Using ‘Big Data’ to Achieve Both Broad and Deep Savings in Hard-to-Reach Customer Segments

Steve Meyers

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Sacramento, California
Monday, November 11, 2013 (1:30)
Using Big Data Across Industries

Could the energy-efficiency industry be using data more effectively?
PART 1: THEORY
Utilities Have Aggressive Goals

US & Canadian Energy Efficiency Budgets

- Electric Programs
- Gas Programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Electric Programs</th>
<th>Gas Programs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$3.7</td>
<td>$0.3</td>
<td>$4.0</td>
</tr>
<tr>
<td>2008</td>
<td>$4.5</td>
<td>$0.5</td>
<td>$5.0</td>
</tr>
<tr>
<td>2009</td>
<td>$6.1</td>
<td>$0.8</td>
<td>$6.9</td>
</tr>
<tr>
<td>2010</td>
<td>$7.5</td>
<td>$0.9</td>
<td>$8.4</td>
</tr>
<tr>
<td>2011</td>
<td>$9.1</td>
<td>$1.0</td>
<td>$10.1</td>
</tr>
</tbody>
</table>
We Need to Target New Markets

US Retail Electricity Spend
(~$400 billion)

1. These customers are busy, so we have to make it easy for customers to adopt.
2. Minimize transaction costs so these customers can be cost-effective.
3. Layer-in measures to achieve more savings-per-customer over time.
Understanding Mass Market Customers

![Diagram showing adoption rates with varying financial incentives](https://enerpath.com)

- **No Barriers**: Maximum penetration rate is high, approaching 100%.
- **Low Barriers**: Moderate maximum penetration rate, around 70-80%.
- **Moderate Barriers**: Lower maximum penetration rate, around 50-60%.
- **High Barriers**: Even lower maximum penetration rate, around 30-40%.
- **Extremely High Barriers**: Lowest maximum penetration rate, around 10-20%.

*FINANCIAL INCENTIVES*
Where and How are the Data Collected?
Estimated Energy Savings

Estimated Annual Energy Costs

- $1,800
- $1,600
- $1,400
- $1,200
- $1,000
- $800
- $600
- $400
- $200
- $0

Current cost

New cost

That's 84% savings in one year

Estimated CURRENT annual energy cost: $1700
Estimated NEW annual energy cost: $800
Estimated annual energy savings: $900

Other Benefits

Additional benefits of an energy efficient business are manifold including those for:

- Your Business
  - Reduced material costs due to longer-lasting lamp life
  - Increased property value due to decreased operational costs

- The Environment
  - Contribution to carbon emission reduction, which reduces pollution in the air
  - Energy reductions that help prevent new power plants from having to be built

- The Community
  - Supporting a local workforce and the creation of green jobs within your community
  - Monetary savings that can be reinvested into the local economy

*These recommendations are based on estimates which are approximate and may not represent actual savings. Estimated savings can vary depending on operational conditions and climate. No warranty, expressed or implied, is made by these recommendations, including but not limited to any warranty of merchantability or fitness for any particular use or application.
MainStreet Efficiency Program Office
123 Center Park Drive, Suite 205
Knoxville, TN 37922
800.555.1234

Customer Work Authorization

Business Name: [Redacted]
Owner: [Redacted]
Account #: [Redacted]
Street Address: [Redacted]
City, State ZIP: [Redacted]
Phone: [Redacted]

I, [Contact Name], a representative of [Customer] am duly authorized to sign this Customer Authorization Form on behalf of Customer.

Customer hereby authorizes EnerPath Services, Inc. ("ESI" or "EnerPath") – Program Manager and its Contractor) to perform the following work (the "Work"): Replace and/or retrofit certain lighting equipment with the new, energy efficient lighting equipment at the Service Address set forth above and specified on the Energy Savings Opportunities Report (attached hereto) prepared by EnerPath for Customer’s Facility. Customer acknowledges that Contractor has been authorized by the Tennessee Valley Authority (herein referred to as "TVA" or "Utility") to contact Customer only with regard to performing the Work, and that any other services, installations, improvements or equipment provided to Customer by Contractor have not been authorized by TVA, and TVA assumes no responsibility therefore. Customer hereby agrees that TVA makes no warranty, expressed or implied, with respect to the Work, including without limitation, the implied warranties of merchantability and fitness for a particular purpose. Customer hereby agrees to hold harmless TVA, its officers, directors, and employees, from and against any and all liability, damages, losses, claims, demands, actions, costs, including attorneys’ fees and expenses, and all court or arbitration or other dispute resolution costs, or any of them, resulting from arising out of, or in any way directly connected with Work performed by Contractor. Customer hereby agrees to hold the Contractor solely responsible for any and all claims, losses, liabilities, damages and expenses, including attorneys’ fees and costs, which Customer may incur as a result of the Work.

Customer acknowledges that connected load at Customer’s Facility may increase if the Work involves replacing burned out or missing lamps.

Customer understands that any materials removed (old ballasts and lamps) will be taken by the installation contractor and staged for pickup and disposal by a licensed hazardous disposal contractor. Customer understands that Utility may inspect and verify that the Work was performed, and hereby permits TVA reasonable access to Customer’s Facility for such purpose. Customer also understands that they may be contacted regarding program evaluation and agrees to cooperate in providing needed information for the purpose of evaluation.

Customer acknowledges that certain data made available through the Energy Savings Opportunities Report may be used for the purpose of evaluating the program and analyzing energy related assets and consumption data at the Service Address set forth above and Customer consents to use of this data for the purpose of this program, and in providing Customer additional information as may be related to other energy efficiency or demand response programs or opportunities. The data will be used only for this purpose and confidentiality will be strictly protected.

Signature: [Redacted]
PART 2: RESULTS
Improving Cost-Effectiveness

**Weekly Program Sales**

- **Cost/kWh** of $0.31 (RHS)
- **Fell 20% to $0.25/kWh**
- **Program Goal of $0.27/kWh**
Improving Sales

Cumulative Daily Program Sales
(Total Project Costs)
Pilot Design Impacts Adoption Rates

- Percent Enrolled (KUB)
- Cumulative % Enrolled (KUB)
- Cumulative % Enrolled (30/70 Design)
Driving Deeper Savings Per Business

Average Value of a Project ($2,000)

Average Value of a Project (> $6,000)
Measuring the impact of marketing channels

**How did customers hear about the program?**

- TV, Radio, Billboard, Media
- Newspaper (50%)
- Telephone Call (64%)
- Bill Insert (91%)
- Chamber of Commerce (63%)
- Other Organization (64%)
- Utility (38%)
- Website (82%)
- Word of Mouth (78%)
- Direct Mail (75%)
- Feet On The Street (61%)

**Enrollment Rate for each Outreach Method**

**Number of Customers Receiving Audits (N=13,860 Audits)**

- Canvassing a neighborhood drives most of the most participation

**Feet On The Street**

EnerPath © Confidential
Adoption Rates by Business Type (NAISC)

- Administration of Economic Programs: 69%
- Personal Care (Barber Shops, Hair Salon): 67%
- Building Finishing Contractors: 67%
- Automotive Repair and Maintenance: 55%
- Alcoholic Beverage Wholesalers: 50%
- Architectural and Related Services: 48%
- Beer, Wine, and Liquor Stores: 47%
- Automobile Dealers: 46%
- Bookkeeping and Payroll Services: 43%
- Automotive Parts/Accessories Stores: 40%
- Building Equipment Contractors: 37%
- Accounting/Tax Preparation Services: 36%
- Advertising and Related Services: 36%
- Book, Periodical, and Music Stores: 32%
- Activities Related to Real Estate: 29%
Cross-Selling & Cross-Marketing

Happy customers will buy more… if they can.

- SBDI Program in Texas found 91% of customers interested in residential EE programs.

- Appliance recycling program in California, in one year, found 50,000 of the total 153,000 participants wanted to participate in residential DR Thermostat Program

- SBDI Program in New York identified 100 customers interested in large-commercial and multi-family programs

- Residential DI Program in Palm Desert CA where 5,500 homes enrolled in simple DI measures ($6M of Utility Funds)
  - $6M of utility investment resulted in $14M of benefits
  - Identified ~1,000 customers who purchased high efficiency pool pumps
  - Identified ~300 customers willing to leverage utility funds 30:1
The Rewards are Great!

10. Enter the data-driven world!
9. Grow sales (realized savings)
8. Improve cost-effectiveness
7. Find deeper savings (savings/customer)
6. Manage workflow
5. Increase program transparency
4. Wow customers (improve customer experience)
3. Identify which marketing campaigns work best
2. Implement sub-segment or hyper-local campaigns
1. In the future blockbuster film about applying big data to energy-efficiency, Brad Pitt may play You!
Thank You!

Steven Meyers
steven.meyers@enerpath.com
512-796-2242

Cambridge, MA
Rochester, NY
San Antonio, TX
Redlands, CA
Los Angeles, CA
Knoxville, TN

www.enerpath.com
## Measure Mix

<table>
<thead>
<tr>
<th>Measure Type</th>
<th>By Cost</th>
<th>By Savings</th>
<th>$/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallpack</td>
<td>7%</td>
<td>4%</td>
<td>$0.47</td>
</tr>
<tr>
<td>Canopy</td>
<td>5%</td>
<td>3%</td>
<td>$0.44</td>
</tr>
<tr>
<td>Exit</td>
<td>1%</td>
<td>1%</td>
<td>$0.37</td>
</tr>
<tr>
<td>Eight</td>
<td>15%</td>
<td>12%</td>
<td>$0.33</td>
</tr>
<tr>
<td>HID</td>
<td>31%</td>
<td>24%</td>
<td>$0.33</td>
</tr>
<tr>
<td>Refridge</td>
<td>2%</td>
<td>2%</td>
<td>$0.27</td>
</tr>
<tr>
<td>Linear</td>
<td>18%</td>
<td>21%</td>
<td>$0.23</td>
</tr>
<tr>
<td>Delamp</td>
<td>2%</td>
<td>2%</td>
<td>$0.19</td>
</tr>
<tr>
<td>LED</td>
<td>18%</td>
<td>25%</td>
<td>$0.19</td>
</tr>
<tr>
<td>MR16</td>
<td>1%</td>
<td>2%</td>
<td>$0.18</td>
</tr>
<tr>
<td>CFL</td>
<td>1%</td>
<td>4%</td>
<td>$0.04</td>
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<tr>
<td>Grand Total</td>
<td>100%</td>
<td>100%</td>
<td>$0.26</td>
</tr>
</tbody>
</table>
The Rewards are Great!

1. Enter the data-driven world!
2. Grow sales (realized savings)
3. Improve cost-effectiveness
4. Find deeper savings (savings/customer)
5. Manage workflow
6. Increase program transparency
7. Wow your customers (improved customer sat)
8. Identify which marketing campaigns work best
9. Implement sub-segment or hyper-local campaigns
10. In the future blockbuster film about applying big data to energy-efficiency, Brad Pitt may play You!
Improving Cost-Effectiveness

Cost/kWh of $0.31 (RHS)

Program Goal of $0.27/kWh

Fell 20% to $0.25/kWh
Improving Sales

Cumulative Daily Program Sales
(Total Project Costs)

NY1
Wed. Oct. 13, 2010
Customers: 819
kWh: 6.3 million
Costs: $2.0 million
Rec. Cost: $0.23/kWh
Conversion: 55%
### Measuring Actual Installations

<table>
<thead>
<tr>
<th>Line#</th>
<th>ECM Code</th>
<th>Proposed Action</th>
<th>Assessed Qty</th>
<th>Install Qty</th>
<th>Qty. Installed</th>
<th>Qty. Not Installed</th>
<th>Installation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F44T8RDX-R</td>
<td>Retrofit Lighting</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No Change</td>
<td>No change to be made</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CFS18/1-SI</td>
<td>Retrofit Lighting</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td>4</td>
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<td>Retrofit Lighting</td>
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<td>1</td>
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<td>5</td>
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<tr>
<td>6</td>
<td>F44T8RDX-R</td>
<td>Retrofit Lighting</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>14</strong></td>
<td><strong>11</strong></td>
<td><strong>11</strong></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Showing 1 to 6 of 6 entries

- $50M Total Retrofit Budget
- 26,000 small businesses retrofit in 24 months
- Up to $2,500 of incentive per small business
- Participation Rate: >90%
- Customer Satisfaction Rate: >99%
- **Average Project:** Cost $940 savings ~1kW of demand and 3,326 kWh/year
- Lighting Retrofits
- EnerPath manages 20 ESRs, 12 local subcontractors, marketing, outreach, installation, inspections, customer satisfaction, and reporting.
- **Innovations:** Real-time tracking via Google maps showing council districts; Lead generation for thermostats and toilets.

"This has been one of our most successful non-residential programs, and has touched the most small businesses in a positive way," Program Manager, Los Angeles DWP

NY: NYSEG and RG&E (2010-Present)

- $30M Total Retrofit Budget
- Targeting 14,000 small businesses in 18 months
- 70% of the project costs supported by utility incentives with 30% customer Co-Pay
- Participation Rate: >65%
- Customer Satisfaction Rate: >98%
- **Average Project:** Cost $2,698 saving ~2kW of demand and 7,331 kWh/year
- Lighting Retrofits
- EnerPath manages 25 ESRs, 12 local subcontractors, marketing, outreach, installation, inspections, customer satisfaction, and reporting.
- **Innovations:** Multiple payment options; Community-based marketing coordinated with Utility; First deployment of iPad technology
Optimizing a Complex Supply Chain Drives Adoption

- Procurement
- Subcontractors
- Installation
- Customer Enrollment
- Call Center
- Performance
- Customer Satisfaction
- Design
- Efficiency Technology
- Training
- Performance
- Regulation Reporting
- Financing
- Auditors
- Marketing
- Inspection
- Logistics

The graphic above represents just some of the interactions that EnerPath manages through its proven software.
Energy Efficiency must be easy for customers.

1. Broad range of desirable efficient equipment that customers like
2. Easy methods of paying for efficiency
3. Delivered through an adaptive and scalable technology-enabled platform
## Customer Satisfaction

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>How satisfied are you with our Energy Service Representative's performance?</td>
<td>Very Satisfied</td>
<td>166</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Satisfied</td>
<td>28</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Not Satisfied</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Did you notice and improvement in the lighting/lighting quality in your business?</td>
<td>Yes</td>
<td>177</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>19</td>
<td>10%</td>
</tr>
<tr>
<td>Would you recommend this program to another business?</td>
<td>Yes</td>
<td>192</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>How would you rate the overall program performance?</td>
<td>Excellent</td>
<td>132</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>Very Good</td>
<td>43</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>18</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Fair</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Would you participate in a similar program?</td>
<td>Yes</td>
<td>192</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Given your experience with this program, will you make energy efficiency improvements at your home?</td>
<td>Yes</td>
<td>162</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>34</td>
<td>17%</td>
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<tr>
<td>How did you hear about this program?</td>
<td>Letter from Utility</td>
<td>100</td>
<td>51%</td>
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<tr>
<td></td>
<td>ESR at My Business</td>
<td>63</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>Word of Mouth</td>
<td>28</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>5</td>
<td>3%</td>
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N=196
## Factors driving results

<table>
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<tr>
<th>Tenancy</th>
<th>Own</th>
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<tr>
<td>Customers</td>
<td>513</td>
<td>488</td>
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<tr>
<td>Adoption Rate</td>
<td>90%</td>
<td>90%</td>
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<table>
<thead>
<tr>
<th>Referral</th>
<th>Direct Mail</th>
<th>Canvassing</th>
<th>Other</th>
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<td>462</td>
<td>436</td>
<td>322</td>
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<tr>
<td>Adoption Rate</td>
<td>95%</td>
<td>85%</td>
<td>92%</td>
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<table>
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<th>Copay</th>
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<th>Copy</th>
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<tbody>
<tr>
<td>Customers</td>
<td>1,075</td>
<td>143</td>
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<tr>
<td>Adoption Rate</td>
<td>93%</td>
<td>74%</td>
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