AUGUST 21-23, 2018 • CLEVELAND, OHIO
Spotlight on Energy Efficiency Funding Models for School Facilities

Thursday, August 23rd
2-3:30pm
Agenda

- **Welcome and Introductions**
  - Crystal McDonald, U.S. Department of Energy

- **USGBC’s Center for Green Sustainability**
  - Anisa Heming, Center for Green Schools, USGBC

- **Energy Efficient Schools Initiative**
  - Scott Slusher, Tennessee Department of Education

- **Questions & Answers**
Anisa Heming, Director
Center for Green Schools
U.S. Green Building Council
Anisa Heming
Director, Center for Green Schools
U.S. Green Building Council
IMPACTS OF U.S. BUILDINGS ON RESOURCES

40% primary energy use*

72% electricity consumption*

39% CO₂ emissions*

13.6% potable water consumption**

Sources:
Reduce contribution to **global climate change**

Enhance individual **human health**

Protect and restore **water resources**

Protect and enhance **biodiversity and ecosystem services**

Promote **sustainable and regenerative** material cycles

Build a **green economy**

Enhance **community quality of life**
ENLAND CODE PROGRESS

Percent savings shown relative to previous version of Standard 90.1
50 million students and 6 million adults

Close to 100,000 public schools

7.5 billion gross square feet and 2 million acres of land
Where we learn

MATTERS
State-level Legislation to Support Energy Efficiency: Dedicated Funding for Existing K-12 Schools

Yngrid Chayacani, Center for Green Schools at the U.S. Green Building Council
Biai Mariko Toy, Center for Green Schools at the U.S. Green Building Council

September 13, 2017

This document is intended to be viewed on an internet-connected device, and citations are hyperlinked.
California 2012
Colorado 2014
Illinois* 2011
Maine 1997
Oregon 2011
Tennessee 2008
Washington 2009
Key Considerations:

- Statewide baseline energy audit
- Accessing information and removing risk
- Grant programs vs. Revolving loans
### Table 3: The California Clean Energy Jobs Act (2013-2016)

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>EEP Approved</th>
<th>Project School Sites</th>
<th>Funding Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2014</td>
<td>33</td>
<td>78</td>
<td>$16,000,000</td>
</tr>
<tr>
<td>2014-2015</td>
<td>409</td>
<td>1,328</td>
<td>$257,000,000</td>
</tr>
<tr>
<td>2015-2016</td>
<td>539</td>
<td>2,113</td>
<td>$400,000,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>981</strong></td>
<td><strong>3,519</strong></td>
<td><strong>$673,000,000</strong></td>
</tr>
</tbody>
</table>

### Table 6: Washington Grant Program budget received, granted, and total spent

<table>
<thead>
<tr>
<th>Year</th>
<th>Budget Amount</th>
<th>Received by Program</th>
<th>Amount Granted to Applicants</th>
<th>Total Project Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$16,900,000</td>
<td></td>
<td>$16,530,105</td>
<td>$43,309,832</td>
</tr>
<tr>
<td>2010</td>
<td>$50,000,000</td>
<td></td>
<td>$49,346,606</td>
<td>$138,296,692</td>
</tr>
<tr>
<td>2011</td>
<td>$20,000,000</td>
<td></td>
<td>$25,465,803</td>
<td>$51,811,992</td>
</tr>
<tr>
<td>2012</td>
<td>$40,000,000</td>
<td></td>
<td>$33,549,148</td>
<td>$68,035,816</td>
</tr>
<tr>
<td>2013</td>
<td>$7,000,000</td>
<td></td>
<td>$9,008,338</td>
<td>$38,393,198</td>
</tr>
<tr>
<td>Total:</td>
<td>$133,900,000</td>
<td></td>
<td>$133,900,000</td>
<td>$339,847,530</td>
</tr>
</tbody>
</table>
Key Considerations:

• Statewide baseline energy audit
• Accessing information and removing risk
• Grant programs vs. Revolving loans
  • Combination: Washington, Tennessee, Maine, Oregon*
  • Grants: California
  • Loans: Colorado
Anisa Heming
Director, Center for Green Schools
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Scott Slusher, Deputy Director
Tennessee Department of Education
Energy Efficient Schools Initiative:

Energy Efficiency Funding Model for School Facilities

Scott Slusher, PEM | Deputy Director | Energy Services Consultant
Tennessee Public Schools Overview (School Year 2016-17)

Counties: 95
Distressed: 15
School Districts: 144
Number of Schools: 1,814
Student Population: 963,294
Square Footage: 169,614,912
Operations Budget: $555,967,030
State Wide K-12 Utility Expenditures (5 year)

Year | Expenditure
--- | ---
2012-2013 | $218,583,151
2013-2014 | $248,269,941
2015-2016 | $235,672,041
2016-2017 | $252,697,433

+ 13.5%
UTILITY EXPENDITURES BY SOURCE (SY2016-17)

- Electricity: 83%
- Natural Gas: 7%
- Fuel Oil: <1%
- Sewer/Water: 10%

- State wide reported square footage reduced by 2,184 sqft (-0.001%)
- Average Daily Attendance increased by 1,745 (0.19%)
- Heating degree days fell by -9%
- Cooling degree days increased by +14%.

<table>
<thead>
<tr>
<th></th>
<th>Utility $ Per Sqft</th>
<th>Utility $ Per ADA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change from previous year</td>
<td>% Change from previous year</td>
</tr>
<tr>
<td>2015-16</td>
<td>$1.39</td>
<td>6.7%</td>
</tr>
<tr>
<td>2016-17</td>
<td>$1.49</td>
<td>$0.10</td>
</tr>
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</table>
EESI Mission

*Improve the classroom learning environment through energy efficient strategies.*
History and Governance


- Funding:
  - $90 million of excess lottery funds
    - $20 Million grant fund
    - $70 Million revolving loan fund
  - $11 Million State Appropriation “Loans Only” (July 1, 2018)

- Governed by 12 members:
  - Commissioner of Education, Environment and Conservation and the Economic and Community Development,
  - Governor, Speaker of the House, & Speaker of the Senate: 3 appointees each representing local government and school districts.

- Five member Technical Advisory Committee, includes experts in LEED, Architecture, Engineering, & Public Power, TVA, and ORNL.

- Managed day to day by an Executive Director, Energy Services Consultant, & Executive Assistant.

- EESI reports administratively through the Department of Education.
EESI Services

- Low interest funding for energy efficient projects,
- Specialty/Emergency Grants,
- Energy assessments and feasibility studies,
- Technical review of existing proposals and designs,
- Best practices for navigating performance contracting,
- Equipment bid specifications and commissioning plans,
- Utility bill tracking and analysis,
- Strategic energy management planning.

Does your school qualify?
- Funding Eligible to
  - Public K-12 Schools
  - Special School Districts
  - Public Charter Schools

Technical Assistance Eligible to:
- Public K-12 Schools
- Special School Districts
- Public Charter Schools
- Private Charter Schools
Prescriptive Grants Program:

- **Program Overview**
  - Grants allocated to districts based on $22/student
  - Pre-determined payments for multiple energy efficiency measures
  - Focus was on increasing efficiency of existing equipment with quick payback

- **Results**
  - Approximately $16 million (out of $20 million allocated) was utilized by 130 school districts
  - TVA provided an additional $2 million of incentives and $1.3 million of in-kind service (pre and post measurement)
  - Electric energy reduction equal to approximately $4 million / year...
Energy Management Grant Program:

**Program Overview**
- $4.3 million of grants available to districts,
- Funds used to:
  - establish an energy policy and an on-going energy management program,
  - establish baseline energy usage,
  - to hire an energy manager or retro-commissioning for districts with advanced energy management programs

**Results**
- Level One Energy Audits for a minimum of 10% of the participating district square footage has been completed
- Baseline energy usage data was entered into Energy Star Portfolio Manager
EESI Grant Program Distributions

EESI Total Grant Disbursement as of January 2017

West Total: $5.14 M
Middle Total: $9.21 M
East Total: $7.73 M

EESI Total Grant Dollars
- 0
- 1 - 150,000
- 150,001 - 250,000
- 250,001 - 500,000
- 500,001 - 750,000
- 750,001 - 1,500,000
- 1,500,001 - 2,524,763
Sustainable Energy Efficiency Loans (Phase 3)

- **$70 $81 Million revolving loan fund**
  - **Eligible Projects**
    - New Construction Projects
      - Cost difference between Current Building Code and High Performance Building standards
    - Existing Buildings Projects
      - Lighting, HVAC, Controls, Building Envelope, and Retro commissioning
  - **Maximum loan size**
    - $5 Million
  - **Loan term**
    - Up to 16 years
  - **Interest Rates**
    - Projects < $3 Million - rate 1.5%
    - Projects > $3 Million - rate 2.0%
EESI Loan Program Distributions

Outstanding loans: $63,603,471.34
Under Construction: $20,443,508
Council Approvals: $14,234,419.
Dollars to Districts: $97,372,271
Energy Savings $36 + million
Our track record in utilizing the original allocation of $90,000,000 is remarkable.

- EESI is one of the only non-scholarship uses of Education Lottery Funds ever approved;
- 141 of the 144 TN school districts have participated in EESI programs;
- 126 grants and 79 loans have been generated by this program since 2008;
- $107 Million directly to schools districts;
- Seven schools have already completed their energy projects and paid back their loans;
- None of EESI’s loans have ended in default;
- 16% - 25% energy savings across all programs;
- All administrative costs associated with the 3-person EESI team are covered by low-interest loans and treasury fund balances.
Hurdles to overcome
Hurdles to overcome: The Funding Distributions Challenge

EESI Total Funding as of January 2017

West Total: $15.7 M
Middle Total: $44.05 M
East Total: $45.86 M

EESI Total Funding Dollars
- 0
- 1 - 200,000
- 200,001 - 450,000
- 450,001 - 1,000,000
- 1,000,001 - 2,000,000
- 2,000,001 - 4,000,000
- 4,000,001 - 6,240,820
Hurdles to overcome

- Must have policy and process documentation and decision trees developed early;
- Local government lack of understanding of performance contracts or energy savings models;
- Some governmental agencies are not accustomed to revolving loan fund programs;
- Connecting energy efficiency learning environments with department of education objectives (i.e. test scores, absenteeism, graduation rates, etc.);
- Bond Rating and Bonding Capacity vs. Cost of Doing Nothing;
- Pipeline is long and lack of interest for loans (early loans had 0% interest rate);
- Political concern of social value and identifying opportunities to update general assembly;
- EESI viewed as a vendor, not a state program; and
- Project scopes are smaller in rural districts.
Key Starting Points

• Tenn. Code Ann. § 49-17-101
• Measurement and Verification Plan
• Program needs to have social value attached:
  • Improved test scores, Higher graduation rates, Reduced student and teacher absenteeism, etc.
• Make importance of energy efficiency relative to student performance by integrating energy awareness into the curriculum.
• Lighting is easy, but don’t miss the opportunity to combine other ECMs...
• Emphasize low end maintenance and training school facilities staff.
• Focus on district and county CFOs.
What’s Next?
What’s next?

- Indoor Environmental Quality
- IOT and Predictive Maintenance
- Site Security
- Dynamic Lighting
- New Construction
NEW! Minimum Project Requirements

Advanced Energy Design Guides

• Prescriptive **pre-modeled solutions** to reach a given energy savings for a given building type.

• [www.ashrae.org/freeaedg](http://www.ashrae.org/freeaedg)
Questions & Answers