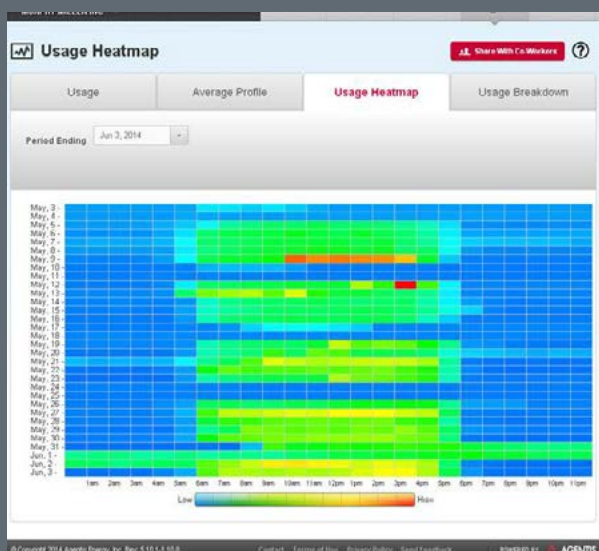
"This has been a great learning experience. In the beginning, it was hard to attract a customer. Now I am utilizing energy saving opportunities for every customer I am involved with, which has also helped our customers.

I've noticed the energy usage has skyrocketed in the last month, month and a half at the building that I've been monitoring, so I've now had to actually go and find out what's going on, because it's almost doubled in the last month and a half. So I have a tech scheduled to go check that out and I'll find out next week. The energy use now is the highest it's been in the last three years: last year at the same time frame was way lower. So something's going on, we just have to figure out what's going on. I know a new unit was put in around December, and it brought the energy usage down a little bit, but we have to figure out what's going on with the equipment so that I can move forward and figure out which measures to implement.

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## Interval data visualizations used to identify chiller schedule problem

One partner contractor used heat map visualizations of interval data to identify that the chiller was running each weekend. Note how the load is somewhat elevated all weekend, and then during the week shuts down each evening. This visualization was available as part of a web-based tool provided by the local utility. Heat maps provide a quick way to identify patterns in interval data that may correspond with equipment scheduling or setback issues.



# Demonstration Findings

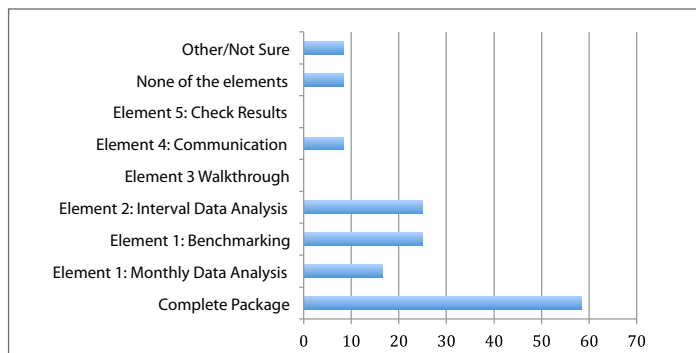
## Demonstration Progress

Of the initial 16 recruited contractors, 4 remained highly engaged with the program over the course of the demonstration while 4 others were moderately engaged. Of the highly engaged contractors, two groups stood out: individuals who served as energy efficiency specialists within larger HVAC firms, and individuals in small firms who had high personal interest in energy efficiency. Factors reported for slow progress included: high summer business load, and difficulty generating interest from clients, difficulty accessing data, and difficulty prioritizing demonstration action items over daily urgent issues.

To provide technical advice and peer learning opportunities, the LBNL team offered 5, 60-90 minute workshops by web-conference. Participation in the workshops was strongly correlated with progress at sites.

## Value to Contractor Partners

To gain insight into the experiences of partner contractors in the demonstration, a web-based survey was conducted, and initial results are based on 12 responses. Overall, the feedback has been positive, with strongly favorable feedback from highly engaged partners.



Which components of the package do you plan to offer in the future?

When asked how they agreed with the statement "Offering the package was worth the effort," 5 said they strongly agree, and 4 were neutral, 2 agree and 1 had no opinion

5 respondents strongly agreed that offering the package strengthened their relationships with their customer, and 3 were neutral.

75% of respondents rated the quality and utility of Energy Management Package materials as 'high' or 'exceptional'.

Contractor Partners	Site Selected	Data in hand	Element 1	Element 2	Element 3	Element 4	Element 5
Bay Air Systems	█	█	█	█	█	█	█
Murphy & Miller Inc Site 1	█	█	█	█	█	█	█
Johnson AC	█	█	█	█	█	█	█
Cooper Oates AC Site 1	█	█	█	█	█	█	█
Eric Kjelsus Energy	█	█	█	█	█	█	█
Marina Mechanical Site 1	█	█	█	█	█	█	█
Cooper Oates AC 2	█	█	█	█	█	█	█
Gilbert Mechanical Site 1	█	█	█	█	█	█	█
Gilbert Mechanical Site 2	█	█	█	█	█	█	█
Gilbert Mechanical Site 3	█	█	█	█	█	█	█
Gilbert Mechanical Site 4	█	█	█	█	█	█	█
Burch Corporation	█	█	█	█	█	█	█
Mid Mo Inspectors Site 1	█	█	█	█	█	█	█
Mid Mo Inspectors Site 2	█	█	█	█	█	█	█
Peterson Service Company	█	█	█	█	█	█	█
AAA Air Care	█	█	█	█	█	█	█
Advanced Energy Efficiency	█	█	█	█	█	█	█
Air Comfort Corporation	█	█	█	█	█	█	█
Cooper Oates AC Site 3	█	█	█	█	█	█	█
Dynamic Air Services	█	█	█	█	█	█	█
Energy Cons Pros/Syntrol	█	█	█	█	█	█	█
Marina Mechanical Site 2	█	█	█	█	█	█	█
Murphy & Miller Inc Site 2	█	█	█	█	█	█	█
Zero Energy Association	█	█	█	█	█	█	█

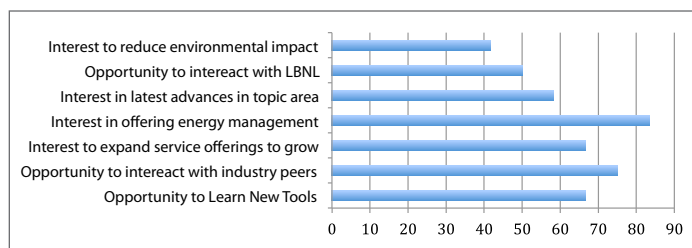
Participating contractors.

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"I think for me a lot of [the EMP] dovetails with things that I have been doing with benchmarking and monthly utility bill analysis but it formalizes it, and puts it all together in one place. It has a nice flow to it, it's putting a lot of resources together in one place, and then brings in the interval data analysis piece which wasn't always top of mind... So this is definitely something that I will continue to be interested in and continue to use."

Demonstration Partner Contractor

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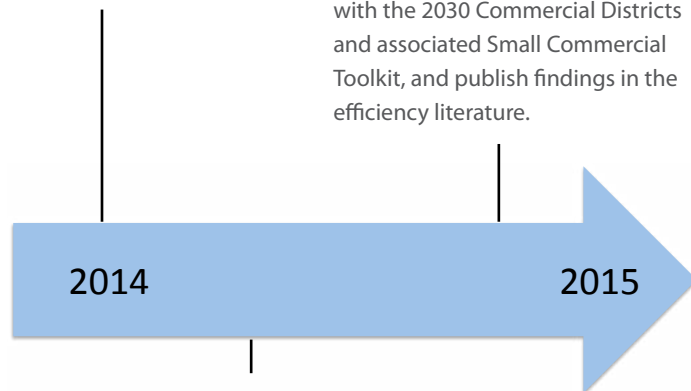


What attracted you to participate in the program?

## EMP: Looking Ahead

**Fall and Winter 2014:**  
Completion of contractor demonstrations

**Spring and Summer 2015:**  
Continue facilitating owner-driven market pull through collaboration with the 2030 Commercial Districts and associated Small Commercial Toolkit, and publish findings in the efficiency literature.



2014

2015

**Winter 2014-2015:**  
Dissemination of final findings in webinars and contractor training courses in collaboration with the 2030 Commercial Districts.  
<http://www.2030districts.org/>

## Find Out More About the EMP

Download the Energy Management Package with instructional guidance and worksheets, and access project overviews and associated slide decks: <http://eis.lbl.gov/smallcomm.html>

Read the business model document to get an overview of the value proposition to contractors and customers: <http://eis.lbl.gov/pubs/emp-business-model.pdf>

Read more about the EMP development effort, and 2014 Demonstration: <http://eetd.lbl.gov/news/article/58166-berkeley-lab-develops-kit-to-he>

Access a short article on the EMP, published in the Journal of RSES, "The HVACR Training Authority™": <http://www.rses.org/journal.aspx>

Find the introductory training presentation here: <http://eis.lbl.gov/pubs/emp-training-11-13-2014.pdf>

Access the Small Commercial Toolkit from the 2030 website here: <http://www.2030districts.org/small-commercial-toolkit-login>

The image shows two documents side-by-side. On the left is the 'E2 Interval Data Analysis Guidelines' document, which includes instructions on how to use the data, a sample energy use plot for October 2008, and a checklist of questions to ask about the data. On the right is the 'E2 Interval Data Analysis Worksheet', which is a form for recording the user's answers to the questions in the guidelines, including fields for building information, data source, and scheduling details.

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