Strategic Energy Planning

Prepared by Utility Savings Initiative

Len Hoey, PEM
State Energy Office
Department of Commerce
Agenda

Process Steps

- Why
- How
- Data Collection
- Measure Results
- Evaluate Results
- Develop Plan
  - Strategies
  - Tactics
- Implement Plan
“Failing to Plan is Planning to Fail”

Alan Lakeim
Why

- Manage Utility Consumption
  - Control costs
    - Savings vs. Avoided Costs
  - Control GHG
- Improve building performance.
- Identify emergency conservation procedures
- Create equipment replacement Policy
How

Assemble stakeholders

**Internal Buildings**
- Facilities personnel
- Building Occupants
- Utility providers
- Management
- Financial personnel
- Human Resources

**Community Based Programs**
- Home owners associations
- Chamber of Commerce
- Community Organizations
Energy Plan Cycle

Continuous Process Improvement

Data Collection

Implement

Measure

Develop

Evaluate
Data Collection

- Utility bills consumption and cost - monthly
  - Total costs including base meter charges, fees, taxes
  - 1 year history minimum
  - Provides a baseline and ability to measure progress
- Buildings, equipment inventory (CMMS), insurance lists, plug load inventory including space heaters
- Building assessments
Self Assessment
Self Assessment
Plug Load Awareness

Thermostat above both coffee pot and toaster oven
Space Heaters cost between $150 and $250 dollars a year to operate per heater. Don’t forget to add extra cooling costs in the summertime.
Data Collection

- Sub-meter Data
- Purchasing policies
  - Energy star
  - Life Cycle Cost Analysis
- Current policies, programs, projects and funding
Energy Plan Cycle

Continuous Process Improvement

Data Collection
Implement
Measure
Develop
Evaluate
Measure Results of Data Collection

- Identify gaps in data:
  - Supply side (utilities)
  - Demand side (owner)

Develop methods to record consumption and cost data both supply and demand recommended
Measure Results of Data Collection

- Building audit and maintenance reports
  - Hot/cold areas vs. calls
  - Plug load
- Current projects, programs and funding
- Purchasing policies
Energy Plan Cycle

Continuous Process Improvement

Data Collection

Implement

Measure

Develop

Evaluate
Evaluate Results of Data Collection

- Validate data accuracy
- Do gaps need to be filled before continuing
  - If yes, becomes part of plan
- Building data
- Create prioritized list of ECMs
  - Group: no-cost / low-cost / capital
- Establish key performance indicators (KPI’s)
Evaluate Results of Data Collection

Key Performance Indicators

- The Energy Office has to standardize on Btu/gsf/yr and gal/gsf/yr as an overall state level KPI.

- Should this metric not accurately reflect your performance you may create additional KPIs and report this in your Plan.
Energy Plan Cycle

Continuous Process Improvement

Data Collection

Implement

Measure

Evaluate

Develop
Develop the Plan

  - Specific
  - Measureable
  - Accountability
  - Realistic
  - Time-Dependent
Develop the Plan

- Keep it focused and simple
- Less may be more
- Sustainable
Develop the Plan

Strategies

- The philosophies, plans and policies supporting long term energy management goals
- Example: “We will implement conservation measures that have a simple payback of two years or less.”
Develop the Plan

Tactics

- Short term actions that support strategic energy management goals
- Example: We will replace all incandescent EXIT signs in buildings ABC and XYZ this year with more efficient technologies
Develop the Plan

Primary USI Focus Areas

- Executive summary
- Supply side (supplier side of meter)
- Demand side (owner side of meter)
- Communication and Training
- Water
Develop the Plan

Optional Focus Areas

- Transportation
- Community Based
  - Residential programs
  - Non-profit programs
  - Commercial, industrial, retail programs
Develop the Plan

Executive summary elements

- Multi year look ahead (5 years)
  - Summarize where you are and where you want to go
- Brief description of facility/campus
- Top Executive statement of commitment
Develop the Plan

Executive summary elements

- Mission and goals of plan
  - 20% reduction by 2010
  - 30% reduction by 2015
- Assign overall responsibility and accountability
- List KPI
Develop the Plan

KPI Example:

<table>
<thead>
<tr>
<th>year</th>
<th>energy $/gsf</th>
<th>$/mmbtu</th>
<th>%change</th>
<th>btu/sf</th>
<th>%change</th>
<th>$/mgal</th>
<th>%change</th>
<th>gal/sf</th>
<th>%change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>$1.14</td>
<td>$6.356</td>
<td></td>
<td>178,764</td>
<td></td>
<td>$3.27</td>
<td></td>
<td>51.82</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>$1.26</td>
<td>$9.189</td>
<td>45%</td>
<td>136,616</td>
<td>-24%</td>
<td>$2.97</td>
<td>-9%</td>
<td>49.13</td>
<td>-5%</td>
</tr>
<tr>
<td>2004-05</td>
<td>$1.25</td>
<td>$9.590</td>
<td>51%</td>
<td>129,989</td>
<td>-27%</td>
<td>$2.98</td>
<td>-9%</td>
<td>47.90</td>
<td>-8%</td>
</tr>
<tr>
<td>2005-06</td>
<td>$1.45</td>
<td>$12.775</td>
<td>101%</td>
<td>113,548</td>
<td>-36%</td>
<td>$2.69</td>
<td>-18%</td>
<td>43.78</td>
<td>-16%</td>
</tr>
<tr>
<td>2006-07</td>
<td>$1.43</td>
<td>$11.661</td>
<td>83%</td>
<td>123,042</td>
<td>-31%</td>
<td>$2.80</td>
<td>-14%</td>
<td>40.71</td>
<td>-21%</td>
</tr>
</tbody>
</table>
Develop the Plan

Focus Area Tables

<table>
<thead>
<tr>
<th>Focus Area A:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy 1.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Strategy 2.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Strategy 3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Next 12 Months Activities</th>
<th>Measurement</th>
<th>Expected</th>
<th>Actual</th>
<th>Savings</th>
<th>Expected</th>
<th>Actual</th>
<th>Cost</th>
<th>Assigned to</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Develop the Plan

### Focus Area 1: Communication and Training

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy 1</td>
<td>Provide USI partners with the skills necessary to identify and implement energy efficiency measures</td>
</tr>
<tr>
<td>Strategy 2</td>
<td>Data review, analysis and reporting of energy use and energy plan information submitted by partners and as required by statute</td>
</tr>
<tr>
<td>Strategy 3</td>
<td>Create, publish, update annually and implement a state level energy management plan that supports program requirements</td>
</tr>
<tr>
<td>Strategy 4</td>
<td>Establish regional user groups to foster participant dialogue on best practices</td>
</tr>
<tr>
<td>Strategy 5</td>
<td>Participate as speakers in relevant workshops and conferences to generate program awareness and participation</td>
</tr>
</tbody>
</table>
## Develop the Plan

### 2010-2011 Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Measurement</th>
<th>Investment</th>
<th>Assigned to</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct 3 EMD training sessions</td>
<td>75 participants 105</td>
<td>$133,105</td>
<td>Len Hoey</td>
<td>ARRA</td>
</tr>
<tr>
<td>Conduct 3 workshops on creating an energy plan</td>
<td>60 participants 35</td>
<td>Staff time</td>
<td>Len Hoey / USI team</td>
<td>Salary</td>
</tr>
<tr>
<td>Develop USI track for annual conference</td>
<td>10-12 sessions 5</td>
<td>Staff time</td>
<td>Renee Hutcheson / USI team</td>
<td>Salary</td>
</tr>
<tr>
<td>Create regional USI user groups</td>
<td>4 groups 0</td>
<td>Staff time</td>
<td>Joe Davis / Reid Conway</td>
<td>Salary</td>
</tr>
<tr>
<td>Maintain key databases tracking USI performance</td>
<td>USI consumption and liaison databases</td>
<td>Staff time</td>
<td>Len Hoey</td>
<td>Salary</td>
</tr>
<tr>
<td>Conduct training session on PC and USI program to various boards and organizations</td>
<td>20</td>
<td>Staff Time</td>
<td>USI team</td>
<td>Salary</td>
</tr>
</tbody>
</table>

### 2011-2012 Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Measurement</th>
<th>Investment</th>
<th>Assigned to</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct 3 EMD training sessions</td>
<td>Interviews to assess application of knowledge</td>
<td>$133,105</td>
<td>Len Hoey</td>
<td>ARRA &amp; state</td>
</tr>
<tr>
<td>Conduct one day tech workshops</td>
<td>Interviews to assess application of knowledge</td>
<td>Staff time</td>
<td>USI &amp; NCSU MAE</td>
<td>Salary</td>
</tr>
<tr>
<td>EPA portfolio manager pilot program</td>
<td>Evaluate software’s applicability for USI reporting</td>
<td>Staff time</td>
<td>Keith Bradshaw</td>
<td>ARRA &amp; salary</td>
</tr>
<tr>
<td>Facilitate implementation of user groups and their activities</td>
<td>Publication of best practices identified during meetings</td>
<td>Staff time</td>
<td>USI team</td>
<td>Salary</td>
</tr>
<tr>
<td>Targeted technical assistance provided through site visits to upgrade energy plans and consumption reports</td>
<td>100% participation by agencies, universities and community colleges</td>
<td>Staff time</td>
<td>USI team</td>
<td>Salary</td>
</tr>
<tr>
<td>Establish electronic bulletin board on USI website</td>
<td>Bulletin board created and promoted to participants</td>
<td>Staff time</td>
<td>USI team</td>
<td>Salary</td>
</tr>
</tbody>
</table>
Develop the Plan

Appendix A – Emergency Energy Procedures

- Tactics
  - Short term
  - Identify non-critical loads
Develop the Plan

Appendix B – Emergency Water Procedures

- Tactics
  - Short term
  - Determine consequences of actions
Develop the Plan

Appendix C – Equipment Replacement

- Tactics
  - Identify critical equipment
  - Locate potential loaner/rental replacement
  - Determine if equipment is still the correct size, capacity and type for current conditions
  - Specify correct replacement including source
Energy Plan Cycle

Continuous Process Improvement

- Data Collection
- Implement
- Develop
- Measure
- Evaluate

Diagram showing the cycle of data collection, implement, develop, measure, and evaluate.
Implement the Plan

- Identify financial resources
  - Utility Providers
  - O&M
  - R&R
  - COPS/Bonds
  - Performance Contracts
  - Grants
- www.dsireusa.org
Implement the Plan

- Identify partner resources
  - Community Colleges
  - Universities
  - County or municipal partners
  - SEO
  - Workforce development boards
  - COGS
  - School of Government
  - Community Development
Implement the Plan

- Perform no cost behavioral activities first
- Align resources with projects
- Assign accountability and responsibility
- Then Do It
Energy Plan Cycle

Continuous Process Improvement

- Data Collection
- Implement
- Develop
- Evaluate
- Measure
Measure Results of Implementation

Results should be measured based upon the method indicated in the Focus Area tables.
Measure Results of Implementation

- Continue to identify gaps in data
- Measured energy reductions from meter data
- Measured cost reductions from billing data
- KPI Trend
- Number of measures implemented from plan
Measure Results of Implementation

- Number of newsletters issued
- Number of team meetings conducted
- Building performance data
  - Hot/cold calls
  - Plug load inventory
- Purchasing policies including rate changes
- Occupant participation
Energy Plan Cycle

Continuous Process Improvement

Data Collection

Implement

Measure

Develop

Evaluate
Evaluate Results of Implementation

- Validate data accuracy
- Were measurements relevant for what you wanted to achieve with the activities?
Evaluate Results of Implementation

- Did you achieve or surpass goals as indicated in measurements column of tables?
  - If not, why?
- Is the project complete?
  - Continue, expand or abandon project
Evaluate Results of Implementation

- Determine next steps to achieve strategic goals
- Create new prioritized list
  - Group: no-cost /low-cost/capital
  - Set realistic goals
Possibilities

“Don’t make excuses. Find solutions.”

Unknown
USI Contacts…

- Len Hoey  
  919 733 1891  
  lhoey@nccommerce.com

- Renee Hutcheson  
  919 715 1158  
  rhutcheson@nccommerce.com

- Lyn Martin  
  919 208 0328  
  lmartin@nccommerce.com

- Reid Conway  
  828 413 5047  
  rconway@nccommerce.com
Thank You for Attending