



Energy Efficiency and 111(d)

A resource and tool for Clean Air Act Compliance

Presented by Sara Hayes for
Physicians for Social Responsibility
March 18, 2015

The American Council for an Energy-Efficient Economy (ACEEE)

- ACEEE is a 501(c)(3) nonprofit that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, & behaviors
- 50 staff; headquarters in Washington, D.C.
- Focus on end-use efficiency in industry, buildings, & transportation
- Other research in economic analysis; behavior; energy efficiency programs; & national, state, & local policy
- Funding:
 - Foundation Grants (52%)
 - Contract Work & Gov't. Grants (20%)
 - Conferences & Publications (20%)
 - Contributions & Other (8%)



www.aceee.org/@ACEEEdc

Energy Efficiency – What is it?

- End-use Energy Efficiency vs Supply-Side
- Reducing Waste
- Examples
 - Improve insulation and air sealing
 - More efficiency lighting or appliances
 - Combined heat and power
 - Performance standards for appliances

Energy Efficiency Policies and Program

- Utility programs
 - Rebates for appliances
 - Home energy audits
- State financing programs
 - Loans to insulate your attic and basement
- Some newer offerings
 - Low-income and multifamily programs
 - Water efficiency
 - Efficiency service providers

What can you do to improve energy efficiency?

Assess your energy waste!

House

- ✓ Envelope, HVAC and appliances
- ✓ Do you have a *vampire* load?

Car

- ✓ MPG!

Office

- ✓ Sleep settings on computers and lighting
- ✓ Does stuff get shut off when people go home?

Check out more actions here!

<http://smarterhouse.org/>



EPA's Clean Power Plan



EPA proposing to regulate carbon emissions from existing power plants under section 111(d) of the *Clean Air Act*.

- 17% reduction in GHG emissions by 2030 relative to 2012 levels, or 30% reduction by 2030 relative to 2005 levels
- Individually tailored state targets
- Allows for flexible approaches including energy efficiency!

Timeline of **EPA** and **State** Actions

Spring - Summer 2015

EPA releases sample federal model plan for states

Summer 2015

EPA releases final rule for existing power plants

Present - Summer 2016

State air agencies conduct stakeholder engagement

Summer 2016

Final state plans due to EPA (may request extension until Summer 2017)

Summer 2017

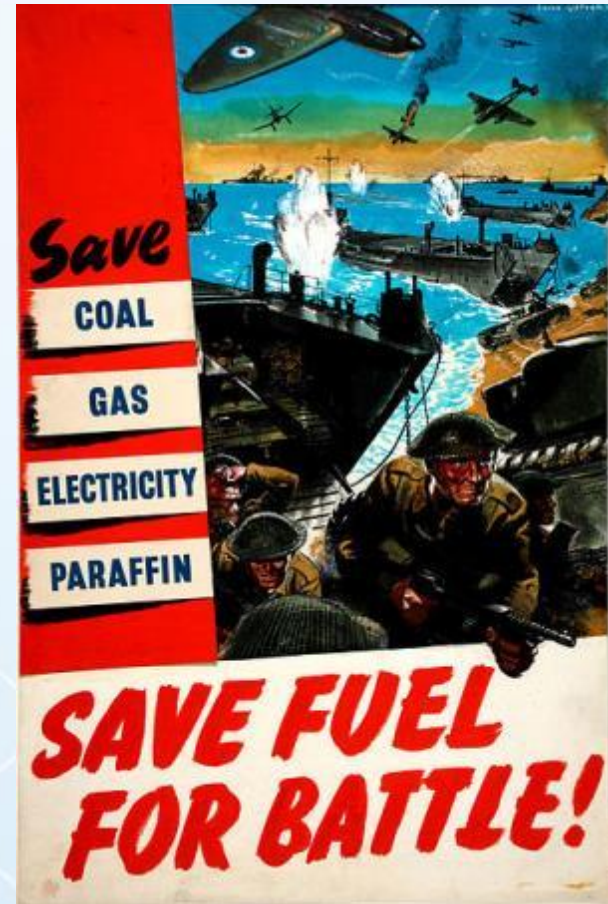
Final multi-state plans due to EPA (may request extension until Summer 2018)

Compliance

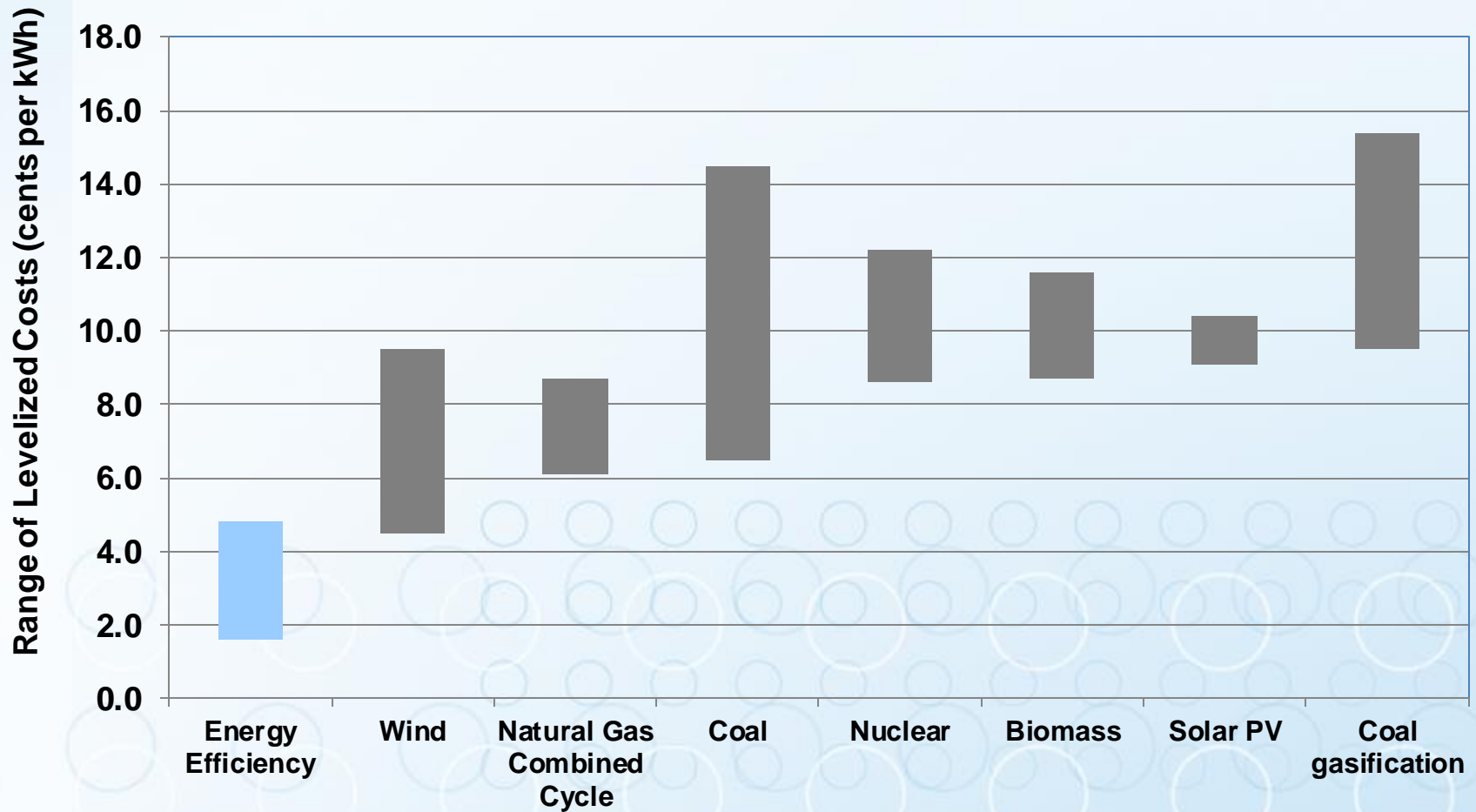
- States can include any mix of strategies to achieve targets.
- Up to each state whether or not to include efficiency as a compliance method.
- EE is a low-cost compliance option that offers a LOT of flexibility for states.

The multiple benefits of energy efficiency as a compliance option

- Low-cost and reliable resource
- Saves utility customers money
- Reduces multiple pollutants
- Boosts state economies



Comparing the costs of some compliance options



Source: Energy efficiency program portfolio data from Molina 2014; All other data from Lazard 2013.

Energy efficiency is happening all around us

24 states have mandatory energy savings goals

40+ states have national model building codes

8% of national electric generating capacity is from combined heat and power

\$1.1 trillion will be saved from existing appliance standards and equipment efficiency through 2035

Hayes, S. et al. 2014. *Change Is in the Air: How States Can Harness Energy Efficiency to Strengthen the Economy and Reduce Pollution*. Washington, D.C.: American Council for an Energy-Efficient Economy.

<http://aceee.org/research-report/e1401>

Four efficiency policies states can implement to help reduce emissions

- Annual energy savings goals
- Building energy codes
- Appliance standards
- Investing in combined heat and power technologies



Modeling end-use energy efficiency potential through 2030

- Assumed states adopt all four common energy efficiency policy options
- Quantified resulting impacts on:
 - Electricity consumption
 - Environment
 - Economy
 - Jobs



A SNAPSHOT OF THE U.S. IN 2030

Following the current energy path will have devastating economic, environmental, and health impacts. Enacting energy efficiency policies would avoid 600 million tons of carbon dioxide emissions.

CURRENT ENERGY PATH



An additional 494 power plants would be maintained

NO_x

527,000 tons* of additional nitrogen oxide pollution

SO₂

980,000 tons* of additional sulfur dioxide pollution

CO₂

600 million tons* of additional carbon dioxide pollution

Transmission and distribution cost increases



Erosion of energy grid reliability

\$95 billion in electricity generation costs

*i.e., the amount of pollution that would be avoided by choosing the energy efficiency scenario

ENERGY EFFICIENCY SCENARIO



Energy efficiency policies would save 925 million MWh of electricity

Environmental impacts:

26%

reduction in carbon emissions relative to 2012

25%

reduction in power demand relative to 2012

Economic impacts:

611,000

new jobs created

\$17.2 billion

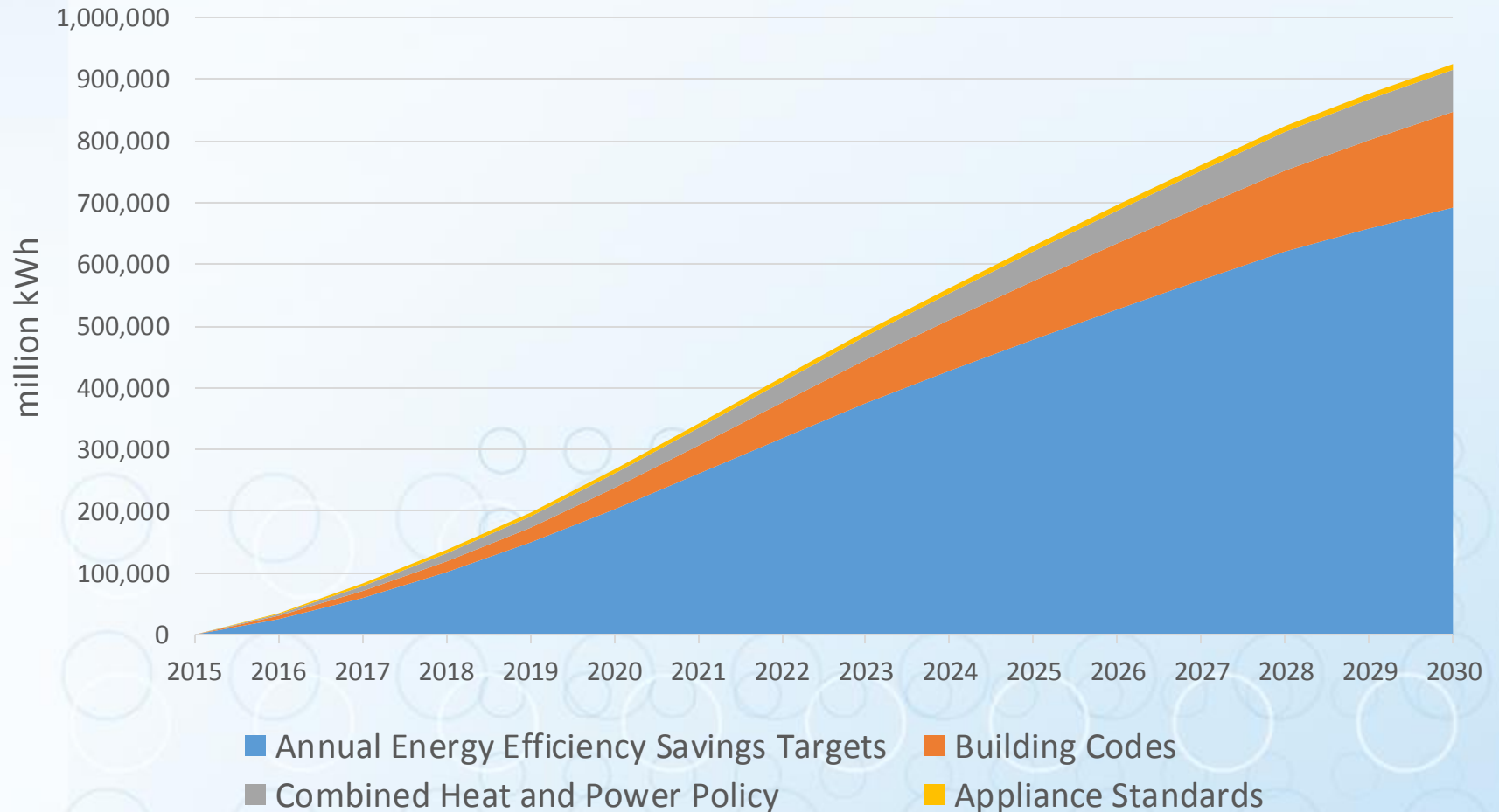
increase in GDP in 2030

\$47 billion in energy efficiency investments

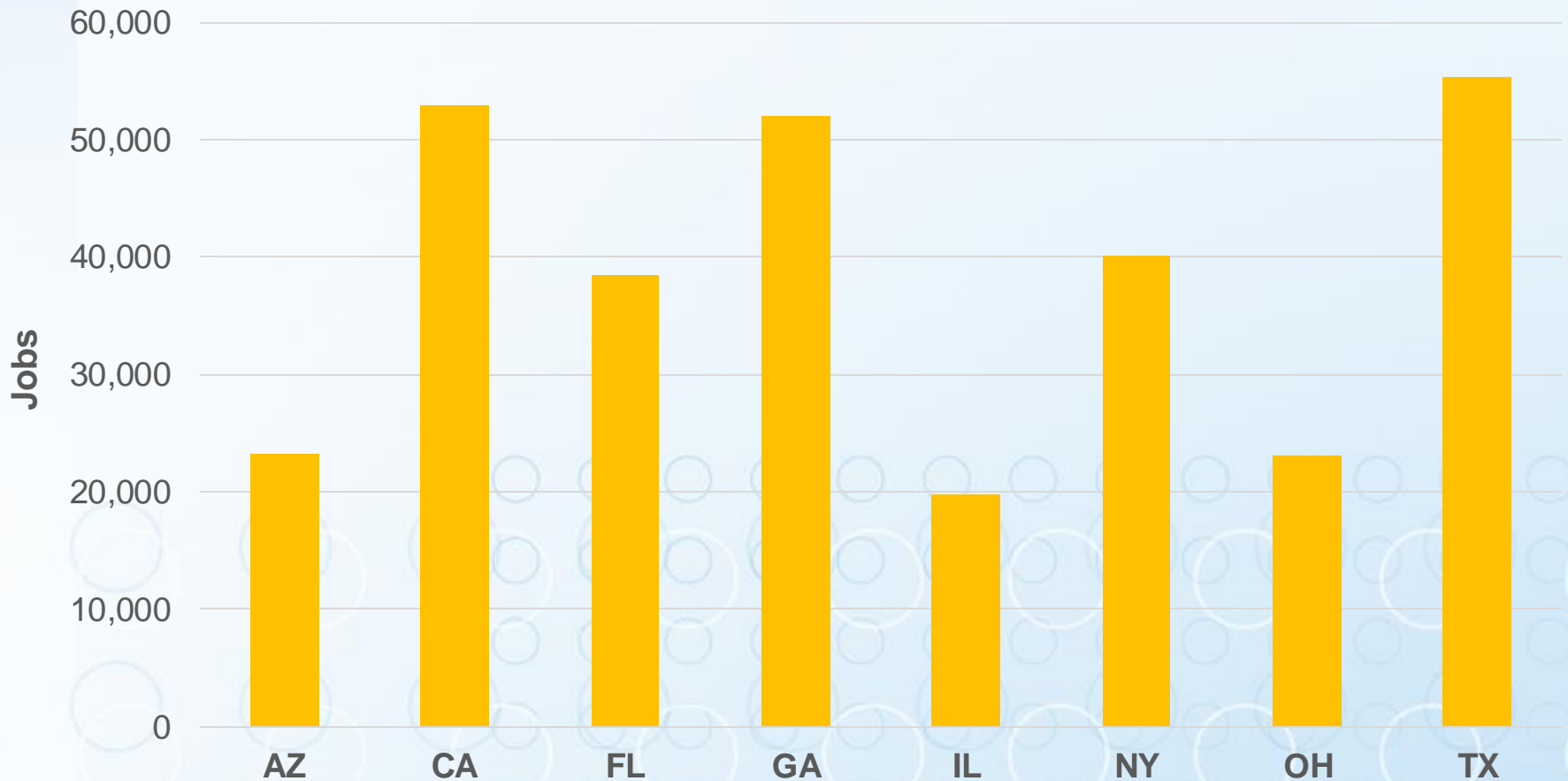
Potential national economic impacts of energy efficiency in 2030

	2030
Net Jobs	611,000
Net savings (billions)	\$48
Increase in net GDP (billions)	\$17
Average cost per MWh saved	\$50.68

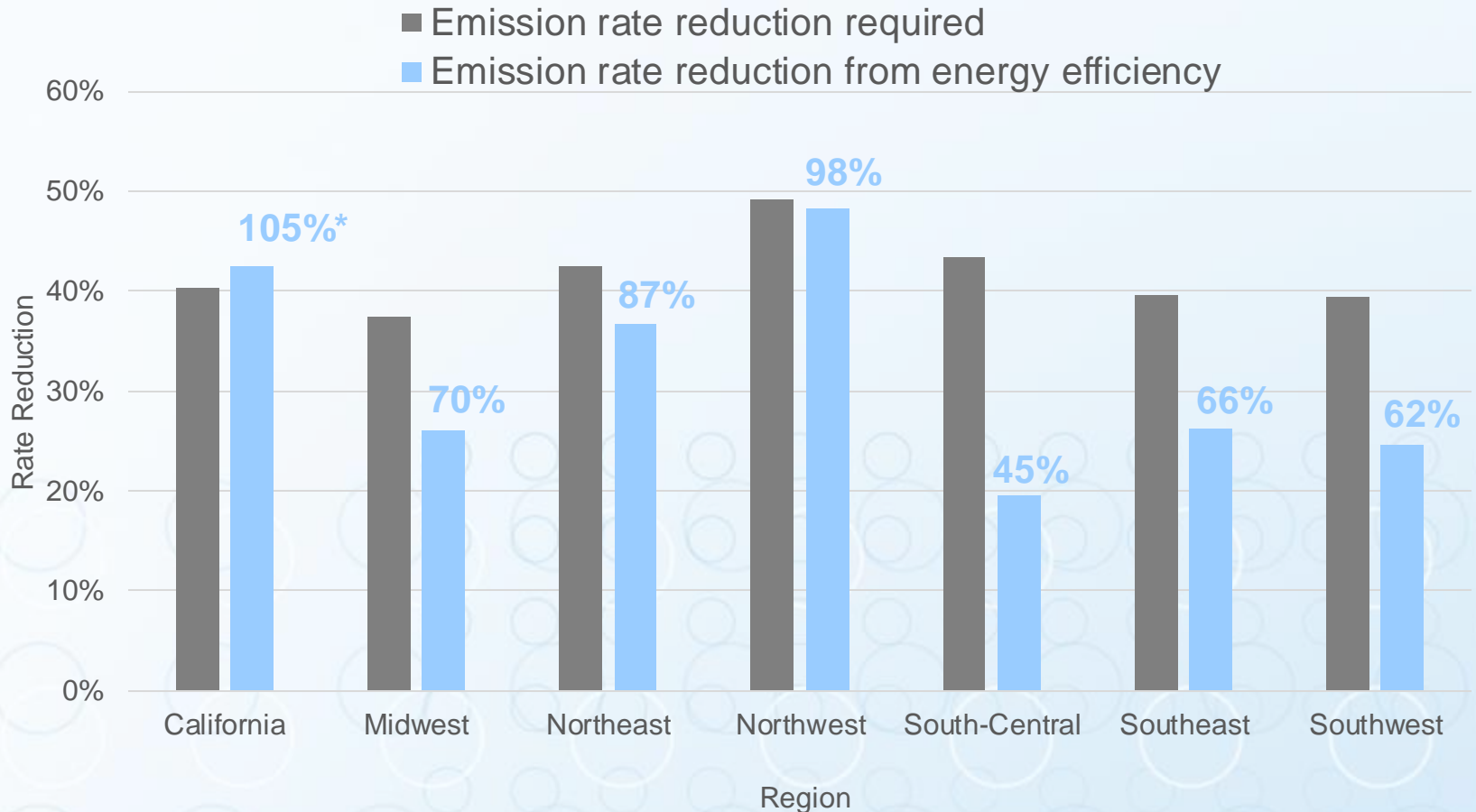
Potential energy savings from energy efficiency policies



New jobs added to the economy in 2030 as a result of our EE scenario

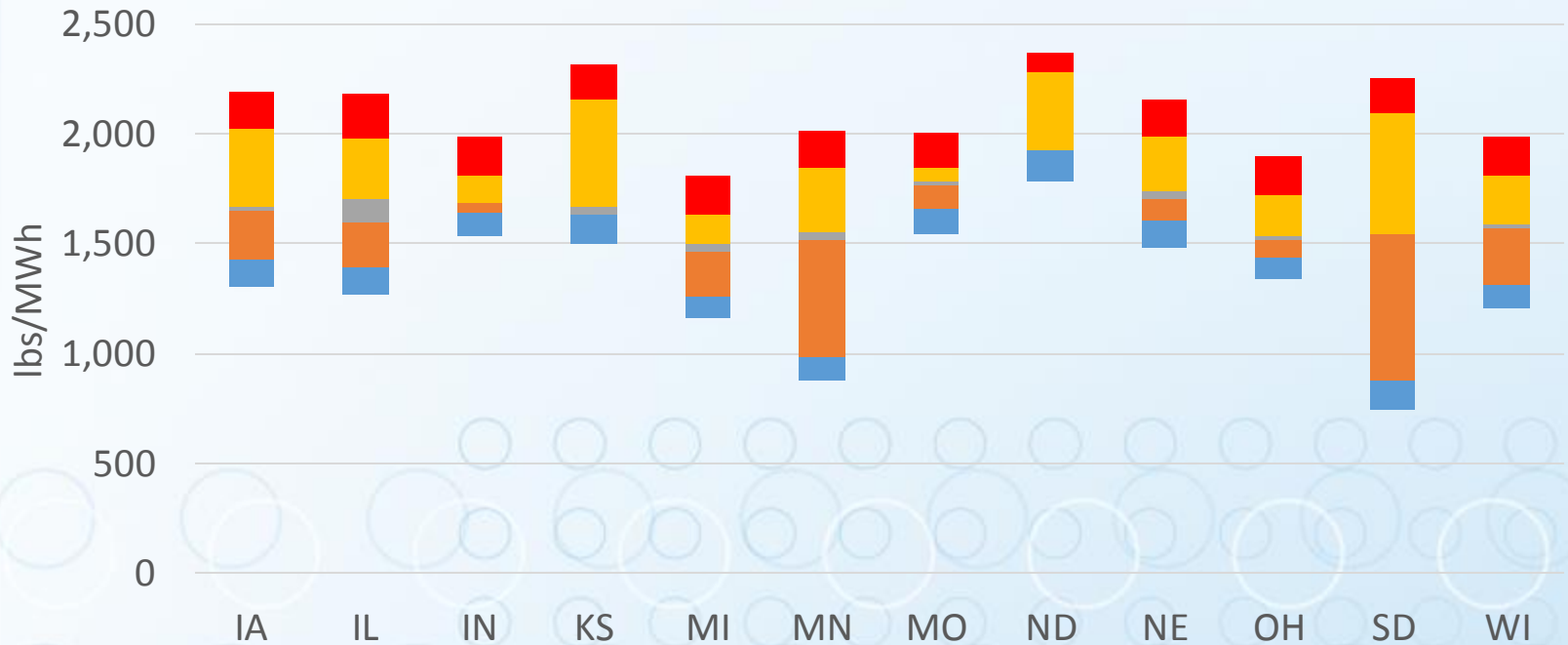


How far can energy efficiency go in regions across the U.S.?



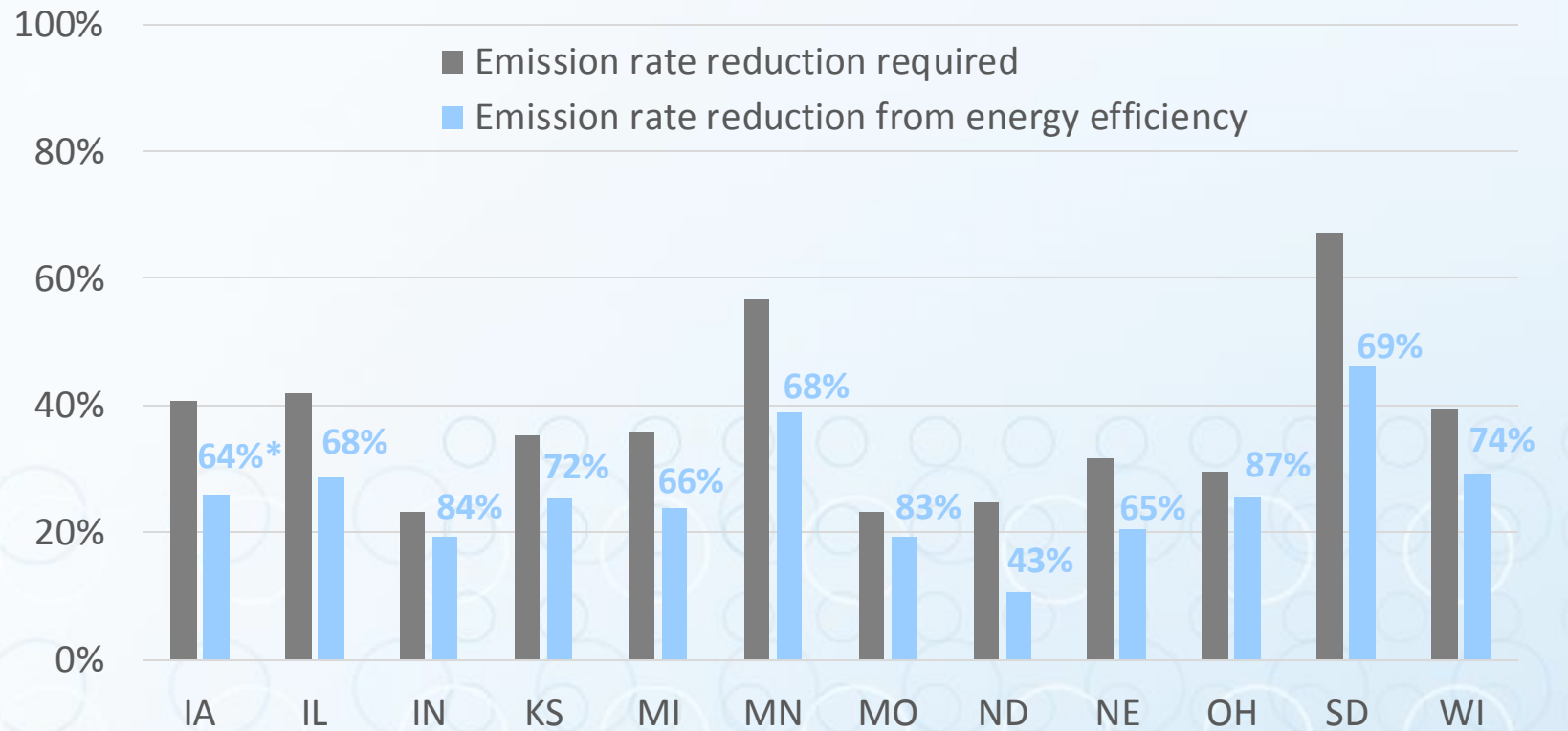
* Percent of total goal met with energy efficiency

Proposed emissions standards in the Midwest



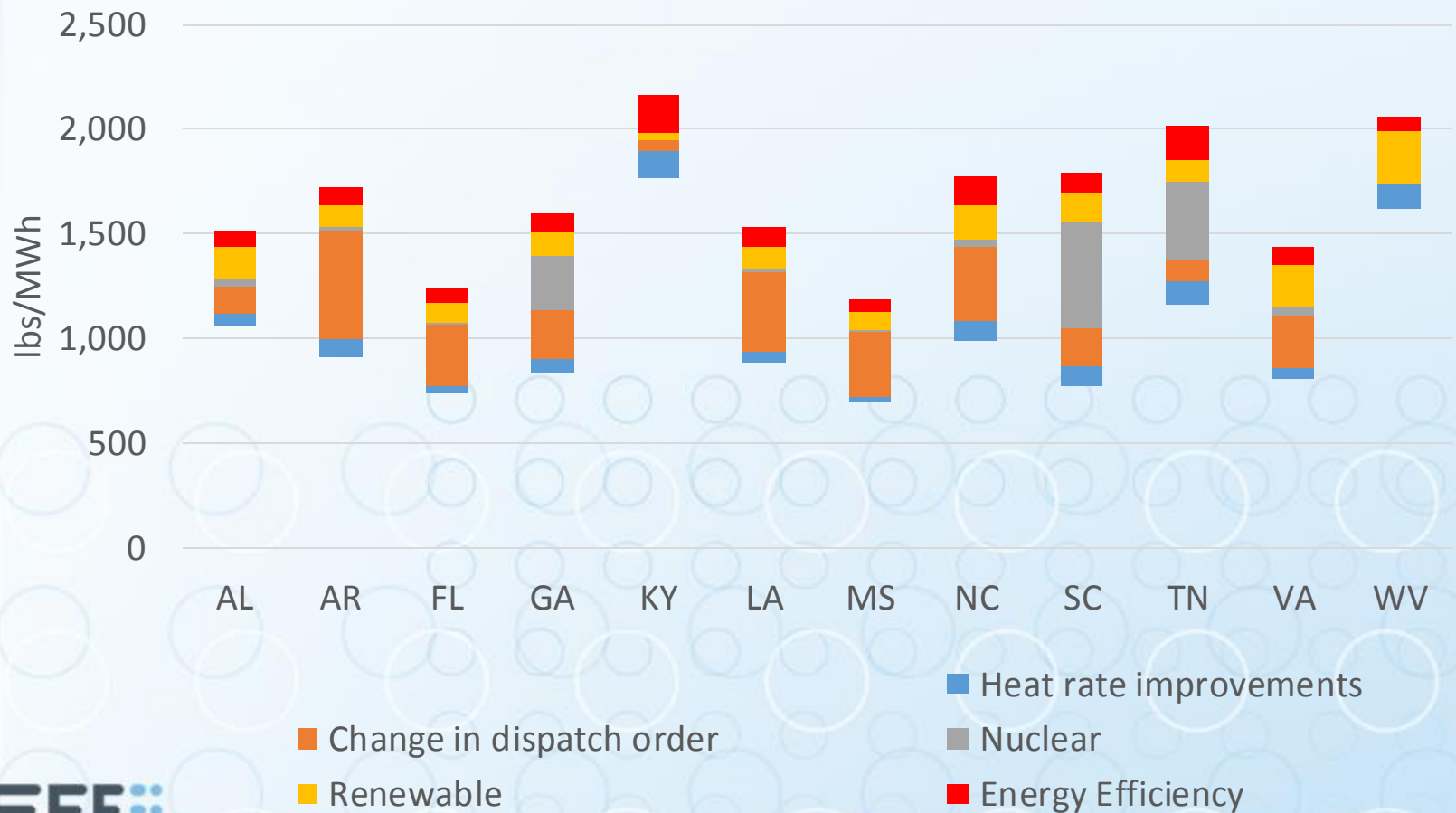
- Heat rate improvements
- Change in dispatch order
- Renewable
- Nuclear
- Energy Efficiency

How far can energy efficiency go in the Midwest?

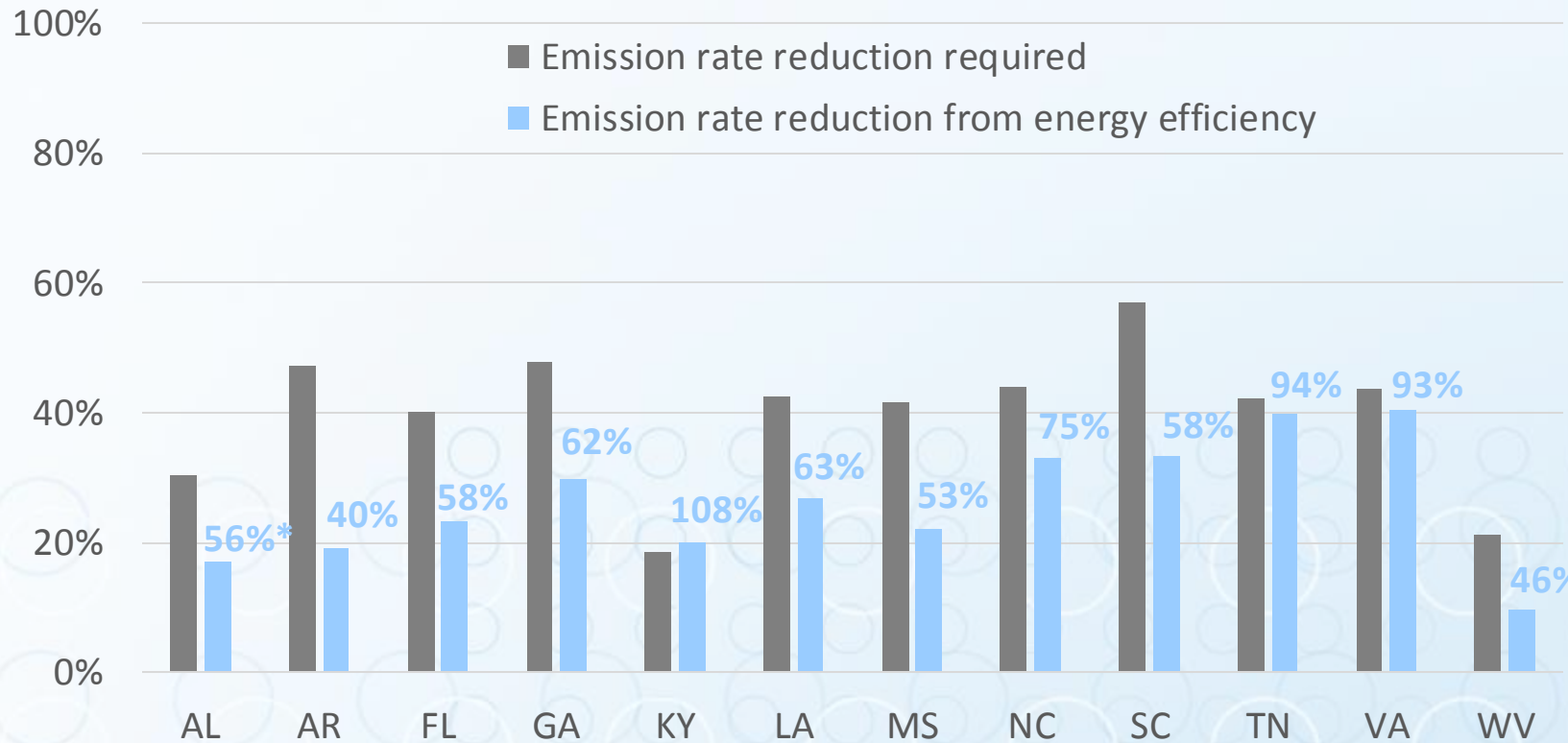


* Percent of total goal met with energy efficiency

Proposed emissions standards in the Southeast



How far can energy efficiency go in the Southeast?



* Percent of total goal met with energy efficiency

Is All This EE REALLY Possible by 2030?

Yes! States are already doing it.

- Many states had annual energy savings increase by 0.25% or more between 2012 and 2013:

HI, MA, MI, MO, NV, RI, WA, WI

- Many states also have 1.5% annual energy savings targets in place NOW:

AZ, CO, ME, MD, MA, MN, RI, VT

- Guess who else is on a good trajectory!

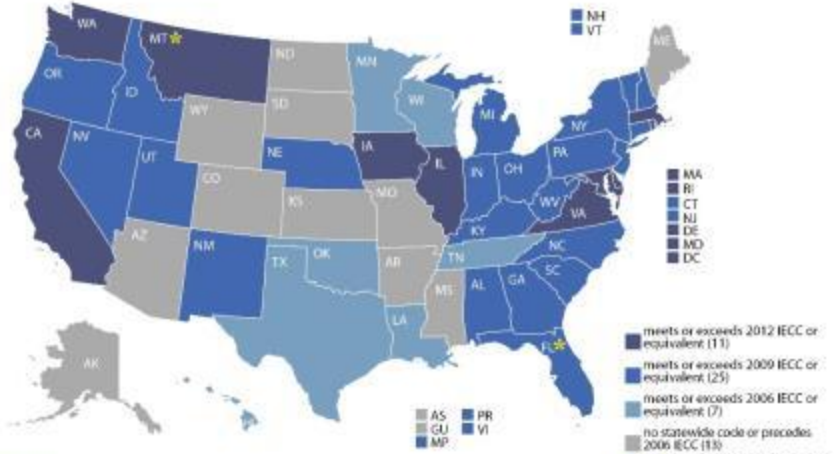
AR, CT, IL, IA, MI, NM, NY, OR, WA

Approximate annual savings targets for electricity and natural gas (2013-2014).

State	Approx. Annual Electric Savings Target	Approx. Electric Sales Covered by EERS	Approx. Annual Natural Gas Savings Target	Approx. Natural Gas Sales Covered by EERS
Massachusetts	2.6%	86%	1.1%	88%
Arizona	2.4%	56%	0.6%	85%
Maryland*	2.4%	100%	–	–
Rhode Island	2.4%	99%	0.9%	100%
New York*	2.1%	100%	0.5%	100%
Vermont	2.0%	100%	–	–
Illinois**	1.8%	89%	1.1%	88%
Maine	1.6%	100%	0.3%	100%
Colorado	1.5%	57%	0.2%	72%
Indiana	1.5%	74%	–	–
Minnesota	1.5%	100%	1.5%	74%
Connecticut	1.4%	93%	0.6%	100%
Hawaii*	1.4%	100%	–	–
Oregon	1.4%	69%	0.4%	89%
Washington	1.4%	81%	–	–
Iowa	1.3%	74%	0.2%	100%
Ohio	1.2%	89%	–	–
Michigan	1.0%	100%	0.8%	100%
New Mexico	1.0%	68%	–	–
California	0.9%	78%	0.6%	82%
Arkansas	0.8%	53%	0.7%	60%
Pennsylvania	0.8%	97%	–	–
Wisconsin	0.7%	100%	0.5%	100%
North Carolina	0.4%	99%	–	–
Nevada	0.2%	62%	–	–
Texas	0.1%	70%	–	–

Notes: *Savings originating from non-reporting entities may count toward targets. Only savings data from regulated program administrators was analyzed in this report. **Rate cap has limited available efficiency measures, resulting in approval of targets below legislative levels.

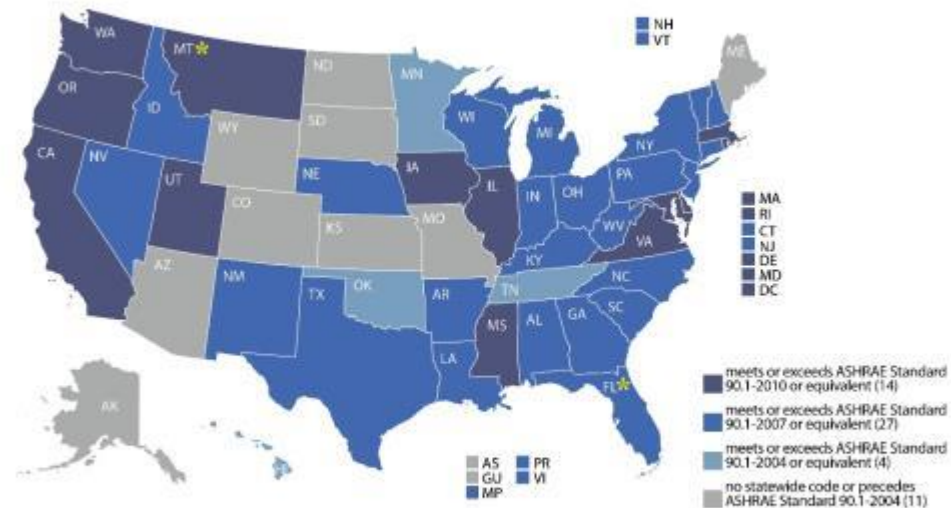
Residential State Energy Code Status AS OF SEPTEMBER 1, 2014



BCAP Dedicated to the adoption, implementation, and advancement of building energy codes.
Get all the most up-to-date code status maps and other valuable resources at www.energycodescoalition.org

More than 40 states have already adopted national model building codes

Commercial State Energy Code Status AS OF SEPTEMBER 1, 2014



BCAP Dedicated to the adoption, implementation, and advancement of building energy codes.
Get all the most up-to-date code status maps and other valuable resources at www.energycodescoalition.org

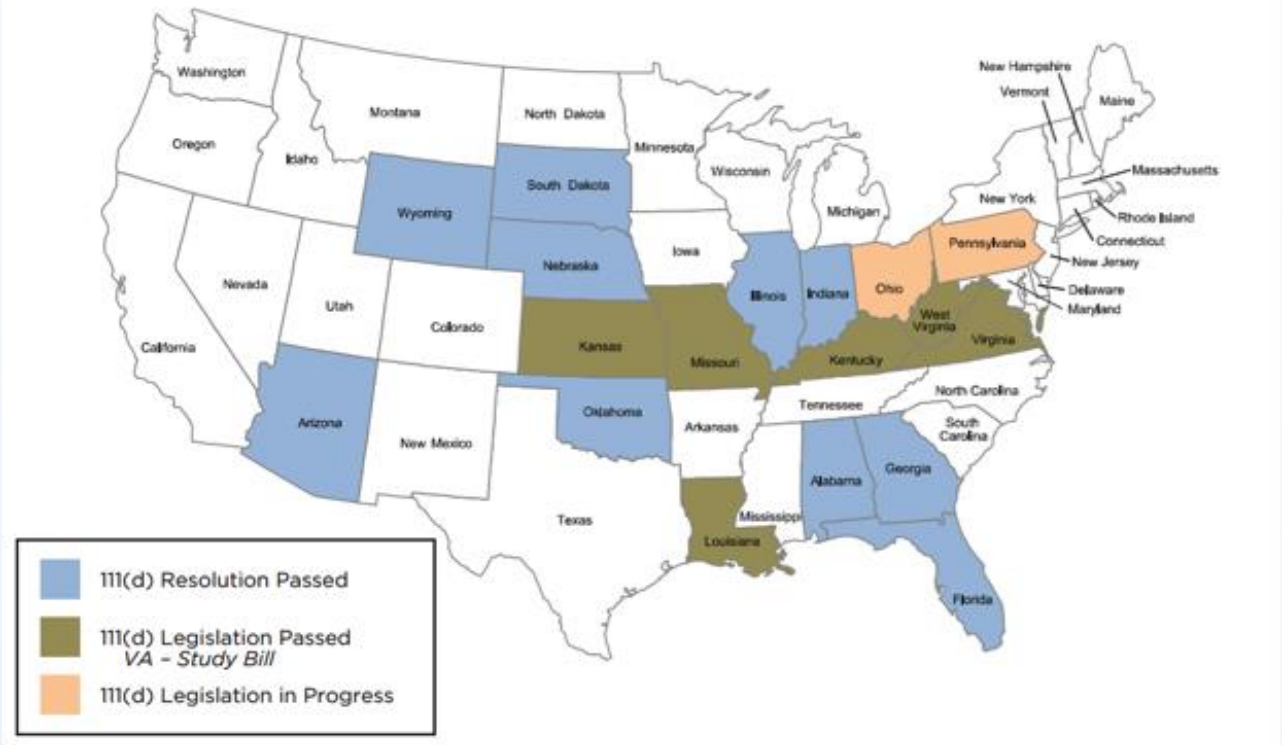
What's Happening in States Now?

- Posturing
- Planning
- Discussing
- Listening

American Legislative Exchange Council

- KY, PA, WV, others...

111(d) State Legislation and Resolutions Adopted During 2014 Session



How can you help your state?

Get involved in the planning process!

- Build relationships
- Understand opportunities to weigh in
- Determine timing
- Learn about opportunities for projects, policies and programs you want to support

Questions? Comments?

Sara Hayes

Senior Manager and Researcher

shayes@aceee.org

(202) 507-4747