



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**



Crystal McDonald

Policy Advisor, WIP

U.S. Department of Energy



Anisa Heming, Director

Center for Green Schools
U.S. Green Building Council



Anisa Heming

Director, Center for Green Schools
U.S. Green Building Council

Government

Building Owners

Product Manufacturers

Architect

University Alumni

Planners



Engineers

Financial Planners

Non-Profit Leaders

Interior Designers

Landscape Architects

IMPACTS OF U.S. BUILDINGS ON RESOURCES

40% primary energy use*

72% electricity consumption*

39% CO₂ emissions*

13.6% potable water consumption**

Sources:

*Environmental Information Administration (2008). EIA Annual Energy Outlook.

** U.S. Geological Survey (2000). 2000 data.





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

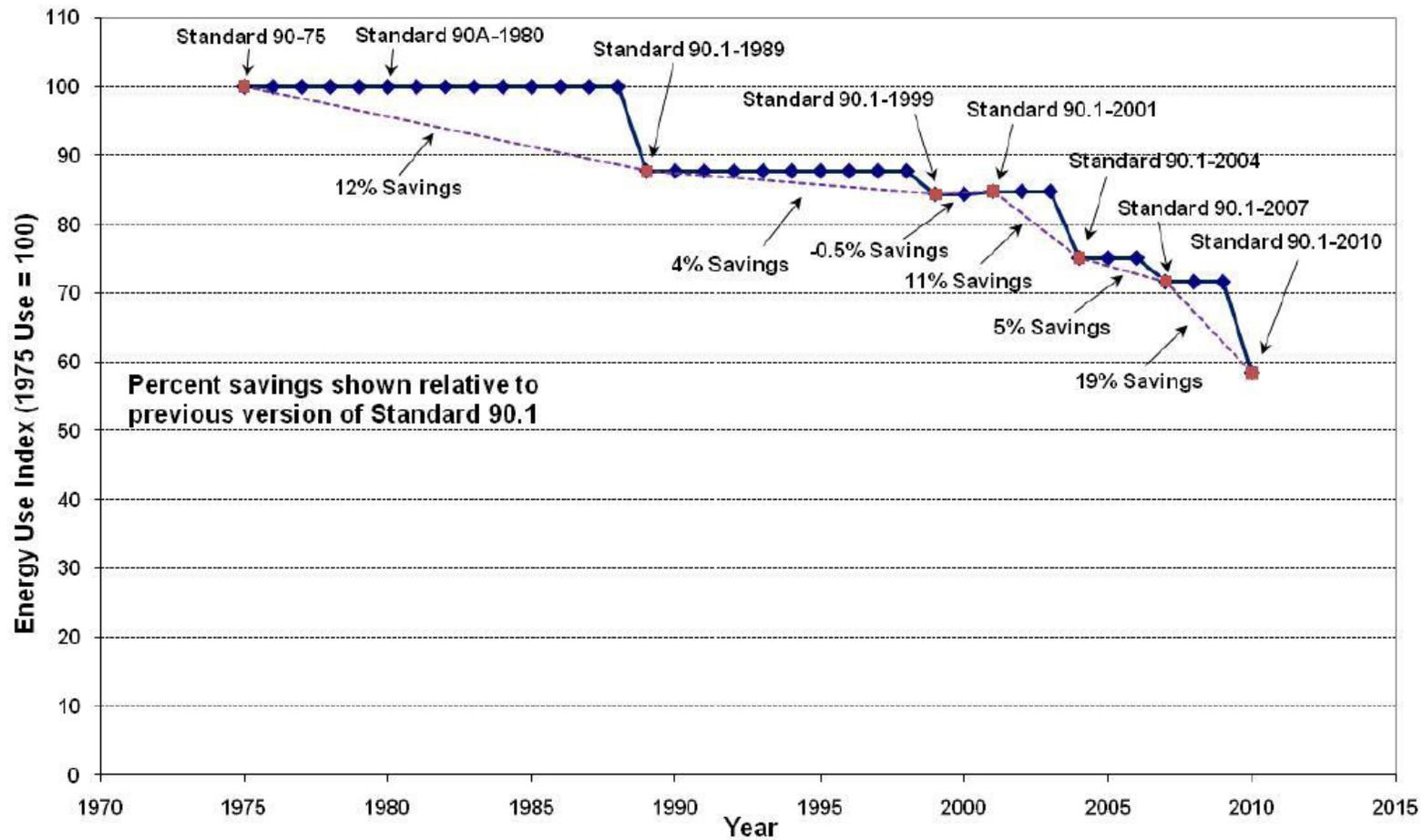


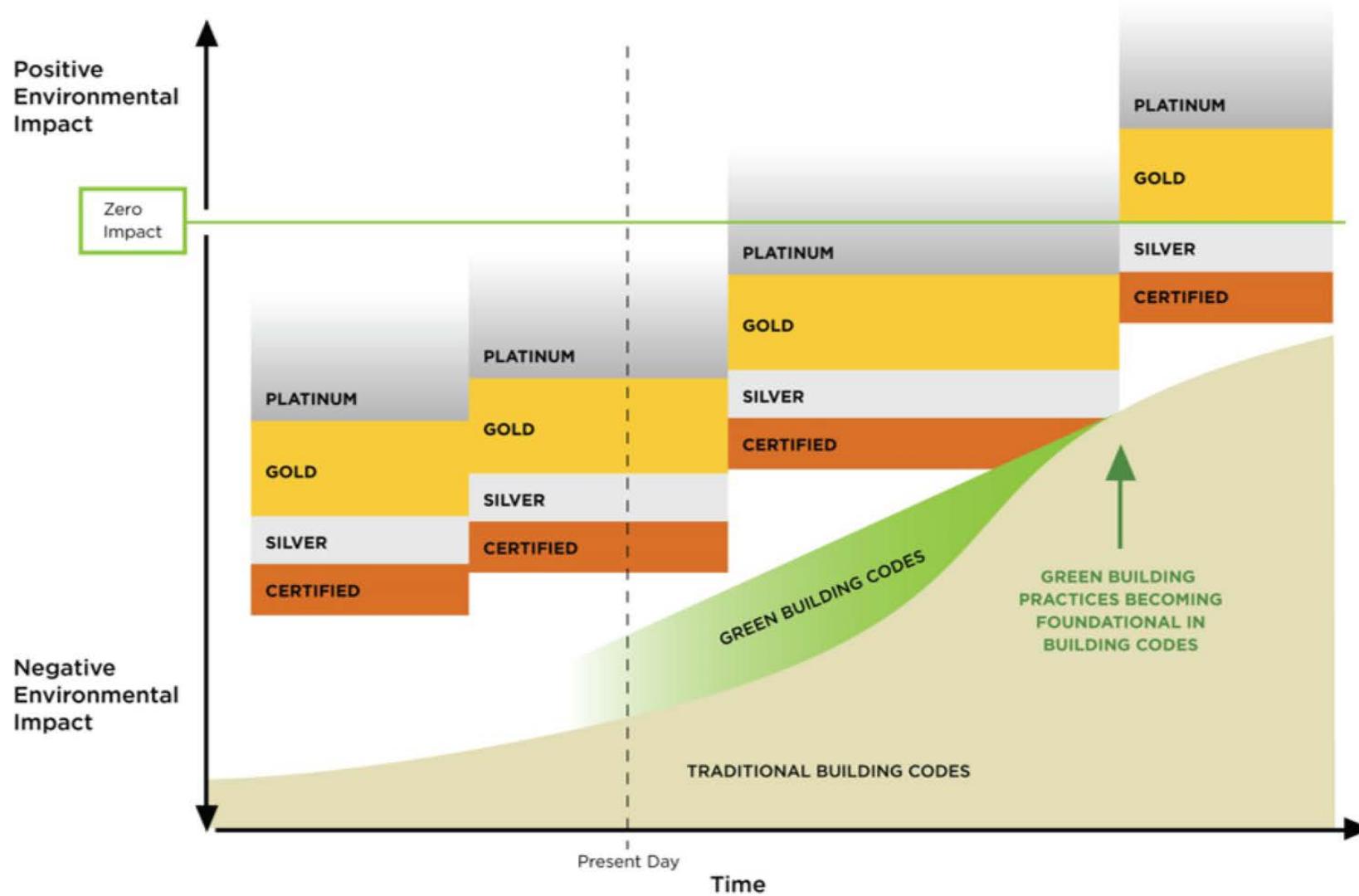
Build a **green economy**



Enhance **community quality of life**

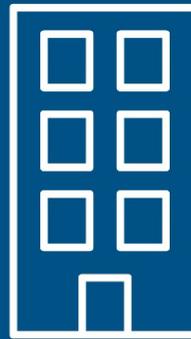
ENERGY CODE PROGRESS







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

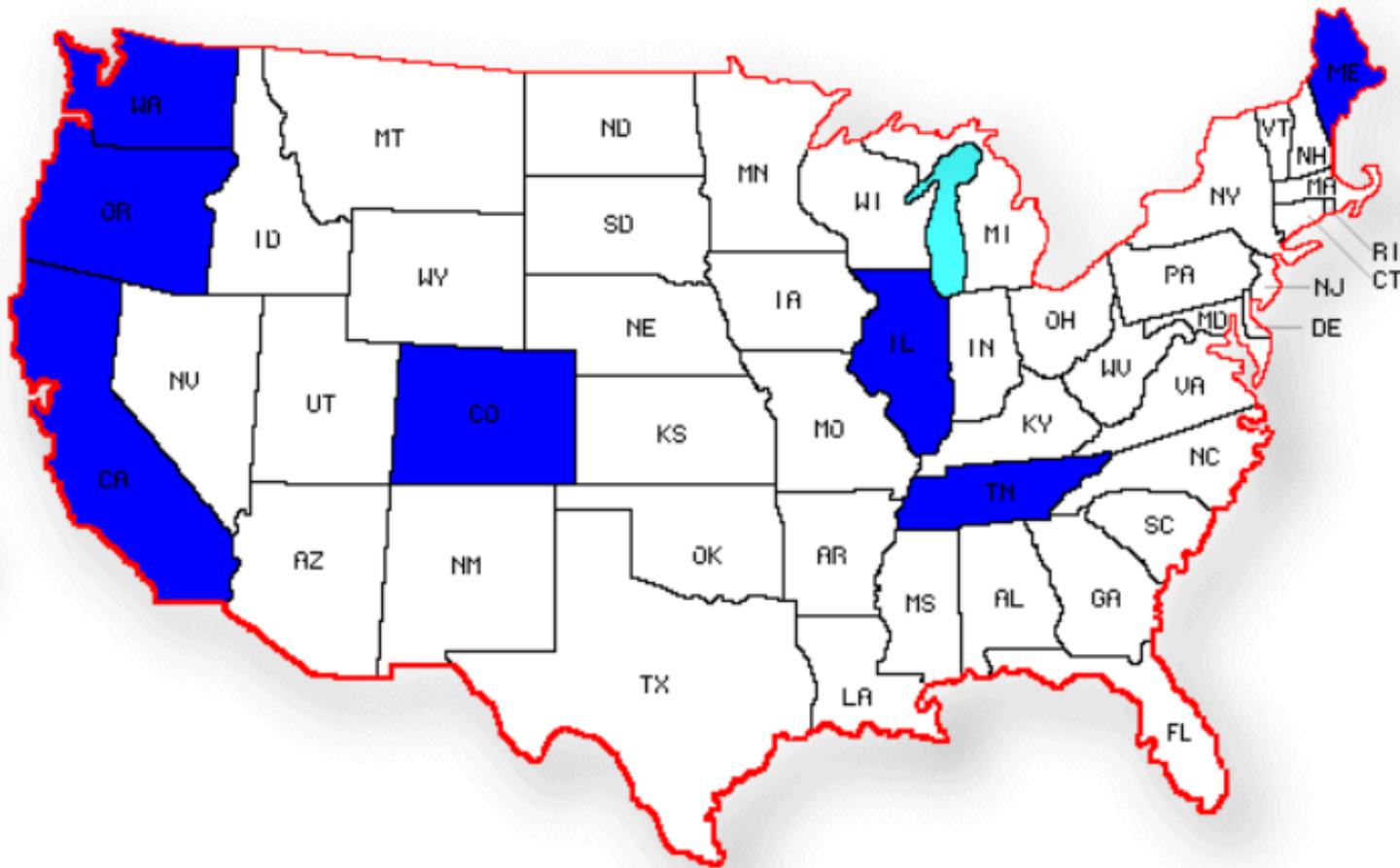


State-level Legislation to Support Energy Efficiency: Dedicated Funding for Existing K-12 Schools

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

September 15, 2017

This document is intended to be viewed on an internet-connected device, and citations are hyperlinked.



STATE	YEAR PASSED
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)

Fiscal Year	EEP Approved	Project School Sites	Funding Approval
2013-2014	33	78	\$16,000,000
2014-2015	409	1,328	\$257,000,000
2015-2016	539	2,113	\$400,000,000
TOTAL	981	3,519	\$673,000,000

Source: California Energy Commission, Commission Report, Proposition 39: California Clean Energy Jobs Act, K-12 Program and Energy Conservation Assistance Act of 2015-2016 Progress Report.

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

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

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

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U.S. Green Building Council

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Scott Slusher, Deputy Director
Tennessee Department of Education



Energy Efficient Schools Initiative:

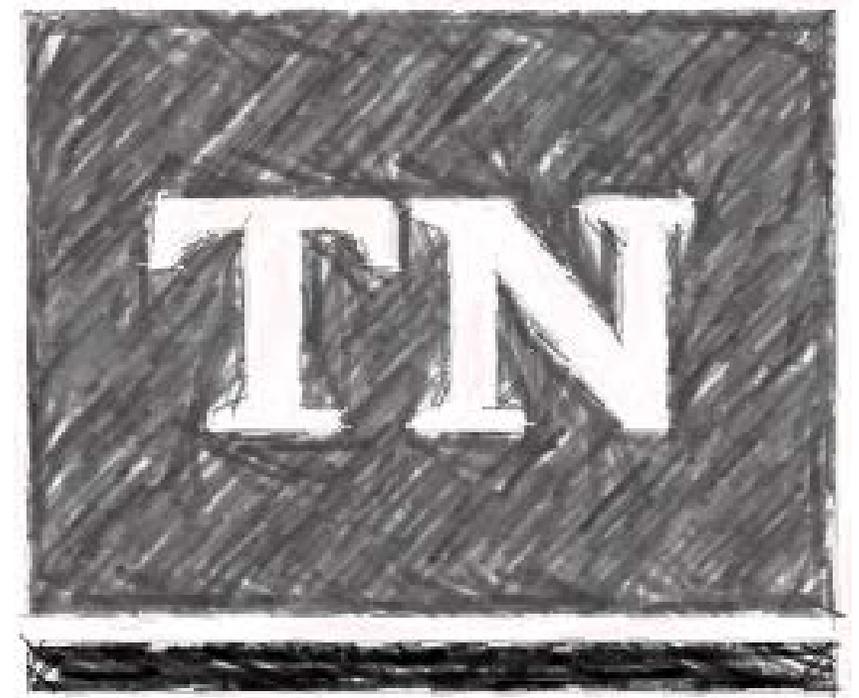
Energy Efficiency Funding Model for School Facilities

Scott Slusher, PEM | Deputy Director | Energy Services Consultant

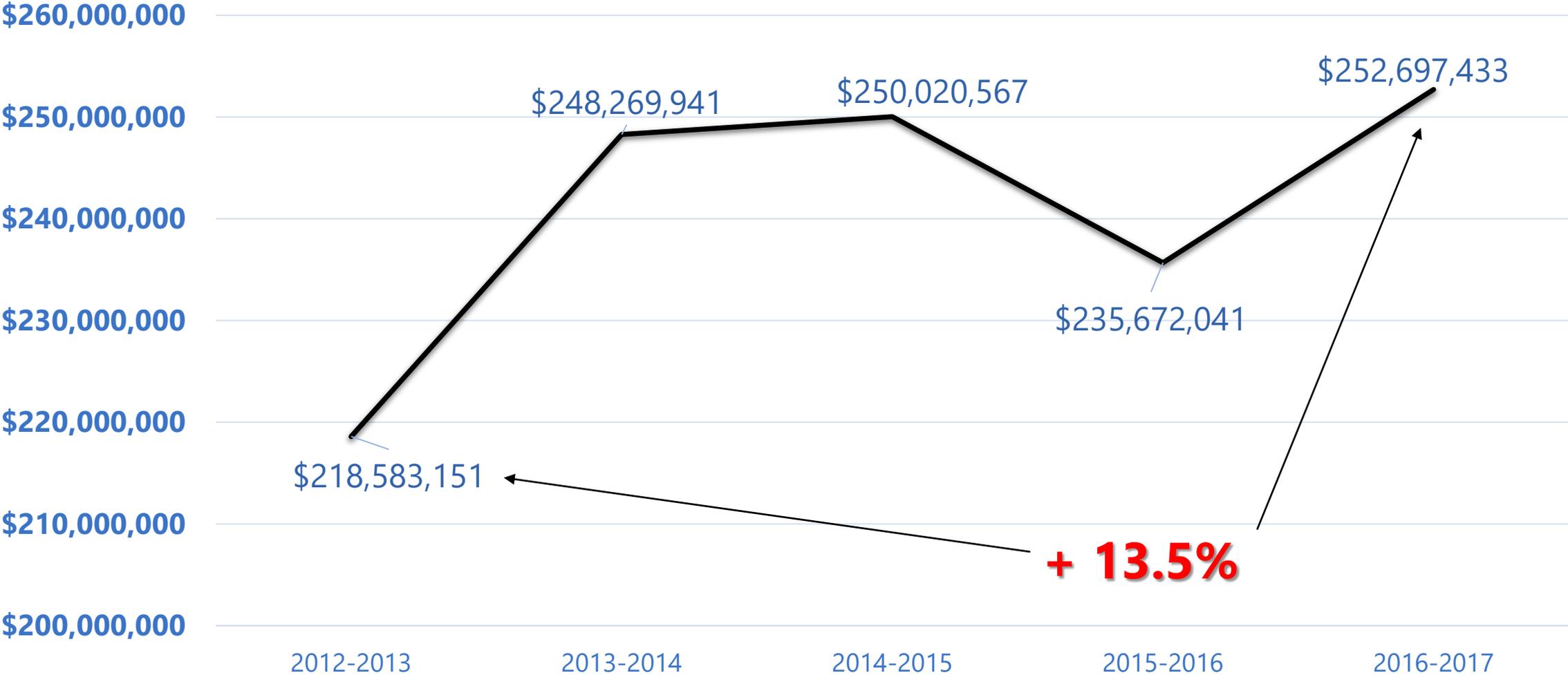
Tennessee Public Schools Overview

(School Year 2016-17)

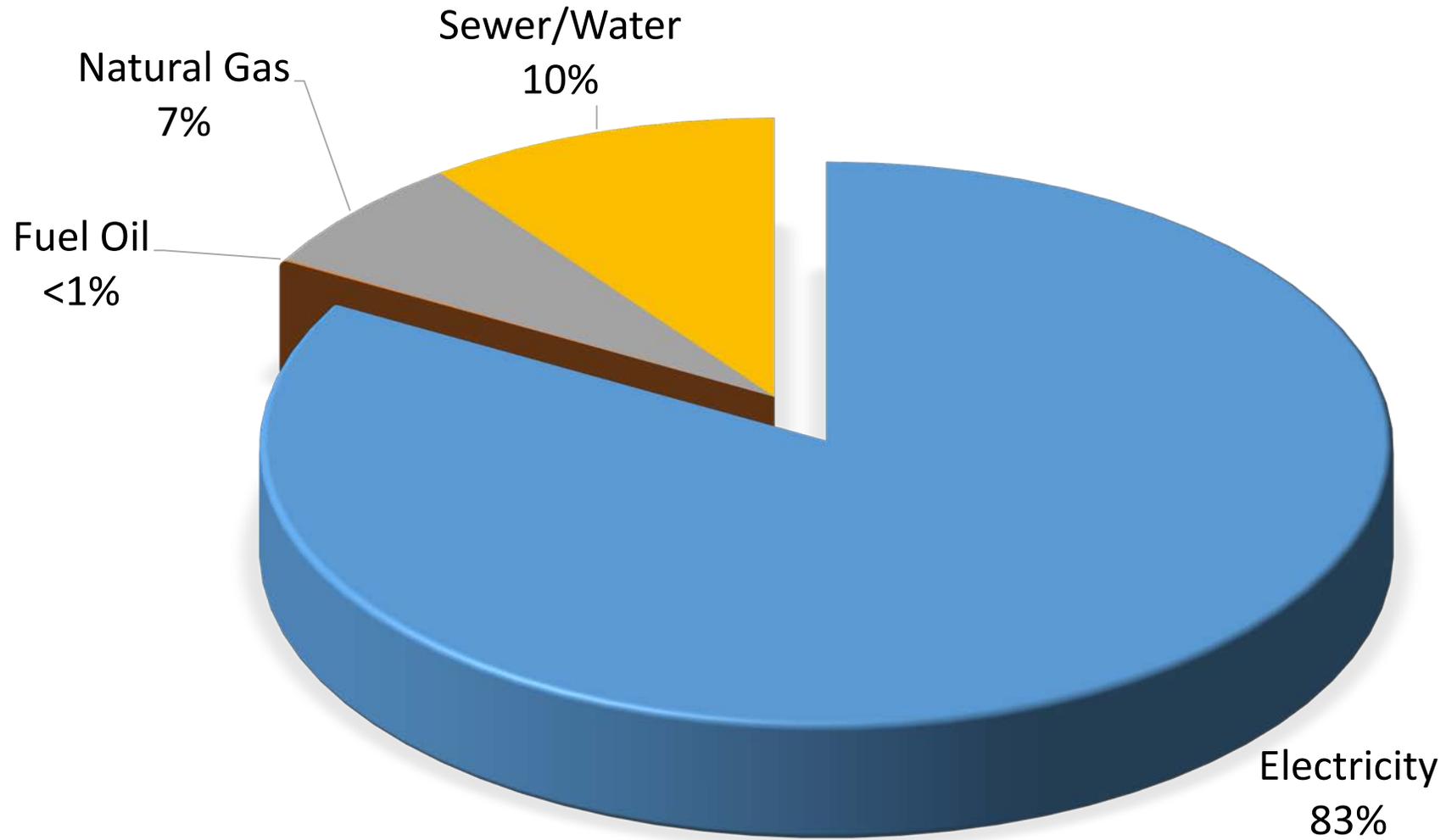
Counties:	95
Distressed:	15
School Districts:	144
Number of Schools:	1,814
Student Population:	963,294
Square Footage:	169,614,912
Operations Budget:	\$555,967,030



State Wide K-12 Utility Expenditures (5 year)



UTILITY EXPENDITURES BY SOURCE (SY2016-17)



School District Utility Summary (2016 – 2017)

- 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%.

Utility \$ Per Sqft				Utility \$ Per ADA			
2015-16	2016-17	Change from previous year	% Change from previous year	2015-16	2016-17	Change From Previous Year	% Change From Previous Year
\$1.39	\$1.49	\$0.10	6.7%	\$258	\$262	\$4.00	2.0%

EESI Mission

Improve the classroom learning environment through energy efficient strategies.

The logo for Tennessee State University, featuring the letters "TN" in white, serif font on a red square background. Below the red square is a dark blue horizontal bar.

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**EESI:
Overview Summary**

History and Governance

- Energy Efficient Schools Initiative (EESI) created by legislature – 2008.
- 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

The logo for Tennessee, featuring the letters "TN" in a white, serif font centered within a red square. Below the square is a dark blue horizontal bar.

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Program Timeline

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

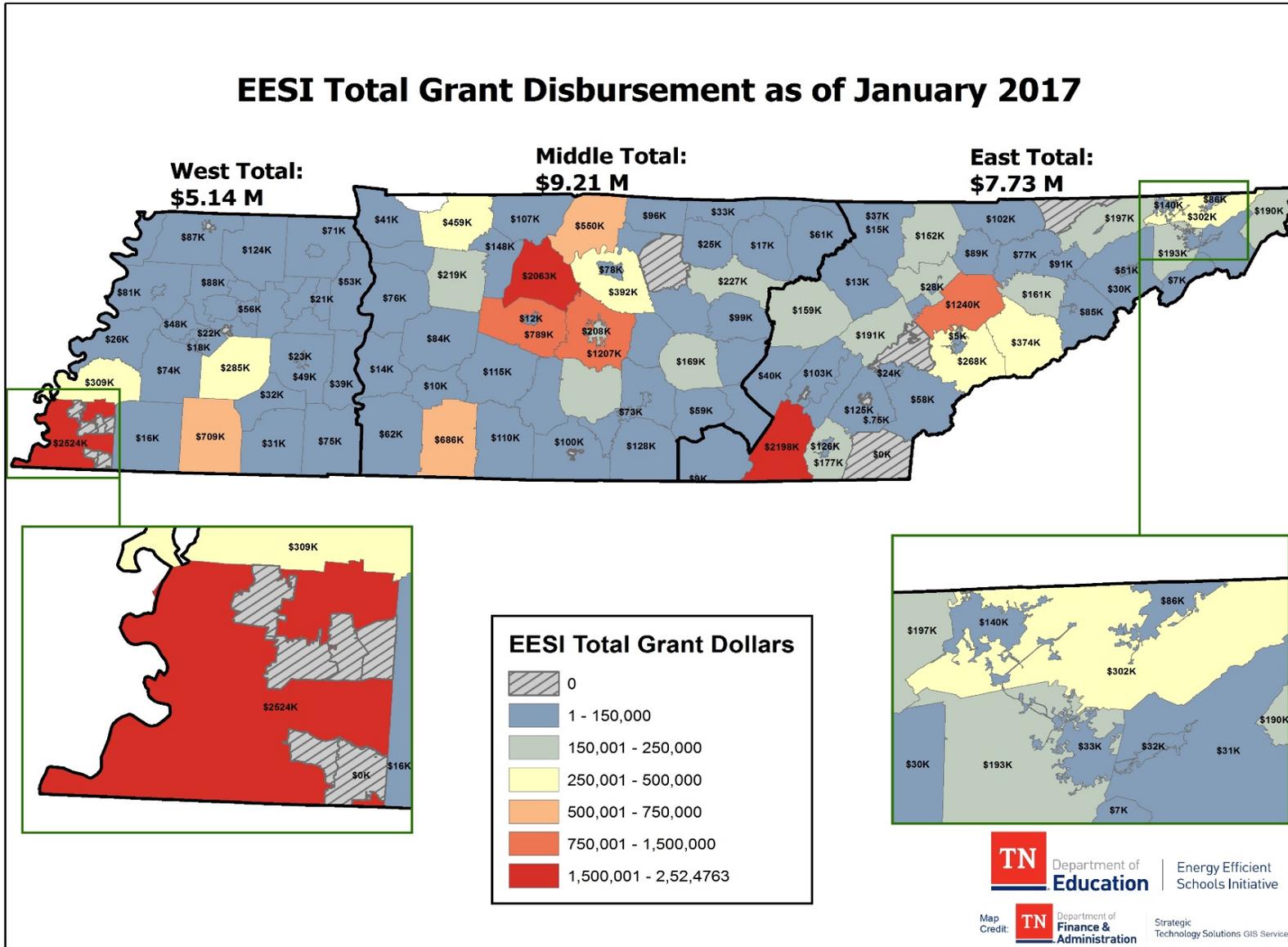
- \$4.3 million of grants available to districts,
- Funds used to:
 - establish an energy policy and an on-going energy management program,
 - establish baseline energy usage,
 - to hire an energy manager or retro-commissioning for districts with advanced energy management programs

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



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:

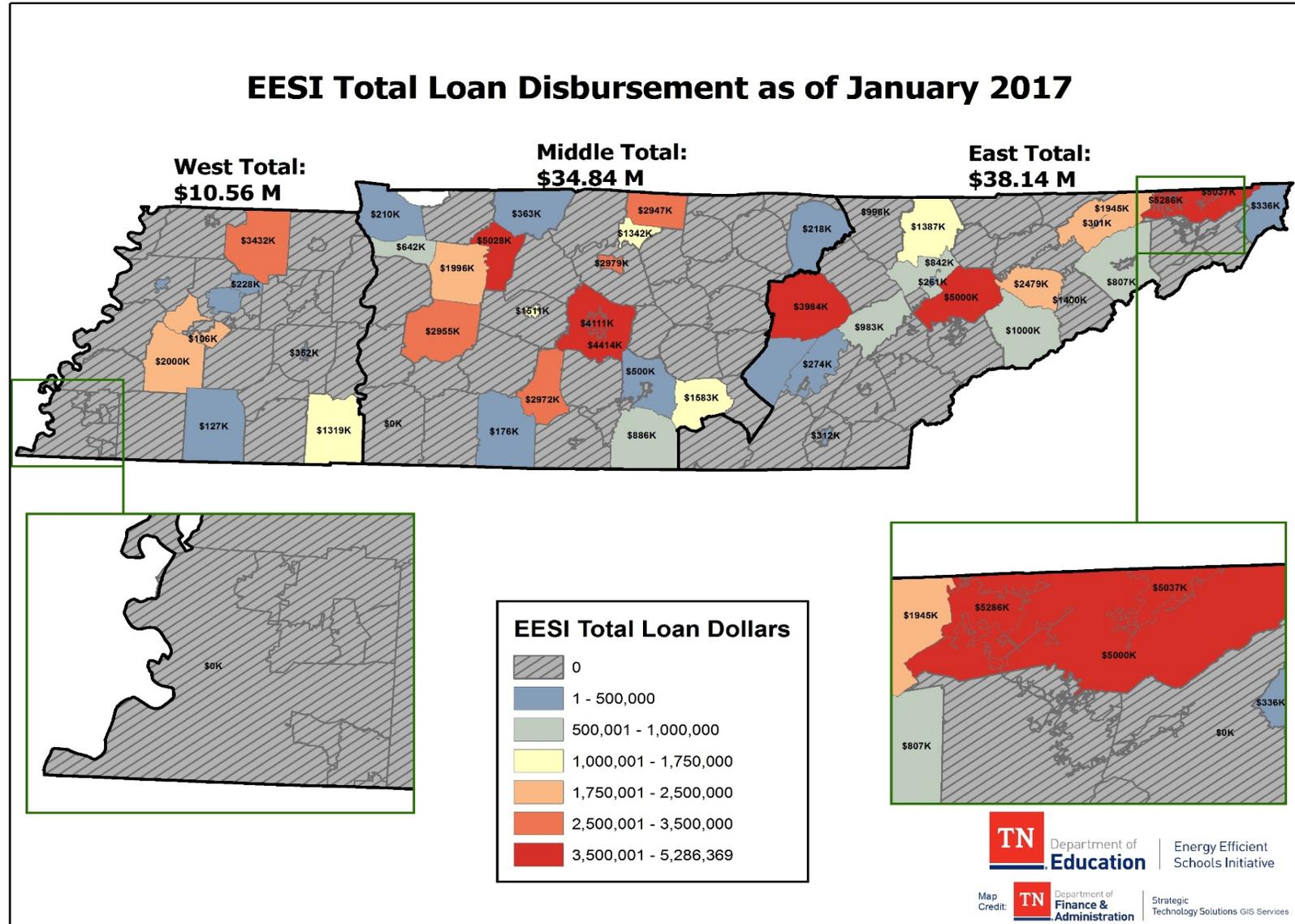
\$14,234,419.

Dollars to Districts:

\$97,372,271

Energy Savings

\$36 + million



Value of our Strategy: EESI Successes (June 30, 2018)

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.

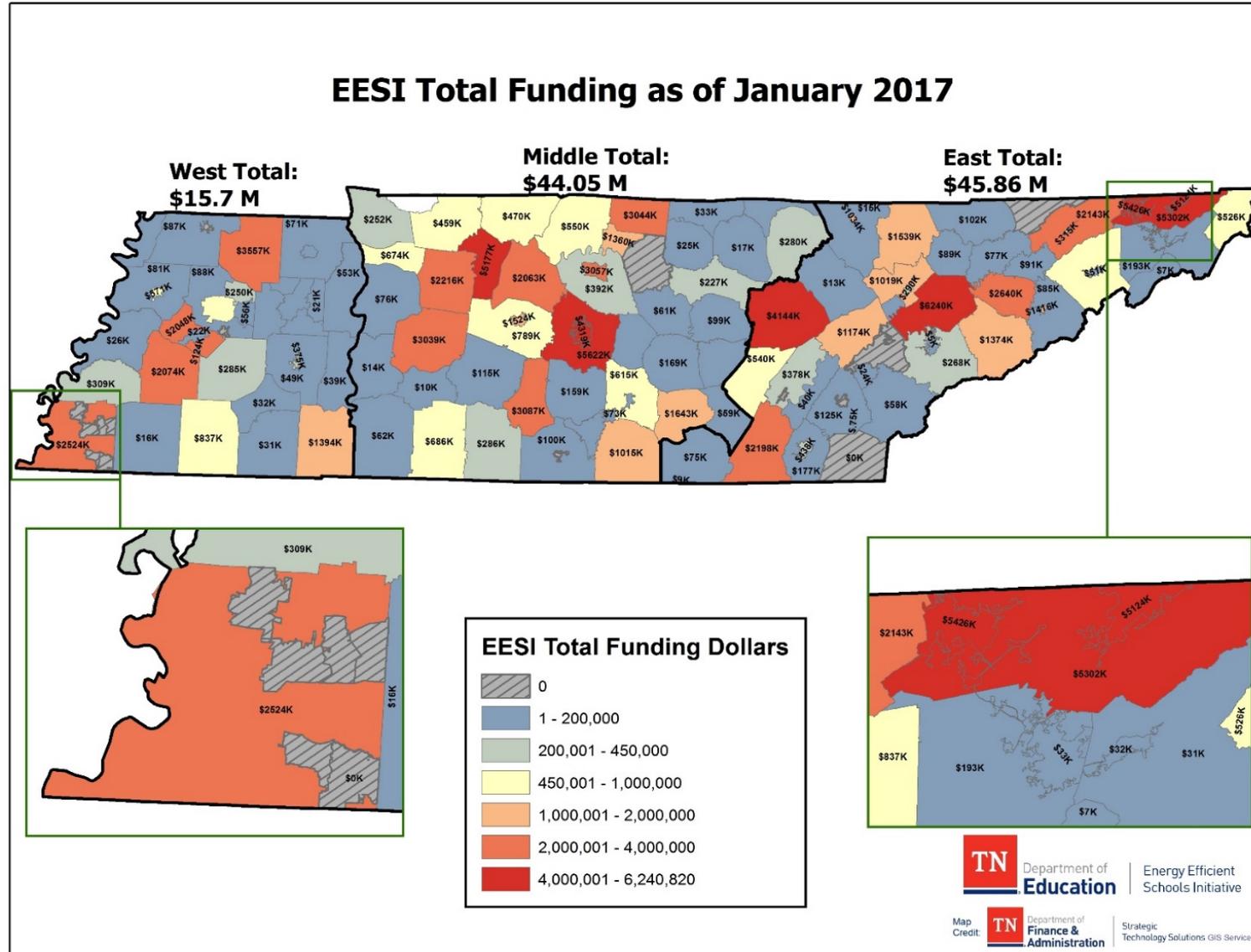
The TNT logo consists of the letters 'TNT' in a white, bold, serif font, centered within a red square. Below the red square is a thin, dark blue horizontal bar.

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Hurdles to overcome

Hurdles to overcome: The Funding Distributions Challenge



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.

The logo for the Tennessee Titans, featuring the letters "TN" in a white, serif font centered within a red square. Below the square is a dark blue horizontal bar.

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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

Posted originally, 9/28/2011
Reposted with errata dated 2/19/14 incorporated, 2/19/2014



**Advanced Energy Design Guide
for K-12 School Buildings**

**Achieving 50% Energy Savings
Toward a Net Zero Energy Building**

Developed by:
American Society of Heating, Refrigerating and Air-Conditioning Engineers
The American Institute of Architects
Illuminating Engineering Society of North America
U.S. Green Building Council
U.S. Department of Energy



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Thank You!

Questions & Answers