Utility Savings Initiative

Utility Savings Initiative Update Tour

July 23 thru August 2, 2012
Utility Savings Initiative

Housekeeping

1. Continuing Ed for PEM
2. BOC
3. Reporting Energy Consumption on Leased Buildings???
Utility Savings Initiative

Agenda

1. USI By the Numbers
   • Btu conversion factors
   • Portfolio Manager
   • Legislation and Budget

2. DOE Better Building Challenge

3. Energy Code

4. The USI Energy Plan
Utility Savings Initiative

Agenda

5. DOE Grant
6. Renewable Energy for Public Buildings
   • Bob Leker
7. Role of USI Team
8. Beyond 2015
The Team

- Western Region / Reid
- Foothills Region / Lyn
- Raleigh Region / Renee
- East Region / Len
Utility Savings Initiative

1) USI By the Numbers
## Utility Savings Initiative

### EPA Conversion Factors

<table>
<thead>
<tr>
<th>Energy Unit</th>
<th>Original USI Factor</th>
<th>Portfolio Manager Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (Btu/kWh)</td>
<td>3,412</td>
<td>3,412</td>
</tr>
<tr>
<td>Natural Gas (Btu/CCF)</td>
<td>100,000</td>
<td>102,900</td>
</tr>
<tr>
<td>#2 Fuel Oil (Btu/gal)</td>
<td>140,000</td>
<td>138,690.5</td>
</tr>
<tr>
<td>#6 Fuel Oil (Btu/gal)</td>
<td>150,000</td>
<td>149,690.5</td>
</tr>
<tr>
<td>Propane (Btu/gal)</td>
<td>92,000</td>
<td>91,648</td>
</tr>
<tr>
<td>Coal (Btu/ton)</td>
<td>26,000,000</td>
<td>25,090,000</td>
</tr>
<tr>
<td>Wood (Btu/ton)</td>
<td>16,000,000</td>
<td>15,380,000</td>
</tr>
<tr>
<td>Steam (Btu/lb)</td>
<td>1,000</td>
<td>1,194</td>
</tr>
</tbody>
</table>
## Utility Savings Initiative

### Original USI Factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy $ Avoided</th>
<th>Energy $/gsf</th>
<th>$/mmBtu</th>
<th>$/mmBtu %change</th>
<th>btu/sf</th>
<th>btu/sf %change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>$2,020,000</td>
<td>$2.02</td>
<td>$12.949</td>
<td></td>
<td>155,754</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>$24,481,673</td>
<td>$1.87</td>
<td>$13.607</td>
<td>5%</td>
<td>137,449</td>
<td>-12%</td>
</tr>
<tr>
<td>2004-05</td>
<td>$25,115,568</td>
<td>$1.99</td>
<td>$14.315</td>
<td>11%</td>
<td>138,705</td>
<td>-11%</td>
</tr>
<tr>
<td>2005-06</td>
<td>$34,916,260</td>
<td>$2.26</td>
<td>$16.536</td>
<td>28%</td>
<td>136,420</td>
<td>-12%</td>
</tr>
<tr>
<td>2006-07</td>
<td>$37,360,350</td>
<td>$2.18</td>
<td>$16.171</td>
<td>25%</td>
<td>134,962</td>
<td>-13%</td>
</tr>
<tr>
<td>2007-08</td>
<td>$49,179,146</td>
<td>$2.37</td>
<td>$17.899</td>
<td>38%</td>
<td>132,344</td>
<td>-15%</td>
</tr>
<tr>
<td>2008-09</td>
<td>$43,990,519</td>
<td>$2.49</td>
<td>$18.320</td>
<td>41%</td>
<td>135,780</td>
<td>-13%</td>
</tr>
<tr>
<td>2009-10</td>
<td>$50,050,148</td>
<td>$2.45</td>
<td>$18.349</td>
<td>42%</td>
<td>133,454</td>
<td>-14%</td>
</tr>
<tr>
<td>2010-11</td>
<td>$62,638,643</td>
<td>$2.39</td>
<td>$18.592</td>
<td>44%</td>
<td>128,470</td>
<td>-18%</td>
</tr>
<tr>
<td>2011-12</td>
<td>$0</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2012-13</td>
<td>$0</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2013-14</td>
<td>$0</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2014-15</td>
<td>$0</td>
<td>$0.00</td>
<td>$0.00</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

**TOTAL UTILITY $ AVOIDED**: $327,732,307

**30% reduction**: 109,028

**$417,083,154**
## Utility Savings Initiative

### Portfolio Manager Factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy $ Avoided</th>
<th>Energy $/gsf</th>
<th>$/mmbtu</th>
<th>$/mmbtu %change</th>
<th>btu/sf</th>
<th>btu/sf %change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>$12.289</td>
<td>$2.02</td>
<td></td>
<td></td>
<td>164,127</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>$12.555</td>
<td>$1.87</td>
<td></td>
<td>2%</td>
<td>148,973</td>
<td>-9%</td>
</tr>
<tr>
<td>2004-05</td>
<td>$13.609</td>
<td>$1.99</td>
<td></td>
<td>11%</td>
<td>145,906</td>
<td>-11%</td>
</tr>
<tr>
<td>2005-06</td>
<td>$16.046</td>
<td>$2.26</td>
<td></td>
<td>31%</td>
<td>140,584</td>
<td>-14%</td>
</tr>
<tr>
<td>2006-07</td>
<td>$15.903</td>
<td>$2.18</td>
<td></td>
<td>29%</td>
<td>137,232</td>
<td>-16%</td>
</tr>
<tr>
<td>2007-08</td>
<td>$17.636</td>
<td>$2.37</td>
<td></td>
<td>44%</td>
<td>134,321</td>
<td>-18%</td>
</tr>
<tr>
<td>2008-09</td>
<td>$18.044</td>
<td>$2.49</td>
<td></td>
<td>47%</td>
<td>137,856</td>
<td>-16%</td>
</tr>
<tr>
<td>2009-10</td>
<td>$18.091</td>
<td>$2.45</td>
<td></td>
<td>47%</td>
<td>135,360</td>
<td>-18%</td>
</tr>
<tr>
<td>2010-11</td>
<td>$18.336</td>
<td>$2.39</td>
<td></td>
<td>49%</td>
<td>130,263</td>
<td>-21%</td>
</tr>
<tr>
<td>2011-12</td>
<td>$0.000</td>
<td>$0.00</td>
<td></td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2012-13</td>
<td>$0.000</td>
<td>$0.00</td>
<td></td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2013-14</td>
<td>$0.000</td>
<td>$0.00</td>
<td></td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2014-15</td>
<td>$0.000</td>
<td>$0.00</td>
<td></td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td><strong>$392,017,479</strong></td>
<td></td>
<td></td>
<td></td>
<td>114,889</td>
<td>30% reduction</td>
</tr>
<tr>
<td></td>
<td><strong>$481,368,326</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL UTILITY $ AVOIDED</td>
</tr>
</tbody>
</table>
## Water Data

<table>
<thead>
<tr>
<th></th>
<th>water $ avoided</th>
<th>$/mgal</th>
<th>$/mgal %change</th>
<th>gal/sf</th>
<th>gal/sf %change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>$4,77</td>
<td></td>
<td></td>
<td>54.48</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>$4,113,517</td>
<td>$5.16</td>
<td>8%</td>
<td>46.38</td>
<td>-15%</td>
</tr>
<tr>
<td>2004-05</td>
<td>$2,908,311</td>
<td>$5.08</td>
<td>7%</td>
<td>48.91</td>
<td>-10%</td>
</tr>
<tr>
<td>2005-06</td>
<td>$4,791,306</td>
<td>$5.25</td>
<td>10%</td>
<td>46.12</td>
<td>-15%</td>
</tr>
<tr>
<td>2006-07</td>
<td>$9,979,068</td>
<td>$6.67</td>
<td>40%</td>
<td>41.01</td>
<td>-25%</td>
</tr>
<tr>
<td>2007-08</td>
<td>$12,801,536</td>
<td>$7.09</td>
<td>49%</td>
<td>39.10</td>
<td>-28%</td>
</tr>
<tr>
<td>2008-09</td>
<td>$15,765,809</td>
<td>$7.74</td>
<td>62%</td>
<td>37.54</td>
<td>-31%</td>
</tr>
<tr>
<td>2009-10</td>
<td>$18,735,890</td>
<td>$8.57</td>
<td>80%</td>
<td>36.61</td>
<td>-33%</td>
</tr>
<tr>
<td>2010-11</td>
<td>$20,255,410</td>
<td>$9.16</td>
<td>92%</td>
<td>36.57</td>
<td>-33%</td>
</tr>
<tr>
<td>2011-12</td>
<td>$0</td>
<td>$0.00</td>
<td>0%</td>
<td>0.00</td>
<td>0%</td>
</tr>
<tr>
<td>2012-13</td>
<td>$0</td>
<td>$0.00</td>
<td>0%</td>
<td>0.00</td>
<td>0%</td>
</tr>
<tr>
<td>2013-14</td>
<td>$0</td>
<td>$0.00</td>
<td>0%</td>
<td>0.00</td>
<td>0%</td>
</tr>
<tr>
<td>2014-15</td>
<td>$0</td>
<td>$0.00</td>
<td>0%</td>
<td>0.00</td>
<td>0%</td>
</tr>
</tbody>
</table>

$89,350,847
Utility Savings Initiative

Annual Calendar Year Degree Day Data

[Graph showing annual calendar year degree day data with linear trends for cdd and hdd.]
Utility Savings Initiative

Fiscal Year Degree Day Data

- cdd
- hdd
- Linear (cdd)
- Linear (hdd)
Utility Savings Initiative

Watch Out

1. Expect significant reductions this year
2. Mild Weather past 12 months
3. ARRA projects
4. Performance Contracts
5. Maintain trend reductions – do not go backwards
Utility Savings Initiative

Portfolio Manager

Community Colleges: 26 facilities

Wayne Community College – 17 (Wayne County)
Johnston Community College – 3 (Johnston County)
Troy Community College – 6 (Montgomery County)
Utility Savings Initiative

**Portfolio Manager**

**K-12 Schools:** 279 facilities

- Charlotte K-12s – 175 (Mecklenburg County)
- Fayetteville K-12s – 94 (Cumberland County)
- Cleveland K-12s – 10 (Cleveland County)

![Energy Star Portfolio Manager](image-url)
Utility Savings Initiative

Portfolio Manager

Universities: 45 facilities

Fayetteville State University – 45 (Cumberland County)
Utility Savings Initiative

Legislation and Budget

H177 Clean Energy Transportation Act

- Task Force – SEO, DOA, DOT & DPI
- Cost benefit analysis of alt fuels
- Fueling infrastructure
- Environmental impact
- EV stations
- Dec 1 Final Report including recommendations
Better Buildings Challenge

What Is It?

DOE / EERE Program

Build on the Success of ARRA

1. Make commitment
2. Take Action
3. Report Results
Better Buildings Challenge

The Commitment

20% reduction by 2020
(using USI 2008-09 as baseline)

Alignment with USI goals

Reporting Incremental Success

Showcase Projects
Comparing the Programs

USI

30% reduction by 2015
(using USI 2002-03 as baseline)

Better Buildings Challenge

20% reduction by 2020
(using USI 2008-09 as baseline)
Better Buildings Challenge

123 million sq. ft.
agencies and universities

11,000 buildings
The Cost of Doing Nothing

Projected Avoided costs
Projected Dollars Spent

Millions
$550
$500
$450
$400
$350
$300
$250
$200
$150

Better Buildings Challenge

Benefits

National database of information
Sharing Information

Barriers

Existing databases in use
Dealing with non-metered buildings
Building Codes

Energy Code Update

Existing Building Code

2012 NC ECC Training
5) USI Strategic Plan
Utility Savings Initiative

KEY FOCUS AREAS OF THE PLAN:

1) Communication and Training –

2) Effectively Allocate Resources – Becomes Initiative Implementation

3) Performance Contracting –
6) DOE PC Grant
Utility Savings Initiative

DOE PC Grant

- Small PC
- Profitable
- Legal
- Meet expectations
- Partners
  - DPI, DCA, NCCCS, NCACC, NCLM, ESC
6) Renewable Energy

Bob Leker
Renewable Energy Contracting – 3rd Party Projects

Bob Leker
Renewables Program Manager
NC Commerce Department
State Energy Office
First – a quick RE technology sampler tour from our ARRA funded projects
"WHERE THE DEVIL IS ALL THAT SOLAR HEAT WE STORED UP LAST SUMMER?"
NIMBY FILMS PRESENTS

ATTACK OF THE 50 FT. WIND TURBINE

RUN!! IT'S TRYING TO PROVIDE US WITH CLEAN, RENEWABLE ENERGY!!

WOULDN'T SOMEBODY THINK OF THE MIGRATORY SONG BIRDS!
Guilford College — thermal collectors
Guilford College – “heat dump”
Robeson County LFG
Other Possible RE Technologies

- Geothermal systems
- Community scale wind (50 kW to 250 kW)
Terms

- Developer – this is the 3rd party that arranges for purchase/installation
- Host – agency, university, or local gov’t. that has the roof or land for the technology
- REC – renewable energy credit (dollar value in addition to the energy payment from utility)
- PPA – power purchase agreement from utility or arrangement to buy thermal energy from a developer
Drivers for 3\textsuperscript{rd} Party Projects

- Fed & State Tax Credits & depreciation
- NC REPS w/ set aside for solar
- Fixed and reduced future energy costs
- Meeting facility sustainability objectives
- No “upfront” costs for hosts
Host Facility

info & homework needed

- Determine your objectives
- Get utility data
- Need “buy-in” from decision makers
- Assemble a team of facility, legal, contracting, dept. leaders, etc.
Complications

- Long-term legal arrangements (site access, purchase arrangements, payments, performance, etc.)
- Qualifying developers
- The “approval” process
- Understanding project benefits and being aware of issues
- Changing renewable energy markets
- 3rd party electricity sales – *not allowed in NC*, however 3rd party thermal sales are
Tools/Resources/Templates – on the way!

- Process overview
- Templates (contracts, RFPs, prequalifying docs, access, etc.)
- FAQs
- Links to relevant background info

Miriam Tripp, Liz Bowen, & Bob Leker and others – developing guides and templates
State of North Carolina
Prequalification for Single Prime Contractors

<table>
<thead>
<tr>
<th>NC License number</th>
<th>License Limit/Level</th>
<th>State/County/City Privilege License [provide copy]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Matrix: Enter type of license. If information not provided in proposal or license does not meet requirement, proposal is non-responsive and do not consider for pre-qualification.]

Bonding

1. e. (1) Attach letter, dated within the last 30 days, from your surety company, signed by their Attorney in Fact, verifying their willingness to issue sufficient payment and performance bonds for this project, on behalf of your firm or its agent licensed to do business in North Carolina, and verifying your company’s capability and capacity based on your current value of work. Surety company bond rating shall be rated “A” or better under the A.M. Best Rating system or The Federal Treasury List.

Have you attached a surety letter?  ☐ Yes  ☐ No

[Matrix: Y/N. If information not provided in proposal, proposal is non-responsive and do not consider for pre-qualification.]

1. e. (2) Have any funds been expended by a surety company on your firm’s behalf?  ☐ Yes  ☐ No  If yes, explain:

1. e. (3) List all surety companies that have provided bonds for your company for the past five (5) years, provide explanation, required, if more than one company.

<table>
<thead>
<tr>
<th>Date</th>
<th>Firm</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Matrix: If “Yes,” without explanation given, proposal is non-responsive and do not consider for pre-qualification.]

Litigation/Claims

1. f. (1) Has your company been involved in any suits or arbitration proceedings within the last five years?  ☐ No  ☐ Yes  If yes, please explain:

[Matrix: If “Yes,” with no explanation given, proposal is non-responsive and do not consider for pre-qualification.]

1. f. (2) Are there currently any judgments, claims, arbitration proceedings or suits involving Owners pending or outstanding against your company, its officers, owners, or agents?  ☐ No  ☐ Yes  If yes, please explain:

[Matrix: If “Yes,” with no explanation given, proposal is non-responsive and do not consider for pre-qualification.]
Below are described solar certification standards from the National Association of Board Certified Energy Practitioners (NABCEP). Also included in this document are recommended administrative contracting requirements. It is highly recommended that public institutions require contractors have at least one staff that is NABCEP certified under either the Photovoltaics Installer (PV) or Solar Heating Installer certification – as is appropriate for the project. The NABCEP entry level certification standard is not recommended as a minimum contractor requirement, the NABCEP PV or Solar Heating Installer full certification is highly recommended. Refer to the NABCEP website for details http://www.nabcep.org/certification/the-need-for-certification. A summary of NABCEP requirements (taken from NABCEP documents available on their website) is outlined below. Refer to the NABCEP website for complete documents.

A current list of NABCEP certified installers at the following NABCEP website http://www.nabcep.org/installer-locator-agreement. Note that NABCEP also has a technical sales certification and has just completed a company certification standard (no companies have completed these requirements yet).

Below is an overview of NABCEP Solar Heating Installer requirements.

To be eligible for NABCEP Solar Heating Installer Certification, candidates must first meet these basic requirements:

1. Be at least 18 years of age
2. Meet prerequisites of related experience and/or education
3. Complete an application for the NABCEP Solar Heating Certification Exam
4. Sign a code of ethics in the application
5. Pay applicable fees
6. Pass the written exam

Prerequisites/Education

There are several ways to qualify to take the NABCEP Solar Heating Installer Certification examination. NABCEP recognizes that professionals in the field of renewable and sustainable energy and energy efficient technologies receive training and work experiences in a variety of ways. Therefore each requirement to qualify for the exam stipulates specific training and experience. The NABCEP Application Review Committee reviews each application to determine compliance with eligibility criteria. Compliance with the requirements of one of the qualifying categories must be documented.

Qualifying categories can be found in the Candidate Information Handbook for Installer Exams.

To qualify to take the NABCEP Solar Heating Installer Certification examination, the candidate must demonstrate that he/she meets at least ONE of the following qualifying categories:

1-a.) Four (4) years of experience installing Solar Hot Water Systems (find the definition of years of experience below or in Section 4.2.2 in the Candidate Information Handbook); OR
Related Websites for Resources

- http://www.dsireusa.org/library/includes/map2.cfm?currentPageID=1&State=NC&RE=1&EE=1 – authoritative website for all energy incentives – DSIRE
RE Contracting – Notes about tools/templates

- We will make tools accessible on web
- Reviewers – “test for relevancy and market usefulness”
- Continue to refine tools/templates
Thank You

Questions?
Utility Savings Initiative

USI Leadership Certificate

Certificate of Recognition

Utility Savings Initiative Leadership Award

This award is presented to:

for excellence in promoting 'USI principles.

Ward Lenz
Director
North Carolina Energy Office

Len Hoey
Engineering Manager/USI Director
North Carolina Energy Office

Reid Conway
Energy Manager/Western Region
North Carolina Energy Office
Utility Savings Initiative

USI Leadership Certificate Criteria

- Utilities – Data collection and management
- Policies – Enforced
- Culture – Community engaged
- Achievement – Reach Objectives
- SEP – Working document
- Innovative – Lead by example
Utility Savings Initiative

7) Role of USI Team
Utility Savings Initiative

Role of USI Team

- Legislative
- Contractual – DOE
- BBC
- Summit

What do you need????????
Utility Savings Initiative

8) Beyond 2015
Utility Savings Initiative

Beyond 2015

- Next Steps
- BBC 2020 any one can sign up
- Legislative calendar
- Energy Summit Initiative
USI Contacts

Len Hoey
lhoey@nccommerce.com
919-733-1891

Reid Conway
rconway@nccommerce.com
828-670-3389

Lyn Martin
lmartin@nccommerce.com
919-208-0328

Renee Hutcheson
rhutcheson@nccommerce.com
919-715-1158

Bob Leker
bleker@nccommerce.com
919-733-1907

www.nccommerce.com/energy