Deep Savings for Small Commercial Direct Install Retrofit Program

A Replicable Model for High Volume, Cost Effective Energy Savings

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Thanks for joining us.
New Buildings Institute (NBI) is a nonprofit organization working to improve the energy performance of commercial buildings.

**SMART Scale Ally**
NBI’s role with the Ecology Action SMART Scale program is to provide technical evaluation of savings and connect the work with the market.

**Improving Policies, Practices and Programs Since 1997**
We have a long history of creating solutions for large and small commercial, such as the Advanced Buildings Suite of tools, Deep Retrofit set of Case Studies and Getting to Zero database.

**Portland Based & World Focused**
We act to catalyze change toward zero net energy and carbon through the improved efficiency of commercial buildings and communities.

Ecology Action provides innovative solutions to the energy, water and transportation challenges of cities, governments and utilities.

**Award-winning Non-profit Consultancy**
For over 45 years, we’ve been a leader in developing pragmatic and collaborative conservation programs across energy, water and transportation in California.

**Four Decades of Experience**
Trusted by both publicly owned- and investor-owned utilities in California for delivering turnkey services to their commercial, municipal, non-profit, and school customers.

**Proven Results**
To date, we have managed more than $50 million in rebates for our clients; completed more than 16,000 retrofits; and delivered more than 500 GWh of electric savings.
SMART Scale Objectives:

- Achieve 20% depth routinely
- Remove key scaling barriers of the DI 2.0 model
- Promote adoption of the model

Today’s Topics

1. Background & Objectives
2. SMART Scale Snapshot & Outcomes
3. Key Elements for Depth and Scaling
4. The Online Toolkit
5. Open Discussion
Why Go Small?

- Undeniable Market
- Key Utility Customers
- Key Community Members
- Energy Opportunity

Let’s Talk ‘Free’ – The Online Toolkit

Welcome to the SMART Scale Toolkit

If you’ve made it this far, you’re most likely here for these reasons:

- You recognize that small to medium sized businesses (SMB) are an important and largely untapped market for deep retrofit energy efficiency programs.
- You also recognize that reaching and servicing these businesses has traditionally been a serious challenge.
- You’re looking for an effective, field-tested program that will help you work with the many SMB’s in your area.
Background:
Demonstrate depth and scaling in the utility program context

Direct Install Evolution

Traditional “DI 1.0”

Deeper “DI 2.0”

SmartScale “DI 3.0”?
Traditional Direct Install: “DI 1.0”

- 100% free to customer
- ~2-3% average savings
- High levels of stranded savings
- ~95% lighting
- Most refrigeration and HVAC savings are not realized
- Expensive for Utility sponsor

Direct Install 2.0

- Average of 8% savings per facility
- Average customer co-pay of ~30% (avg. 1 year payback)
- Greater than 40% non-lighting savings
- Measure bundling offsets high cost measures
- 16,000 start-to-finish retrofits
Delivery structure overview

- Rebate Program sponsor
- Co branding
- Oversight

- Marketing
- Retrofit design
- Proposal & “sale”

- Third Party Implementer
- Contractor selection & mgmt.
- Quality assurance
- Rebate fulfillment
- Reporting

- Access to facility
- Customer co-pay
- Focus on core biz

- Customers
- Contractors
- Installations
- Assist w/ retrofit design

Measure Types

Refrigeration
- Anti-sweat door heater control
- Auto door closer
- Motor replacement w/ECM
- Strip curtains
- Refrigerated case lighting

HVAC & Other
- Package terminal AC control
- RTU optimization control
- Package unit replacement
- Pool Pump control
- Vending control

Lighting
- New LED fixture
- LED retrofit kit
- TLED lamps
- LED screw in lamps
- Linear fluorescent retrofit
SMART Scale Results

**kWh Savings by Technology Type**

- 0.3% Other
- 9.0% HVAC
- 37.2% Refrigeration
- 53.5% Lighting

**Program Building Types**

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Restaurant</td>
<td>26%</td>
</tr>
<tr>
<td>Office</td>
<td>17%</td>
</tr>
<tr>
<td>Hotel</td>
<td>7%</td>
</tr>
<tr>
<td>Market</td>
<td>8%</td>
</tr>
<tr>
<td>Retail</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>19%</td>
</tr>
<tr>
<td>Grocery</td>
<td>5%</td>
</tr>
<tr>
<td>Church</td>
<td>4%</td>
</tr>
<tr>
<td>Gas Station</td>
<td>5%</td>
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</tbody>
</table>
SMART Scale Customer Size

% of Projects by Customer kW Size n = 729

Program Results

<table>
<thead>
<tr>
<th>Large Scale</th>
<th>Cost Effective</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>729 Projects in 3 Years</td>
<td>47M 1st year kWh savings (450M lifetime)</td>
<td>$0.32/kWh</td>
</tr>
<tr>
<td>47M 1st year kWh savings (450M lifetime)</td>
<td>3.1 Cost 1st year (0.035/ lifetime)</td>
<td>28% Customer payment of total project cost</td>
</tr>
<tr>
<td>64,500 kWh</td>
<td>Measures</td>
<td></td>
</tr>
</tbody>
</table>

Well beyond other programs as evaluated in CA.
Key Elements for Depth & Scaling

Elements of Success - Program Design

1. Performance Based Contracts
2. Accurate Savings Calculations
3. Tiered Measures and Incentives
4. Harnessing the Power of Contractors
Tiered Measure List

<table>
<thead>
<tr>
<th>Tier</th>
<th>Program Savings</th>
<th>Example Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIER I</td>
<td>30%</td>
<td>Linear fluorescent lamp replacement, screw-in lamps, occupancy sensor</td>
</tr>
<tr>
<td>TIER II</td>
<td>50%</td>
<td>LED wall pack, ECM motors, linear fluorescent with lamp reduction</td>
</tr>
<tr>
<td>TIER III</td>
<td>20%</td>
<td>LED full fixture replacement, HVAC optimization controls</td>
</tr>
</tbody>
</table>

Measurement Approach
M&V Goals & Methods

Taking a look at data

Dual Goals
- Evaluate Whole Building Savings
- Identify Best M&V Approach

Dual Methods
- Whole Building Pre/Post Analysis
  - Weather-Normalized with FirstView® software
- Traditional Ex Ante Calculations

~10% of EE Metering Runs Were Valid

445 buildings
1 year pre & post
gas and electric
data requested

43 buildings
valid results in
First View
Meter Data Review

M&V Results

- Achieved a range of 8% - 33%
- Meter showed 50% of Ex Ante savings
- Insufficient data to determine average savings for all 729 sites
- Estimating ~ 40% of sites reached 20% savings
Online Resources and Tools

**Easy to Navigate**

The toolkit navigation allows the user to follow along sequentially or simply fast track to the next chapter.

**Brief Intro Videos**

Videos are featured for key chapters and call out the most important program details for users.

**Quick Access to Downloads**

All the corresponding chapter attachments are included in each chapter and can be accessed with a click.

**Online, Free & Accessible 24/7**

The Toolkit is online and accessible to all team members who have quickly registered for an account.

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The Implementation Guide

10 Steps for Successful Program Design and Delivery
Open Discussion

Thank you

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