



Welcome to the

# Energy Efficiency Experts Roundtable

Center for Best Practices Environment, Energy & Transportation (EET) Division  
September 18, 2018



NGA's Annual Energy Policy Institute, June 2018

# Agenda for Today

8:00am—8:30am	<b>Welcome, Guidance and Discussion of Objectives, Introductions</b>
8:30am—9:30am	Energy Efficiency Today and Tomorrow
9:30am—10:30am	Leading by Example: Efficiency in State Operational Planning & Procurement
10:30am—11:00am	<i>Break</i>
11:00am—12:00pm	Energy Efficiency in Utility Programs and Rate Design
12:00pm—1:15pm	Lunch Discussion: The Energy Efficiency Value Chain
1:15pm—2:15pm	Financing
2:15pm—2:45pm	Energy Efficiency in Energy and Resilience Planning
2:45pm—3:15pm	<i>Break</i>
3:15pm—3:45pm	Energy Efficiency in Low-Income Populations
3:45pm—4:15pm	Energy Efficiency in Rural Communities and the Agricultural Sector
4:15pm—4:30pm	Closing Remarks

# Format for Today's Discussions

Session		Format
8:30am—9:30am	Energy Efficiency Today and Tomorrow	Round robin discussion format
9:30am—10:30am	Leading by Example: Efficiency in State Operational Planning & Procurement	Small group discussions
11:00am—12:00pm	Energy Efficiency in Utility Programs and Rate Design	Open discussion format
12:00pm—1:15pm	Lunch Discussion: The Energy Efficiency Value Chain	One-on-one conversations
1:15pm—2:15pm	Financing	Coin discussion format
2:15pm—2:45pm	Energy Efficiency in Energy and Resilience Planning	Regional discussions
3:15pm—3:45pm	Energy Efficiency in Low-Income Populations	Game format
3:45pm—4:15pm	Energy Efficiency in Rural Communities and the Agricultural Sector	Open discussion format



# We would like to thank you for participating in today's Experts Roundtable



The goal for today's meeting is to discuss innovative opportunities to enhance future savings through EE.

We would like to thank DOE's Office of Energy Efficiency and Renewable Energy for supporting today's meeting.

# General Guidance

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1.

The information discussed will be **off the record and not for attribution**, so an open, positive, and productive dialog is encouraged. NGA will take notes for internal purposes.

2.

We want to hear about the **best practices that states should consider pursuing to advance EE** and want innovative state examples and/or existing models that are highly effective.

3.

Please also call out any **roles for governors in advancing EE policies** (e.g., executive orders, governors awards, convening stakeholders through a gubernatorial taskforce, etc.).

## An Energy Efficiency Primer for Governors

### Executive Summary

Governors are supporting energy efficiency as a way to help consumers lower their energy costs, reduce state energy expenditures, defer the need for new power plant and transmission investments, strengthen system reliability, advance economic development and reduce environmental impacts. Based on those benefits, increasing energy efficiency—lowering energy use while providing the same level of service—is the goal most often cited in states' energy plans.<sup>1</sup>

The United States has made great strides in using energy more efficiently.<sup>3</sup> From 1985 to 2004, energy intensity (i.e., energy use relative to economic output) declined 10 percent because of efficiency improvements across the nation, after taking into account shifts in economic activity.<sup>4</sup> States have been essential to that progress. From 1993 to 2010, because of state policy directives, annual utility spending on electric energy efficiency increased 35 percent, from \$1.3 billion to \$4.6 billion.<sup>5</sup> That spending supported investments in improving lighting; upgrading appliances; optimizing systems for heating, ventilation, and air conditioning; and other measures. Those investments can also help advance state economic development efforts through increased job creation,

enhanced productivity and reduced energy bills.

In 2012, states collectively took 75 policy actions to advance energy efficiency through measures such as strengthening building codes, enhancing lead-by-example efforts, and establishing financing programs.<sup>2</sup>

However, several challenges to energy efficiency hinder further progress, including initial investment costs, regulatory barriers, and lack of information and data to quantify environmental and other benefits. As a result, less energy efficiency is being adopted than is economically viable. For instance, a study by the National Academy of Sciences found that building energy efficiency could improve cost-effectively by 25 percent to 30 percent by 2030 if barriers to greater adoption were reduced.<sup>6,7</sup>

Governors play a critical role in advancing energy efficiency. Although actions vary by state, governors have available a wide variety of tools to deploy energy efficiency. Since 2008, governors have worked with legislators, regulators, and others to develop or advance nearly 300 actions to improve energy efficiency.<sup>8</sup> Examples of those and other recent state actions include:

The discussions today will inform an update of *NGA's 2013 Energy Efficiency Primer for Governors* in the wake of elections in 39 states with 17 open seats. The updated document will be released in Spring 2019 and will particularly seek to inform new governors.





# NGA Center's Environment, Energy & Transportation Division

## Power Sector Modernization

Energy Policy Institute  
Grid Modernization & Energy Planning  
Retreats  
Global Energy Summit

## Resiliency

State Resiliency Assessment & Planning  
Tool and State Resilience Retreats  
Grid Emergency Exercises  
Resiliency Workshop  
Housing Resiliency Experts Roundtable

## Smarter States, Smarter Communities

Learning Lab  
Roadmap  
State Specific Support

## Support for New Governors

Boot Camp for New Governors' Energy  
Policy Advisors' Retreat  
Webinars for New Governors' Policy  
Advisors'  
Governors Guide to Energy Policy

## Technical Assistance on Demand

Research  
Policy Memos  
Consultations

## Transportation Modernization

Traffic Safety Learning Labs  
  
INNOVATION ??  
Electric Vehicle (EV) Regional Workshops

## Energy Efficiency

Lead By Example Workshop  
Energy Efficiency Experts Roundtable  
Energy Efficiency Roadmap for Governors

## Nuclear Weapons Waste

Federal Facilities Task Force Meeting  
Intergovernmental Meeting  
Governors Guide to Nuclear Weapons  
Waste Clean up

## Water Policy Learning Network

Water Policy Institute  
Webinar Series  
Delaware River Basin Retreats



Sue Gander, Division Director



Tom Simchak, Senior Policy Analyst



Jessica Rackley, Senior Policy Analyst



Dan Lauf, Program Director

# Meet Our EET Team Working on this Project





# NGA's Energy Efficiency Toolkit

[Edit Factsheet](#)[View PDF](#)

## ✓ NGA Energy Efficiency Toolkit, 2017

<http://www.ngaenergyefficiency.org/>

- Provides state policymakers with five energy efficiency policy factsheets (CPACE, EE target setting, Building Codes, Low-Income, and a general “Other” category) with editable content, allowing states to fill in their own details.
- These EE factsheets can be used by state policymakers to quantify and demonstrate the benefits of advancing a specific type of EE policy.

## Benefits of Low-income Energy Efficiency Programs

Alabama

Addressing Energy Poverty, Reducing Energy Burden, and Providing Economic Development Gains

### Low-Income Energy Efficiency Programs – Sources of Funding & State Role

Low-income households [with incomes below 200% of federal poverty guidelines -- earning \$49,200 for a family of four] comprise around 35% of the U.S. population. Most of these households live in less efficient homes, including fewer owner occupied homes and more rental properties, and have older, less efficient appliances and other equipment (U.S. Census Bureau). As a result of these and other factors, low-income households spend a higher percentage of their income on energy costs, the median low income household's energy burden was 7.2%, compared to non-low-income households (who spend about 2 to 3 % of their income on energy costs), (ACEEE 2016 ). To reduce energy bills and provide additional savings resulting from improved health and safety, a number of states have developed policies or implemented programs focused on improving the energy efficiency of low-income households.

Most funding for low-income energy-related programs comes from federal sources, primarily the Weatherization Assistance Program (WAP) and the Low-Income Home Energy Assistance Program (LIHEAP) that is distributed by states and local authorities. About \$3.5 billion of funding for low-income energy programs comes from federal sources. Ratepayer-funded utility spending on low-income energy assistance and energy efficiency was \$3.91 billion (in 2013), with \$3.13 billion going to bill payment assistance and \$777 million, or roughly 20%, going to efficiency programs (LIHEAP Clearinghouse 2016). States and local governments provide about 3% of total funding directed to low-income energy bill assistance or energy efficiency programs. Most low-income funding supports bill assistance, but about 14% (\$1.17 billion) supports energy efficiency investments (ACEEE, 2016 & LIHEAP Clearinghouse 2016). There is a limited amount of funding from foundations.

### Fast Facts



#### **\$[100] Million**

Annual energy expenditures per capita (\$) and state ranking (based on EIA data)



#### **[100]%**

State average energy burden \_\_% (percentage of income spent on energy)

(based on DOE's Low-Income Energy Affordability Data (LEAD) Tool)



#### **[100]%**

Percent of State Population Below the Federal Poverty Level (based on U.S. Census Bureau data)



#### **\$[1.2] Billion**

Total U.S. Economic Activity from WAP Spending in 2008 (based on ORNL data)

**Enhancing Low-Income EE Programs in [State]**

# Introductions

Please introduce yourself, and in 30 seconds or less, provide the following information:



Stakeholders at the NC Lead-by-Example Retreat, 2017



NAME



AFFILIATION



ELEVATOR PITCH

- What is one thing governors can do to help advance energy efficiency?
- What do you see as the greatest challenge to advancing energy efficiency?



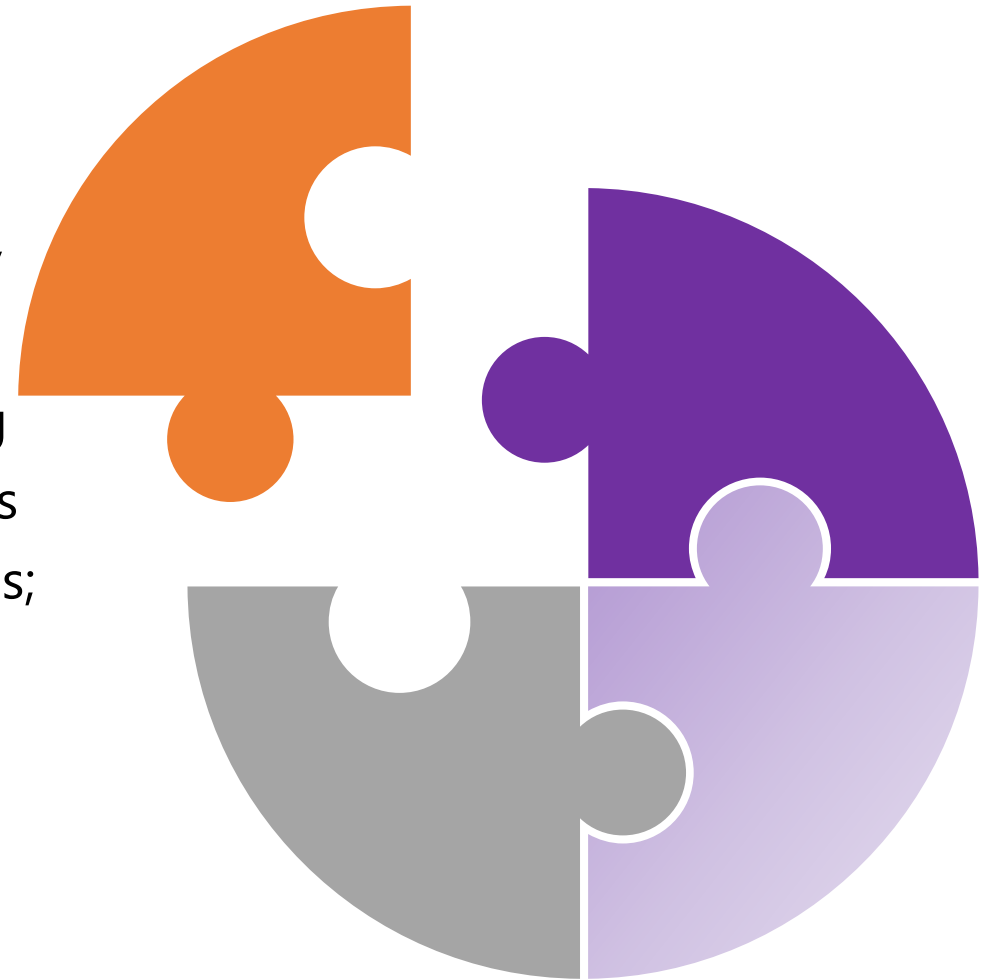
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# Defining Energy Efficiency

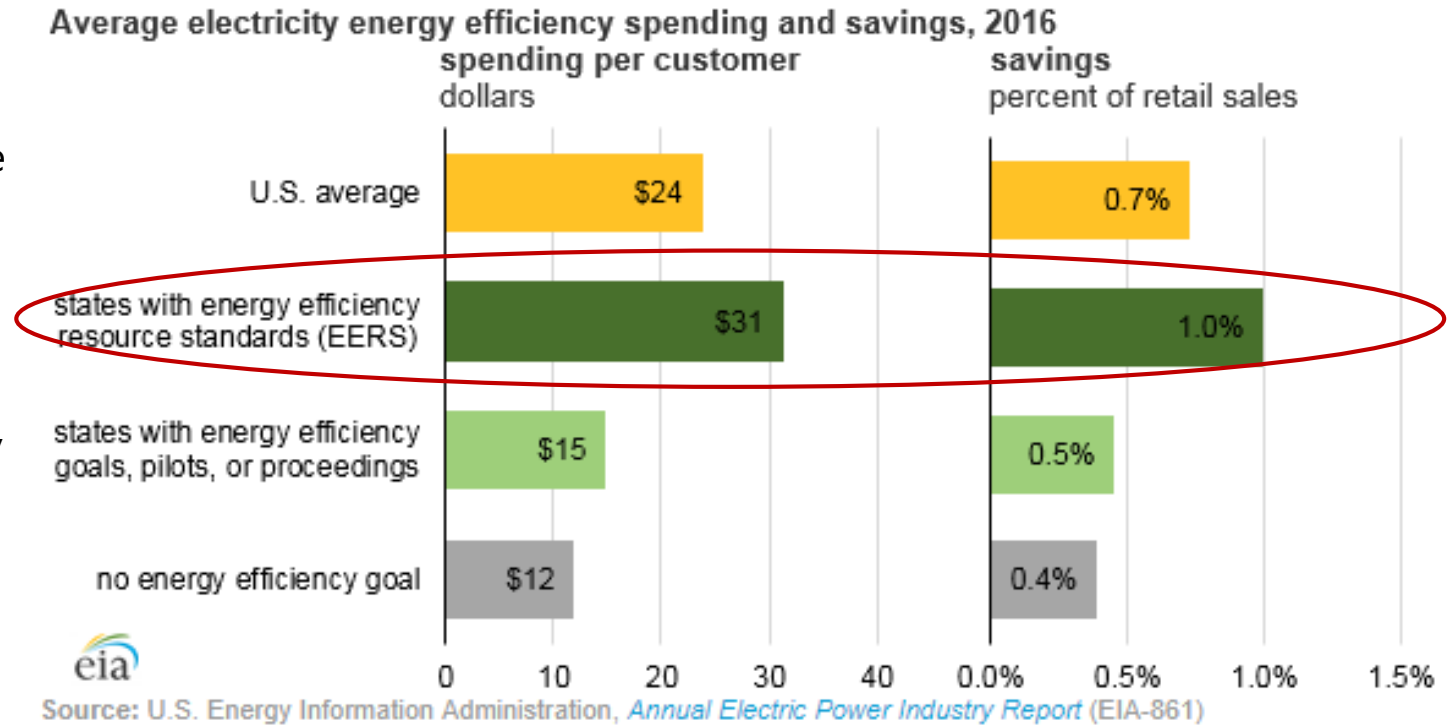
We define energy efficiency as lowering energy use by providing the same level of service, and examples of energy efficiency measures include improving building insulation; upgrading lighting and appliances in homes and businesses; combined heat and power applications; and enhancing industrial equipment such as fans and motors.

*The definition of distributed energy resources (DERs) has evolved in recent years to often include energy efficiency alongside generation resources, energy storage, and demand response resources.*



# Energy Efficiency Today – State Advances

- As of August 2018, 30 states and DC have adopted energy efficiency policies—either mandated requirements, voluntary goals, or pilot programs. Since 2017, 5 of these states have either created new or updated existing EE targets (DSIRE, 2018).
- U.S. electric utilities reported spending \$3.6 billion on energy efficiency incentives in 2016, or an average of \$24 per customer (EIA-861 – doesn't include gas utility spending). Most reported spending supported residential and commercial energy efficiency: 43% and 49% respectively. The remaining 8% of spending was for industrial customers in 2016. [For reference, electric utilities spent about \$2 billion annually, equivalent to ~ 0.5% of utility revenues as of 2006, EPA, NAPEE, 2009.]
- Incremental savings due to EE spending for reporting year 2016 totaled 27.5 billion kilowatt-hours, or 0.7% of nationwide retail electricity sales. Projected lifecycle savings were much greater, at 354 billion kWh.
- Annual incremental savings varied by state, from near 0% of electricity retail sales up to 3% of retail sales (MA + RI).

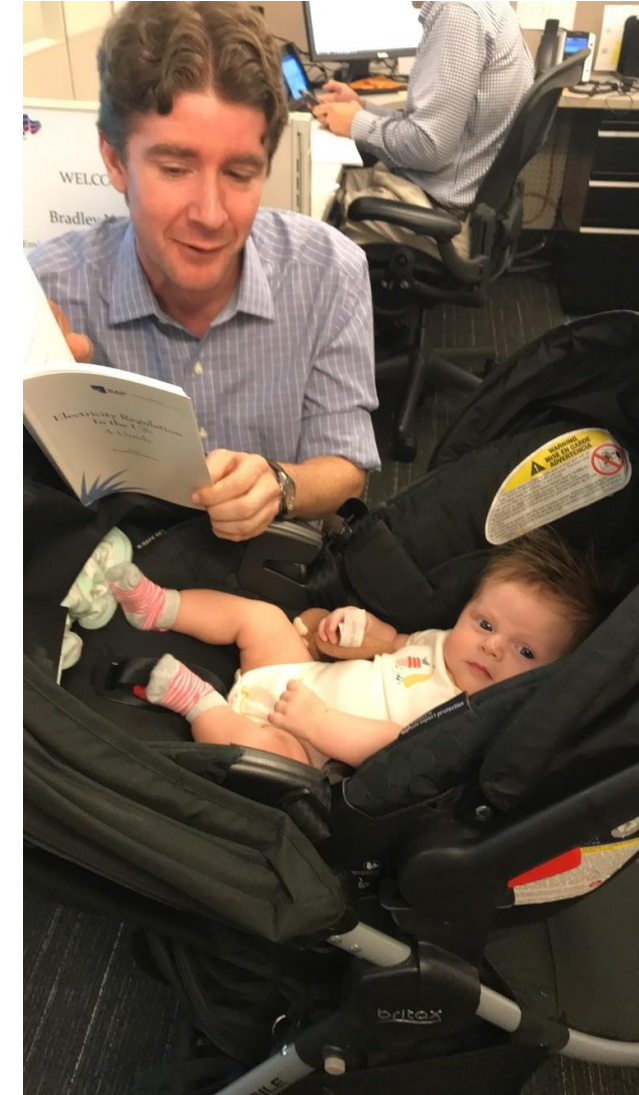


- Recent state policy advances – states have updated or enhanced EE targets; Lead-by-Example initiatives (ZEB focus); focus on interaction between resources, e.g., Energy-Water Nexus; attention on energy resiliency; innovative financing (Green Banks; Resilience funds; plug-and-play programs)*

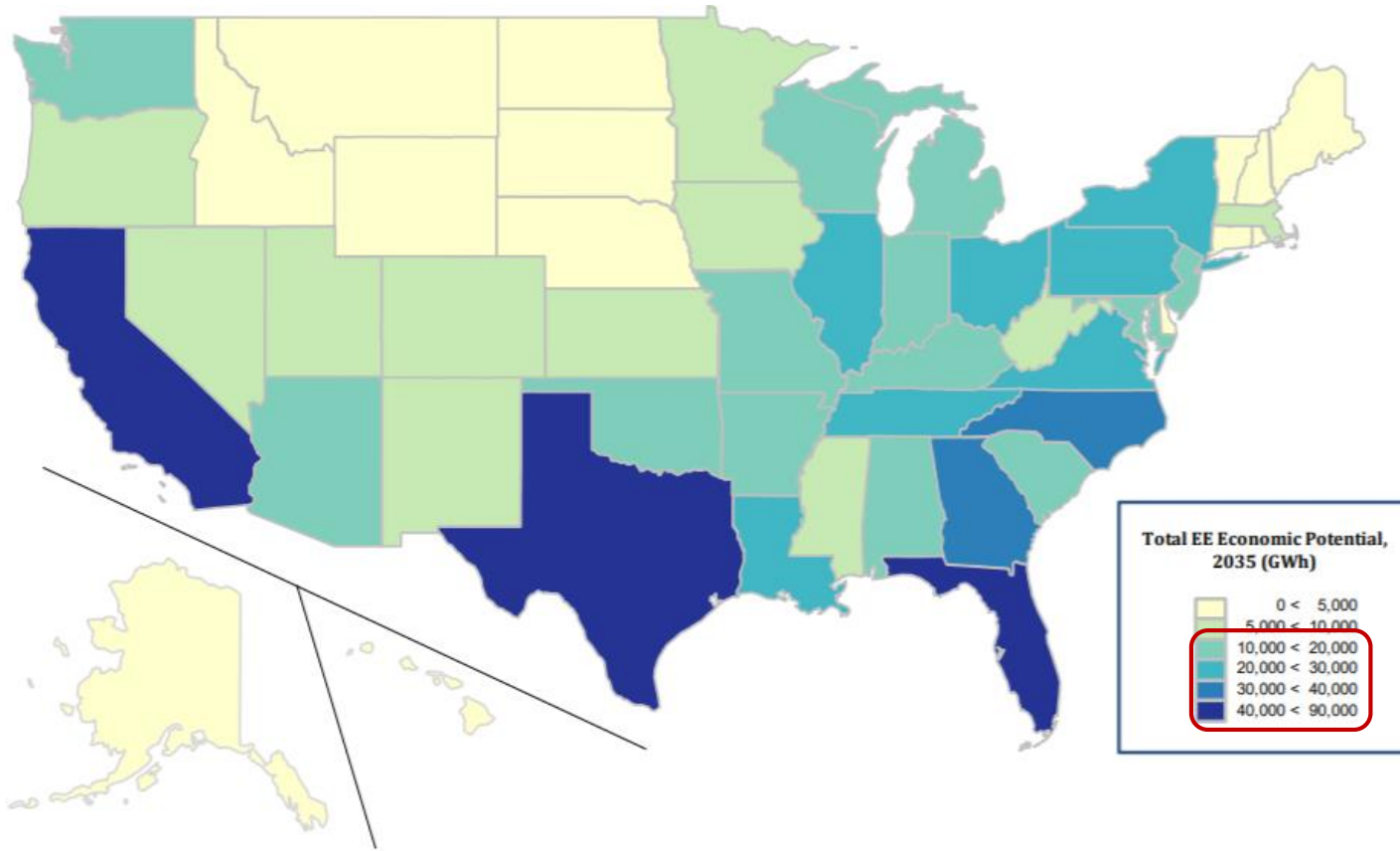


# Energy Efficiency Today – State Setbacks

- **Budget being reduced/suspended for state EE activities** (e.g., IA suspended funding for several EE grant/loan programs in 2017; Ohio temporary freeze of EE targets in 2014; statewide policies that weaken industrial energy efficiency requirements, budgets and options in the Midwest; etc.)
- **Market failures – not recognizing the full value of EE** (e.g., states have not made changes to utility business models encouraging EE such as decoupling, performance incentives, and setting or enhancing EE targets; states haven't accounted for all benefits of EE in cost-benefit analyses; opt-out provisions allowing large customers to avoid paying into EE programs; etc.).







**Figure ES-1**  
**Total Energy Efficiency Economic Potential (EP) by State in 2035, in GWh**

Source: EPRI, DOE, and LBNL, 2017

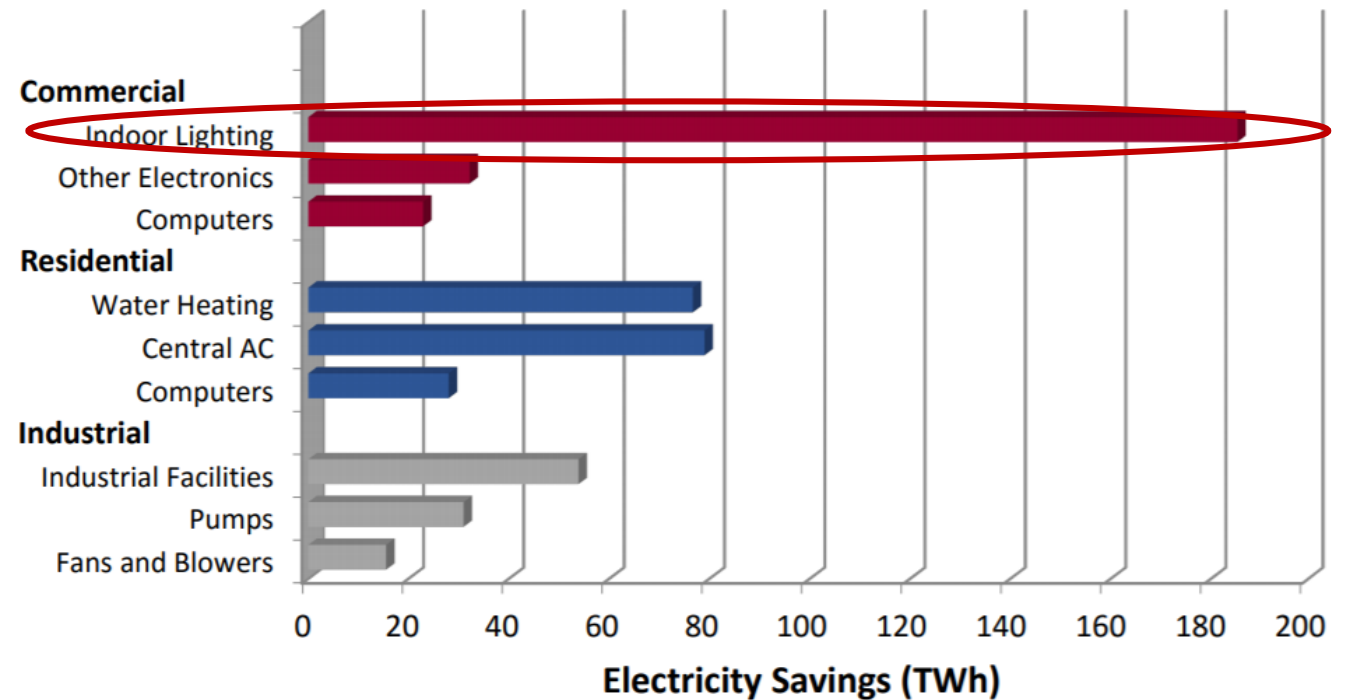
## Total EE Economic Potential in 2035 by State

A study by the Electric Power Research Institute (EPRI) estimates that the U.S. has the potential to cost-effectively reduce its electricity use by about 16% in 2035, and that every state could save with energy efficiency ranging from 12 to 21% savings per state (2017).

State-level energy efficiency potential estimates range from 12% (MO) to 21% (FL) in 2035 relative to adjusted baseline sales. Twenty-six states show more than 15% savings available cost-effectively between 2016 and 2035.

# Top Opportunities Per Sector

The EPRI analysis looked at the top three opportunities per sector for cost-effective energy savings. Commercial indoor lighting presents significant opportunities for energy savings, about 57% of the total achievable 2035 energy savings.



Source: EPRI, DOE, and LBNL, 2017

# Guidelines for the Energy Efficiency Today and Tomorrow Discussion: Round Robin Format

1. We will give everyone 2 to 3 minutes to think about the questions on the next slide and jot down ideas.
2. We'll then go around the room and ask everyone to answer the question or vote for an answer already given.
3. For questions asking for model state examples, please provide one example only, and try to keep all answers to 30 seconds or less.
4. NGA will note these ideas on the flip chart.

# Energy Efficiency Today and Tomorrow: Discussion Questions

1.

Where are there gaps in current state energy efficiency programs? What technologies, end-users, etc. are we not reaching?

2.

Which states have model energy efficiency planning policies in place that other states may want to consider adopting?

- Include in your examples which states consider and incorporate energy efficiency as a resource in distribution system and distributed resource planning.

3.

What types of programs (e.g. educational, financing, technical assistance, etc.) and sectors (e.g. residential, commercial, industrial) should states focus on that can still yield cost-effective and significant energy savings?

- Where do we get the most bang for our buck?



NGA's Lead-by-Example Workshop, March 2018

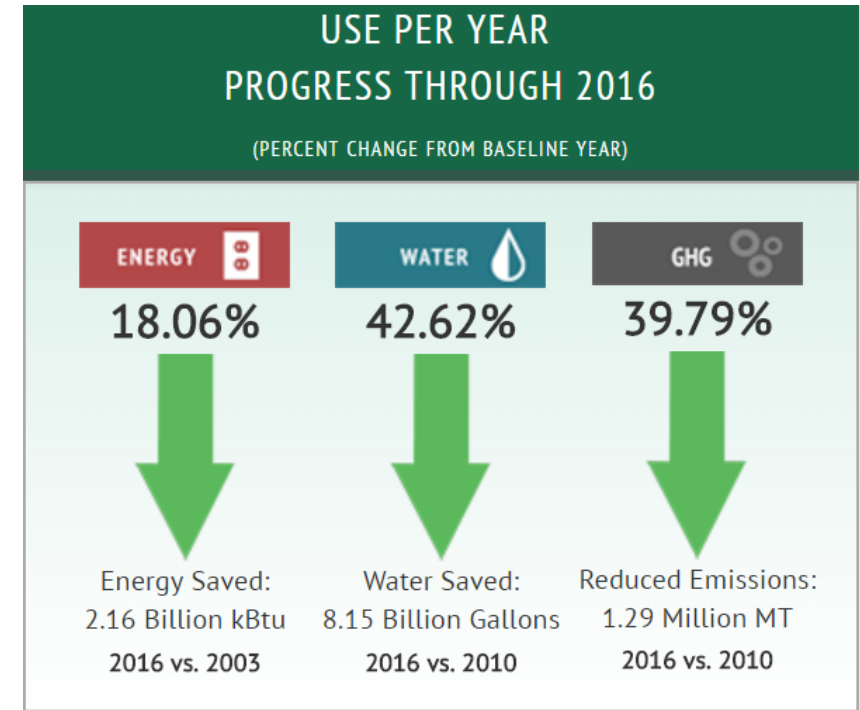
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| 4:15pm—4:30pm   | Closing Remarks   |

# Leading by Example: Efficiency in State Operational Planning & Procurement

## *Key Facts:*

- Energy use at state government facilities accounts for ~10% of a typical government's annual operating budget.
- 33 states either have an energy savings target in place committing state government facilities to an energy reduction goal or require state buildings to exceed the statewide energy code or meet a green building mandate such as LEED.



This is an example of one of the snapshots CA DGS provides tracking progress with meeting state public sector energy, water & GHG reduction goals established by Governor Jerry Brown under B-18-12 in 2012.



# EET's Recent LBE Work

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*NGA's Lead-by-Example work focuses on ways to reduce energy use in public buildings (mainly state-owned or leased buildings), enhance use of renewable energy and improve fleet efficiency*



## **2018 LBE WORKSHOP**

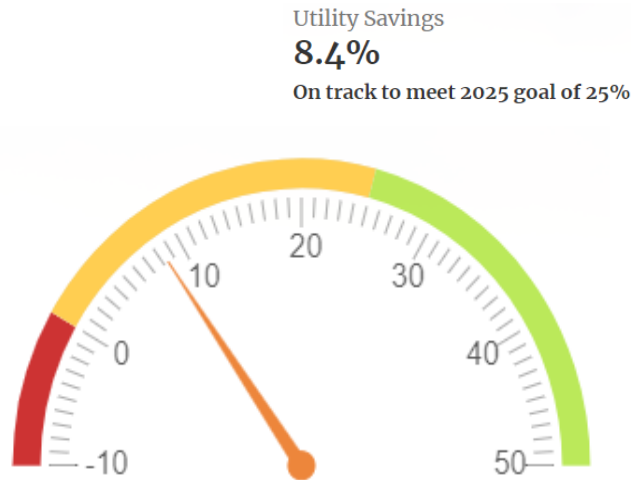
This March workshop brought together 17 states to discuss opportunities to reduce energy consumption and expenses in public buildings



## **2017 LBE RETREATS**

NGA held in-state retreats with MD, MS, NC, PA and WA. Focus areas included innovative financing (P3s); building benchmarking; microgrids for critical public facilities; and incentivizing agency participation

# Leading By Example



The KY Energy Savings Dashboard, a public dashboard, tracks progress with meeting state energy & cost savings targets

## State LBE Trends:

- States are beginning to move toward zero energy building (ZEB) targets defined by DOE as “an energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”
  - *E.g., Washington, Governor Inslee, EO 18-01 (Jan 2018).*
- States are focusing on ways to incentivize state agency’s to pursue more EE opportunities.
  - *E.g., SC (Act 105 of 1995) and OR (OAR 330) legislation allow for state agencies to retain energy cost savings from energy efficiency projects. NC has a similar law that applies to the University of North Carolina system (HB 1292).*

# **Guidelines for the Leading by Example Discussion: Small Group Format**

1. We'll form six small discussion groups (please see the number on your table tent for your group assignment).
2. Please see the number cards placed around the room and go to your assigned group space when we break for discussion.
3. Each discussion group will have 30 minutes to discuss the questions on the next slides (~ 10 minutes per question).
4. Each group will have a moderator from NGA and/or DOE.
5. Jot down as a group the top 1 or 2 ideas to answer each question, and designate someone to report out your group's ideas.
6. We'll go around the room and ask each group's designee to spend 2 to 3 minutes summarizing your group's answers.

# Leading by Example: Discussion Questions

1.

What are the best lead-by-example practices or programs that states should consider adopting?

2.

How can states better 'lead by example' and encourage private sector efficiency investments while saving energy at their own sites and operations?

3.

What are one or two key things that governors can do to direct greater energy savings by state operations?

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**NATIONAL GOVERNORS ASSOCIATION**





Source: DOE

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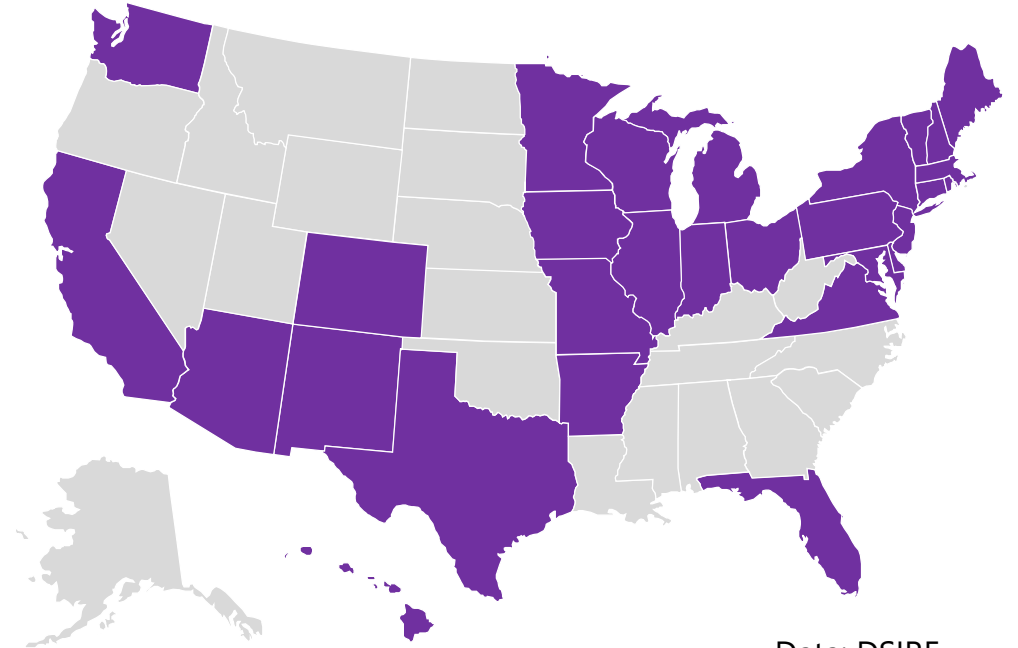
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# Energy Efficiency in Utility Programs and Rate Design

## *Introduction*

- Utilities are uniquely well placed to support energy efficiency, but it means selling less of their core product. So utility commissions have a role to play in creating a regulatory environment in which utilities see a reward for supporting efficiency – or perhaps are required to.
- Utility commissions can require least-cost solutions to projected load, and include efficiency as a solution, in integrated resource planning.
- Efficiency can be considered cost-effective when the cost of the program or project is lower than the cost of building and operating additional generation + transmission required to meet the needs of that end use. (or should there be more to it?).

States with an Energy Efficiency Resource Standard



Data: DSIRE

# Guidelines for the Energy Efficiency in Utility Programs and Rate Design Discussion:

## Open Discussion Format

1. We will have 10 to 12 minutes as a group per question to discuss ideas/answers to the four questions on the following slide.
2. Please use your table tent to flag that you'd like to speak.
3. We will go around the room and request responses in the order that we saw table tents go up.
4. For questions asking for model state examples, please provide one example only, and try to keep all answers to 30 seconds or less.
5. NGA will type up these ideas on the screen and/or flip chart for everyone to see.

# Energy Efficiency in Utility Programs and Rate Design:

## Discussion Questions

1.

How can states better use utility rate design to advance energy efficiency?

2.

How can the integrated resource planning (IRP) process better incorporate energy efficiency measures to meet projected demand?

3.

How should benefits from grid-interactive efficient buildings that can participate in demand response programs be accounted for in utility planning & programs?

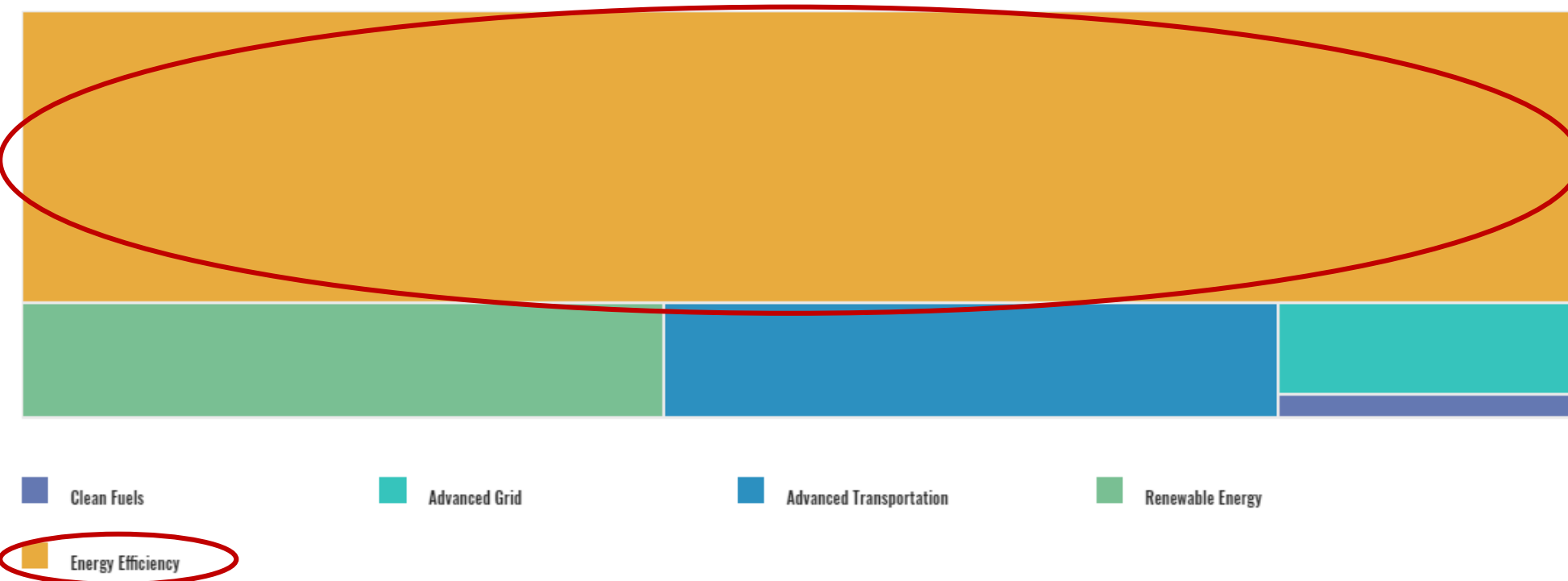
4.

What are one or two key things that governors can do to help improve utility-EE programs in the state?

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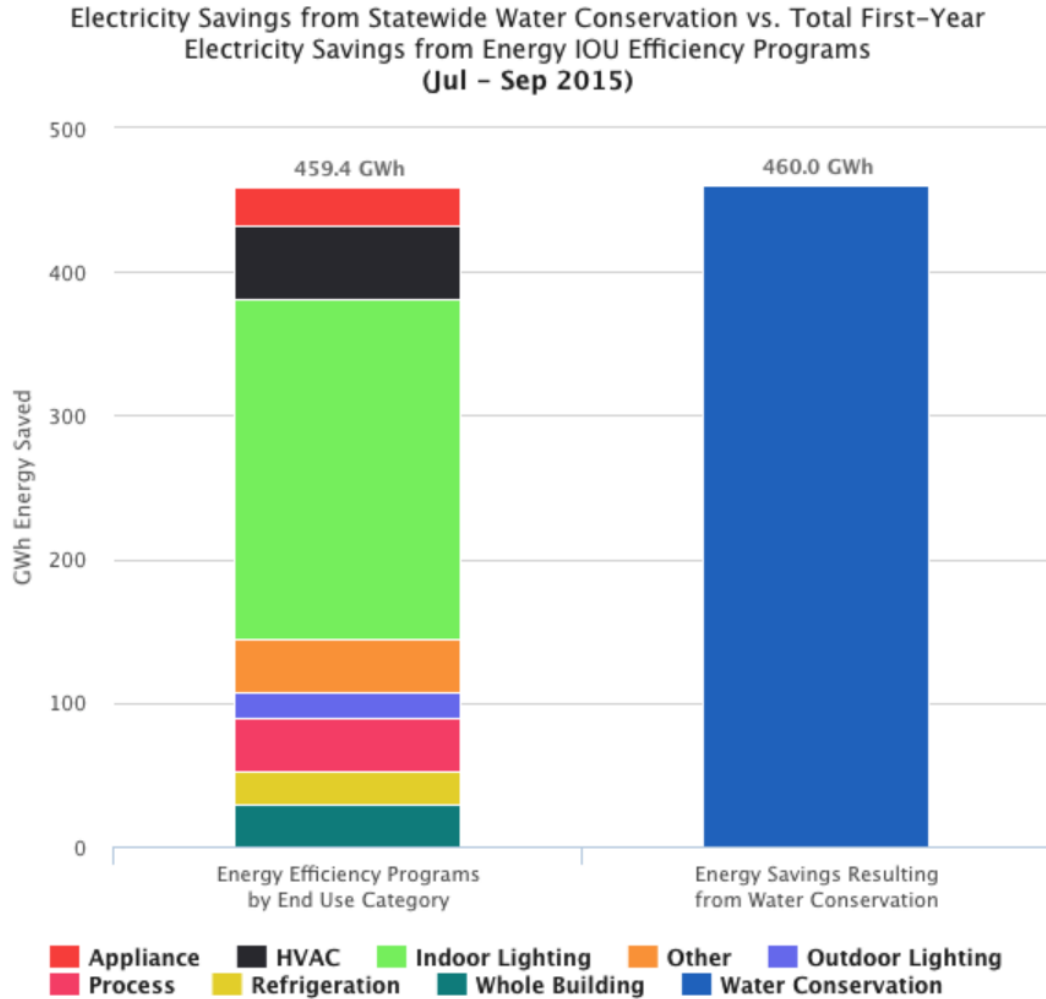
# The Midwest is Home to 714,257 Clean Energy Jobs



Source: Clean Jobs Midwest, 2018

*The US EE industry added more new jobs than any other industry in the U.S.' energy sector in 2017 and now employs nearly 2.25 million people. (Sources: E4TheFuture and Environmental Entrepreneurs)*

# Emerging Opportunities for Energy Savings: The Energy-Water Nexus



Source: The University of California Davis Center for Water-Energy Efficiency, 2016

- One of the key findings is that the **electricity savings from water conservation are roughly equal to the electricity savings estimated for all of the IOU energy efficiency programs** implemented in California (from July through September 2015).
- Water conservation efforts by the state resulted in a 24 percent reduction in 2015 water-use (2013 baseline), creating energy savings of 460 GWh at a cost of \$45 million, while the investor-owned utilities' energy efficiency programs resulted in 460 GWh of energy savings at a cost of \$173 million.
- This translates into a cost of 3.8 cents/kWh for the IOU energy efficiency programs, and 1.0 cents/kWh for the water conservation programs.



# Guidelines for The Energy Efficiency Value Chain Lunch Discussion: **One-on-One Conversations**

1. Please discuss the questions on the next slide with one of your neighboring colleagues during lunch.
2. Write down 1 or 2 answers/ideas to each question on the post-it notes provided along the conference table.
3. Towards the end of lunch we'll ask each group of two discussants to place their post-it notes under each question on the front board.
4. NGA staff will describe some of the common ideas/themes, and will document these ideas, providing meeting notes to all participants next week.

# Lunch Discussion: The Energy Efficiency Value Chain: Discussion Questions

1.

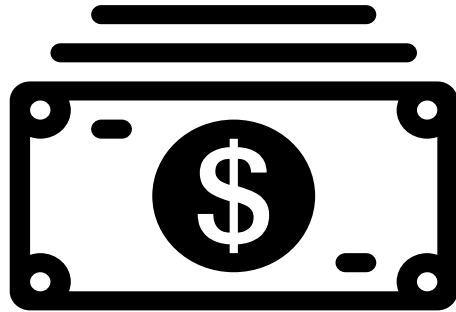
How can state policy planners better incorporate economic factors into decision-making around energy efficiency policies and programs?

2.

What can state policymakers do to increase awareness (among legislators, end-users, the public, etc.) of the value of energy efficiency programs in their state?

3.

What are one or two actions governors can do to improve the public's awareness of the economic benefits from energy efficiency initiatives?

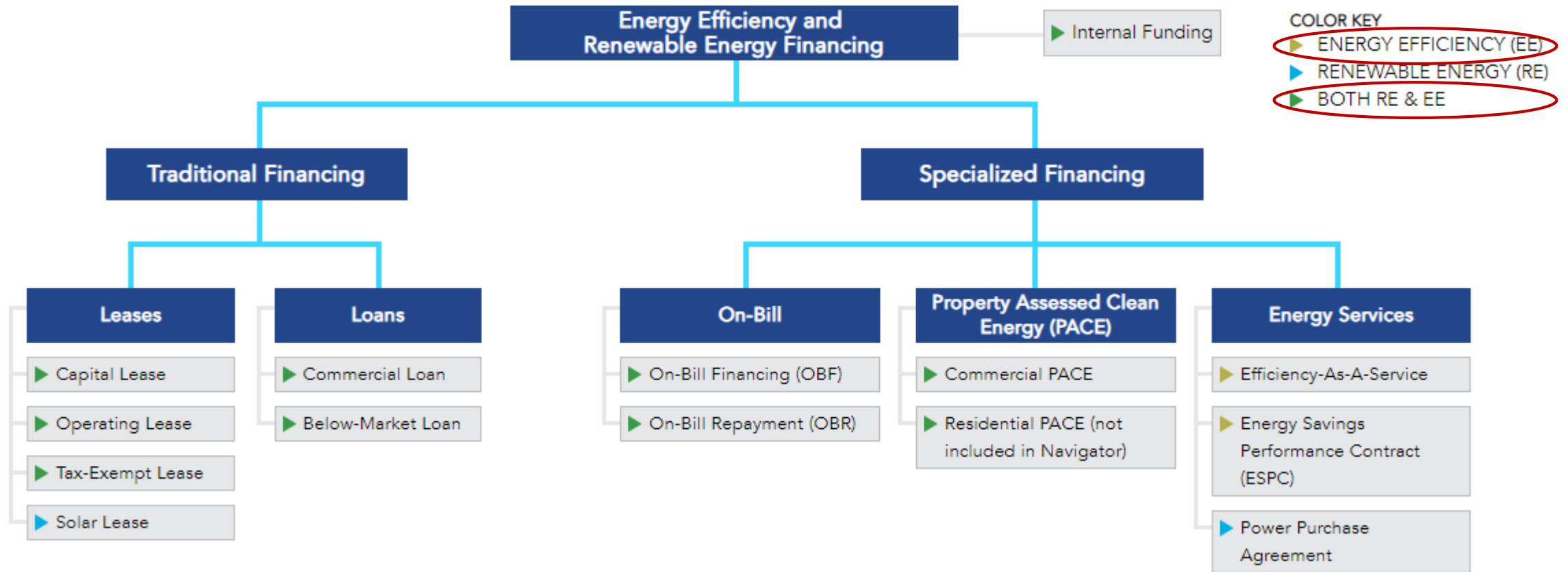


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# Financing

This session will focus on innovative financing policies that states can adopt or utilize to increase energy efficiency investments.



Source: DOE, Better Buildings Financing Navigator, 2018

# **Guidelines for the Financing Discussion: Coin Format**

1. Each attendee will be given three chocolate gold coins, which represent three opportunities to speak during the open discussion. Each time you want to speak you have to pay with one of your gold coins.
2. We will have 10 to 12 minutes per question to discuss ideas/answers to the four questions on the following slide.
3. Please use your table tent to flag that you'd like to speak, and have a gold coin ready.
4. We will go around the room and request responses in the order that we saw table tents go up.
5. NGA will type up these ideas on the screen and/or flip chart for everyone to see.

# Financing:

## Discussion Questions

1.

What state financing options/programs stand out as innovative and best practices?

2.

How are innovative financing mechanisms performing in the 'real world' as more states and municipalities act to enable them?

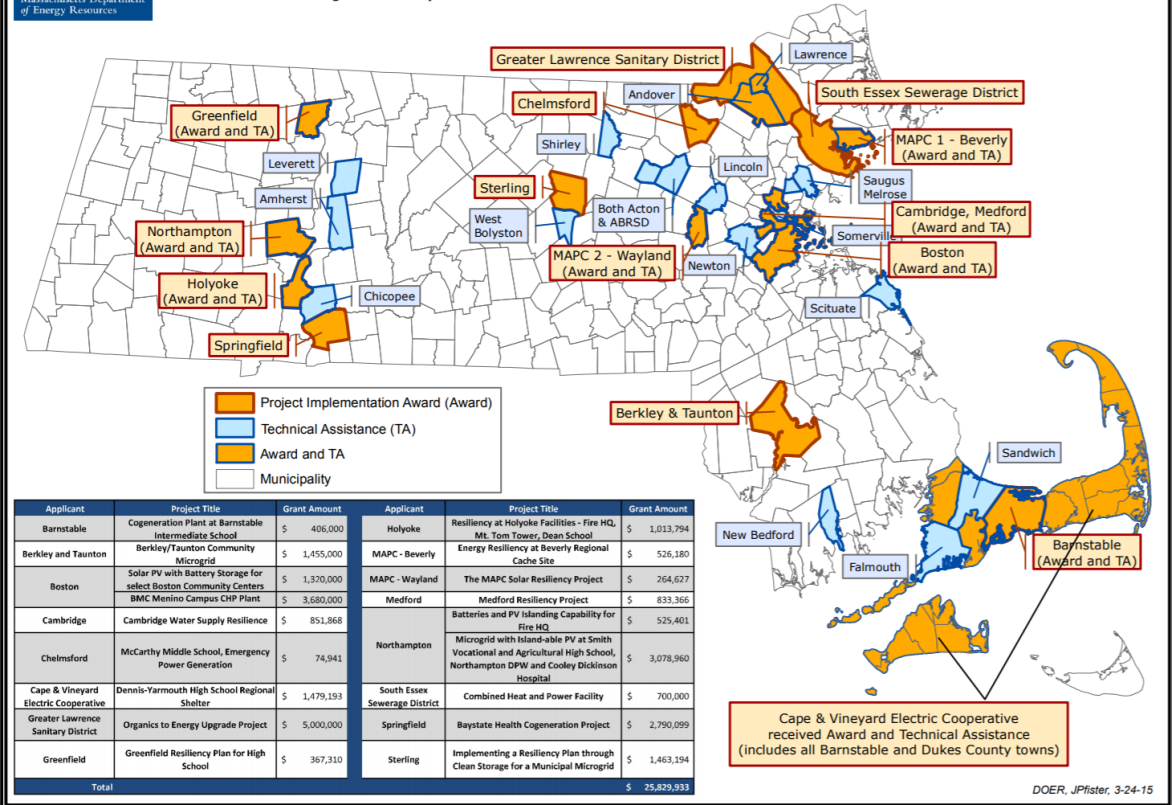
3.

What new methods might be on the horizon?

4.

What are one or two key actions that governors can take to advance financing options for efficiency improvements?

# Community Clean Energy Resiliency Initiative Project Implementation and Technical Assistance



## Agenda for Today

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- 4:15pm—4:30pm Closing Remarks

Source: Massachusetts \$40 Million Community Clean Energy Resiliency Initiative (CCERI), mass.gov

This MA grant program helps cities and towns use clean energy technologies to protect citizens from service interruption caused by severe weather due to climate change. Grants have been given for the installation of EE measures such as CHP, energy management systems, and microgrid projects.



# Energy Efficiency in Energy and Resilience Planning

NGA defines resilience as “the ability to: withstand disasters better, respond and recover more quickly, and excel under new conditions.”

## NGA's Recent and Upcoming Work on this Topic:

### ✓ **OR-NGA Power Sector Modernization Policy**

#### **Academy** (Dec '16 to April '18)

- 16-Month effort to address local energy resilience
- Partnership between Gov. Brown's office, ODOE, and Central Lincoln PUD
- Developing a guidebook to compile guidance for consumer-owned utilities on personnel preparedness, facility hardening, mitigation and role of distributed resources.

### ✓ **State Resilience Assessment & Framework Tool (SRAP Tool – expected to be released Winter '19)**

- Self-assessment to led by Governor's Offices
- Energy and infrastructure focus
- Establishing Effective Governance
- Evaluating Risk
- Assessing Vulnerabilities to Critical Infrastructure
- Mitigating Economic Consequences
- Strengthening Community Ties
- Beta tested by ID, MD, OR (+) with in-state retreats this Summer/Fall

# SRAP Tool Example

	Section 3: Assessing Vulnerabilities to Critical Infrastructure					
	Prepared	Mostly Prepared	Moderately Prepared	Minimally Prepared	Why did you select this response?	What will it take to improve your score?
Have state leaders conducted hazard, exposure, vulnerability, and risk assessments on state critical infrastructure?	State leaders have conducted assessments within the last five years and revised energy assurance and emergency operation plans accordingly.	State leaders have conducted assessments within the last five years, but have not yet revised energy assurance and emergency operation plans accordingly.	State leaders have conducted assessments more than five years ago, but these documents are likely out of date and have not been revisited.	State leaders have not conducted vulnerability and risk assessments on critical infrastructure.		
Based on the response to the previous questions, have critical infrastructure been hardened to survive extreme weather events and hazard conditions consistent with the State’s most recent Hazard Mitigation Plan?	Yes, critical infrastructure systems are hardened to survive extreme weather events.	Most critical infrastructure systems are hardened to survive extreme weather events.	Plans are in place to harden some critical infrastructure and minimal upgrades are complete.	No, critical infrastructure systems are not hardened to survive extreme weather events, or the state is not aware of whether systems have been adequately hardened.		
Has the state identified, mapped, and assessed interdependencies between critical infrastructure assets?	The state has mapped critical infrastructure interdependencies and is working with operators and industry to address vulnerabilities.	The state has gathered data about critical assets and has begun mapping interdependencies.	The state plans to gather data on critical infrastructure assets to help it map interdependencies, but the process is no yet underway.	The state has not mapped critical infrastructure asset interdependencies and does not have access to that data to start this process.		

# **Guidelines for the Energy Efficiency in Energy and Resilience Planning Discussion: Regional-Based Format**

1. We will split everyone up into three regional discussion groups (East, Central, and West)
  - Please consider your region's context, such as the region's existing generation mix, existing EE programs and policies, market constructs, and other factors.
2. Each group will have 15 minutes to discuss ideas/answers to the four questions on the following slide.
3. As a group, write your top 1 or 2 ideas to answer each question and designate someone to report out your group's ideas.
4. Each group's designee will spend 2 to 3 summarizing your group's answers.

# Energy Efficiency in Energy and Resilience Planning: Discussion Questions

1.

How can we better leverage efficiency in resilience efforts? What approaches can states take strategically beyond bread-and-butter policies like energy efficiency resource standards, building codes, and tax incentives?

2.

How can risk, and risk mitigation, be accounted for in efficiency program assessment, e.g. in IRPs, other cost-benefit calculations, etc.?

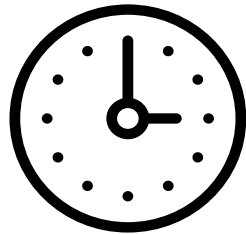
3.

What are one or two key actions that governors can take to improve the consideration of energy efficiency in energy and resilience planning?

4.

How should the benefits from grid-interactive efficient buildings be accounted for in state energy and resilience planning?

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**NATIONAL GOVERNORS ASSOCIATION**



Source: VERMOD, 2018

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# Energy Efficiency in Low-Income Populations

This session will focus on policies that states can adopt to improve the energy efficiency of low-income housing and reduce their energy costs.

## NGA's Recent Work on this Topic:



### **NGA Energy Efficiency Toolkit, 2017**

<http://www.ngaenergyefficiency.org/>

- Provides state policymakers with five energy efficiency policy factsheets (CPACE, EE target setting, Building Codes, Low-Income, and a general “Other” category) with editable content, allowing states to fill in their own details.
- These EE factsheets can be used by state policymakers to quantify and demonstrate the benefits of advancing a specific type of EE policy.



### **New Hampshire EE Retreat, 2016**

- Participants discussed strategies for optimizing state low-income EE programs, including weatherization and bill assistance programs, and improving EE in the existing manufactured housing stock in the state.

[Edit Factsheet](#)[View PDF](#)

## Benefits of Low-income Energy Efficiency Programs

Alabama

Addressing Energy Poverty, Reducing Energy Burden, and Providing Economic Development Gains

### Low-Income Energy Efficiency Programs – Sources of Funding & State Role

Low-income households [with incomes below 200% of federal poverty guidelines -- earning \$49,200 for a family of four] comprise around 35% of the U.S. population. Most of these households live in less efficient homes, including fewer owner occupied homes and more rental properties, and have older, less efficient appliances and other equipment (U.S. Census Bureau). As a result of these and other factors, low-income households spend a higher percentage of their income on energy costs, the median low income household's energy burden was 7.2%, compared to non-low-income households (who spend about 2 to 3 % of their income on energy costs), (ACEEE 2016 ). To reduce energy bills and provide additional savings resulting from improved health and safety, a number of states have developed policies or implemented programs focused on improving the energy efficiency of low-income households.

Most funding for low-income energy-related programs comes from federal sources, primarily the Weatherization Assistance Program (WAP) and the Low-Income Home Energy Assistance Program (LIHEAP) that is distributed by states and local authorities. About \$3.5 billion of funding for low-income energy programs comes from federal sources. Ratepayer-funded utility spending on low-income energy assistance and energy efficiency was \$3.91 billion (in 2013), with \$3.13 billion going to bill payment assistance and \$777 million, or roughly 20%, going to efficiency programs (LIHEAP Clearinghouse 2016). States and local governments provide about 3% of total funding directed to low-income energy bill assistance or energy efficiency programs. Most low-income funding supports bill assistance, but about 14% (\$1.17 billion) supports energy efficiency investments (ACEEE, 2016 & LIHEAP Clearinghouse 2016). There is a limited amount of funding from foundations.

### Fast Facts



#### **[\$100] Million**

Annual energy expenditures per capita (\$) and state ranking (based on EIA data)



#### **[100]%**

State average energy burden \_\_% (percentage of income spent on energy)

(based on DOE's Low-Income Energy Affordability Data (LEAD) Tool)



#### **[100]%**

Percent of State Population Below the Federal Poverty Level (based on U.S. Census Bureau data)



#### **[\$1.2] Billion**

Total U.S. Economic Activity from WAP Spending in 2008 (based on ORNL data)

**Enhancing Low-Income EE Programs in [State]**

# NGA Energy Efficiency Toolkit, 2017



## Benefits of Low-Income EE Policies

[Directions: choose three of the options below based on your state priorities]

- **Economic Development:** In 2008, the federal Weatherization Assistance Program (WAP) spent \$420 million, accounting for 8,560 full time jobs, and creating \$476 million in annual income (ORNL, 2014).
- **Health Benefits:** A 2014 ORNL study found that the average weatherization cost per single family home was \$4,000 and the present value (PV) per unit of health-related benefits is estimated at \$14,148.
- **Increased Productivity at Work due to Home Weatherization:** \$1,813 per single family home due to improved sleep (ORNL, 2014).
- **Increased Productivity at Home due to Home Weatherization:** \$1,329/per single family home (due to improved sleep)
- **Energy Cost Savings:** For every \$1 invested, the federal WAP returns \$2.51 in benefits, including \$1.80 in savings on energy bills (NREL, 2010).
- **Energy Savings:** Weatherization typically leads to 35% average energy savings in low-income homes (NREL, 2010).

# Guidelines for the Energy Efficiency in Low-Income Populations Discussion:

## **“Efficiency” Group Game Format**

1. We'll form three teams.
2. Each team will have 10 minutes to discuss the questions on the next slides (~ 2 to 3 minutes per question).
3. Jot down as a group your top 3 ideas to answer each question on individual post-it notes (use 3 notes per question, 12 post-it notes total)
4. All teams will then place their post-it notes on the designated wall space.
5. NGA staff will then organize a vote among everyone in the room on the top ideas. The team with the #1 answer based on votes will get 4 points, and the team with the #2 answer for each question will get 2 points.
6. The team with the most points will receive a small prize and bragging rights.

# Energy Efficiency in Low-Income Populations:

## Discussion Questions

1.

What are the best, most innovative state low-income energy efficiency programs / models that other states should consider adopting?

2.

How can states ensure that programs are reaching underserved communities and maximize their social benefit?

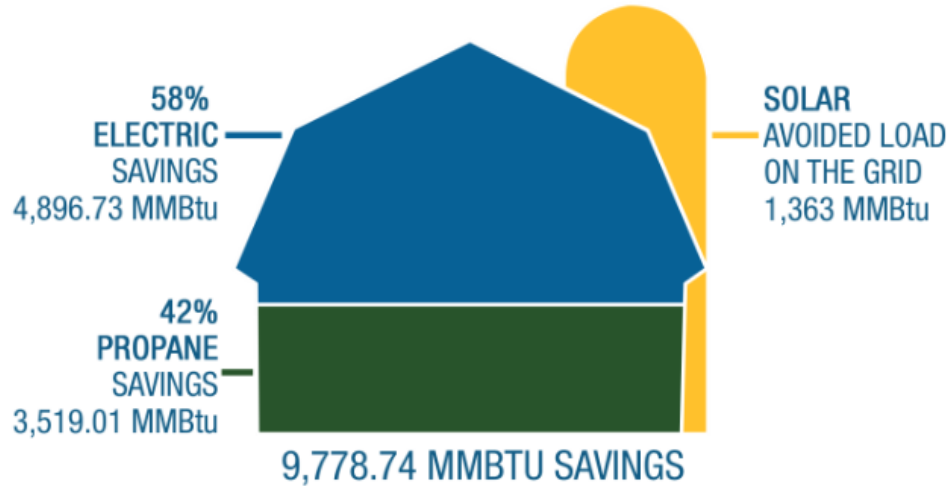
3.

How can energy efficiency be paired with other social service programming (and vice versa) to maximize the benefits?

4.

What are one or two key actions that governors can take to improve low-income energy efficiency programs in their state?

## Maryland Agricultural Businesses Improve Efficiency and Add Solar for \$208,676 in Annual Savings



Source: Maryland Energy Administration (MEA), Outcomes from the 2016 Kathleen A. P. Mathias Agriculture Energy Efficiency Program

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# Energy Efficiency in Rural Communities and the Agricultural Sector

Participants will discuss what rural and agricultural policies and programs have proven the most effective for achieving greater energy savings along with what innovative new approaches states should consider adopting.

## Key Facts:

- ✓ Rural communities face a higher median energy burden than urban customers.
- ✓ According to EIA nearly 1/3rd of rural households face energy insecurity, meaning that they have to reduce or forgo food or medicine to pay their energy bills.



Source: USDA

# Guidelines for the Energy Efficiency in Rural Communities and the Agricultural Sector

## Discussion:

### Open Discussion Format

1. We will have 6 to 7 minutes as a group per question to discuss ideas/answers to the four questions on the following slide.
2. Please use your table tent to flag that you'd like to speak.
3. We will go around the room and request responses in the order that we saw table tents go up.
4. For questions asking for model state examples, please provide one example only, and try to keep all answers to 30 seconds or less.
5. NGA will type up these ideas on the screen and/or flip chart for everyone to see.



# Energy Efficiency in Rural Communities and the Agricultural Sector: Discussion Questions

1.

What innovative programs are being implemented by states to reach these communities?

2.

What are new best practices in the agricultural sector to improve energy productivity?

3.

What are one or two key actions that governors can take to improve rural and/or agricultural energy efficiency programs in their states?

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# Report Out – Highlights & Solutions

In 30 seconds or less per participant, please briefly provide:

- ✓ 1 promising idea or effective state example that you heard mentioned today
- ✓ 1 thing that we're missing – what's important that we didn't discuss today

# NGA Follow-up

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- NGA will post the agenda and presentations from this Roundtable on our website and will send out the link to all participants once the posting is live.
- We will also provide follow-up notes on key takeaways from the meeting to all participants.
- We'll be working on an update to our 2013 *Energy Efficiency Primer* based on what we've heard today and once a draft is complete, we will circulate it to today's participants for comments.

## An Energy Efficiency Primer for Governors

### Executive Summary

Governors are supporting energy efficiency as a way to help consumers lower their energy costs, reduce state energy expenditures, defer the need for new power plant and transmission investments, strengthen system reliability, advance economic development and reduce environmental impacts. Based on those benefits, increasing energy efficiency—lowering energy use while providing the same level of service—is the goal most often cited in states' energy plans.<sup>1</sup>

The United States has made great strides in using energy more efficiently.<sup>3</sup> From 1985 to 2004, energy intensity (i.e., energy use relative to economic output) declined 10 percent because of efficiency improvements across the nation, after taking into account shifts in economic activity.<sup>4</sup> States have been essential to that progress. From 1993 to 2010, because of state policy directives, annual utility spending on electric energy efficiency increased 35 percent, from \$1.3 billion to \$4.6 billion.<sup>5</sup> That spending supported investments in improving lighting; upgrading appliances; optimizing systems for heating, ventilation, and air conditioning; and other measures. Those investments can also help advance state economic development efforts through increased job creation,

enhanced productivity and reduced energy bills.

In 2012, states collectively took 75 policy actions to advance energy efficiency through measures such as strengthening building codes, enhancing lead-by-example efforts, and establishing financing programs.<sup>2</sup>

However, several challenges to energy efficiency hinder further progress, including initial investment costs, regulatory barriers, and lack of information and data to quantify environmental and other benefits. As a result, less energy efficiency is being adopted than is economically viable. For instance, a study by the National Academy of Sciences found that building energy efficiency could improve cost-effectively by 25 percent to 30 percent by 2030 if barriers to greater adoption were reduced.<sup>6,7</sup>

Governors play a critical role in advancing energy efficiency. Although actions vary by state, governors have available a wide variety of tools to deploy energy efficiency. Since 2008, governors have worked with legislators, regulators, and others to develop or advance nearly 300 actions to improve energy efficiency.<sup>8</sup> Examples of those and other recent state actions include:

The discussions today will inform an update of *NGA's 2013 Energy Efficiency Primer for Governors* in the wake of elections in 39 states with 17 open seats. The updated document will be released in Spring 2019 and will particularly seek to inform new governors.



# Other Wrap-Up Items

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We'll email the meeting evaluation survey to all participants tomorrow.

**Thank you for participating in this Energy Efficiency Experts Roundtable!**

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