

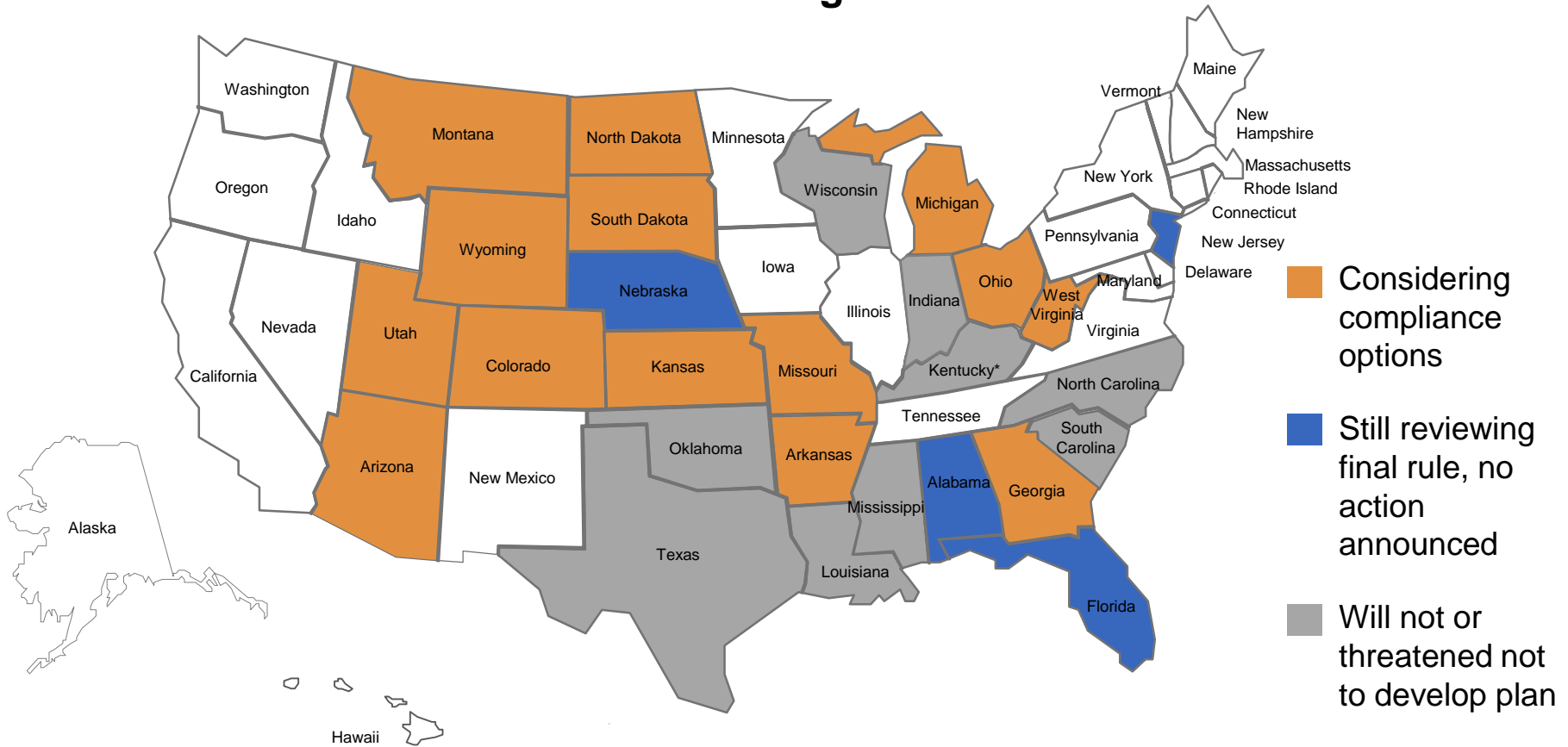


THE CLEAN POWER PLAN

Advanced Energy Economy
December 9, 2015 - NCSL

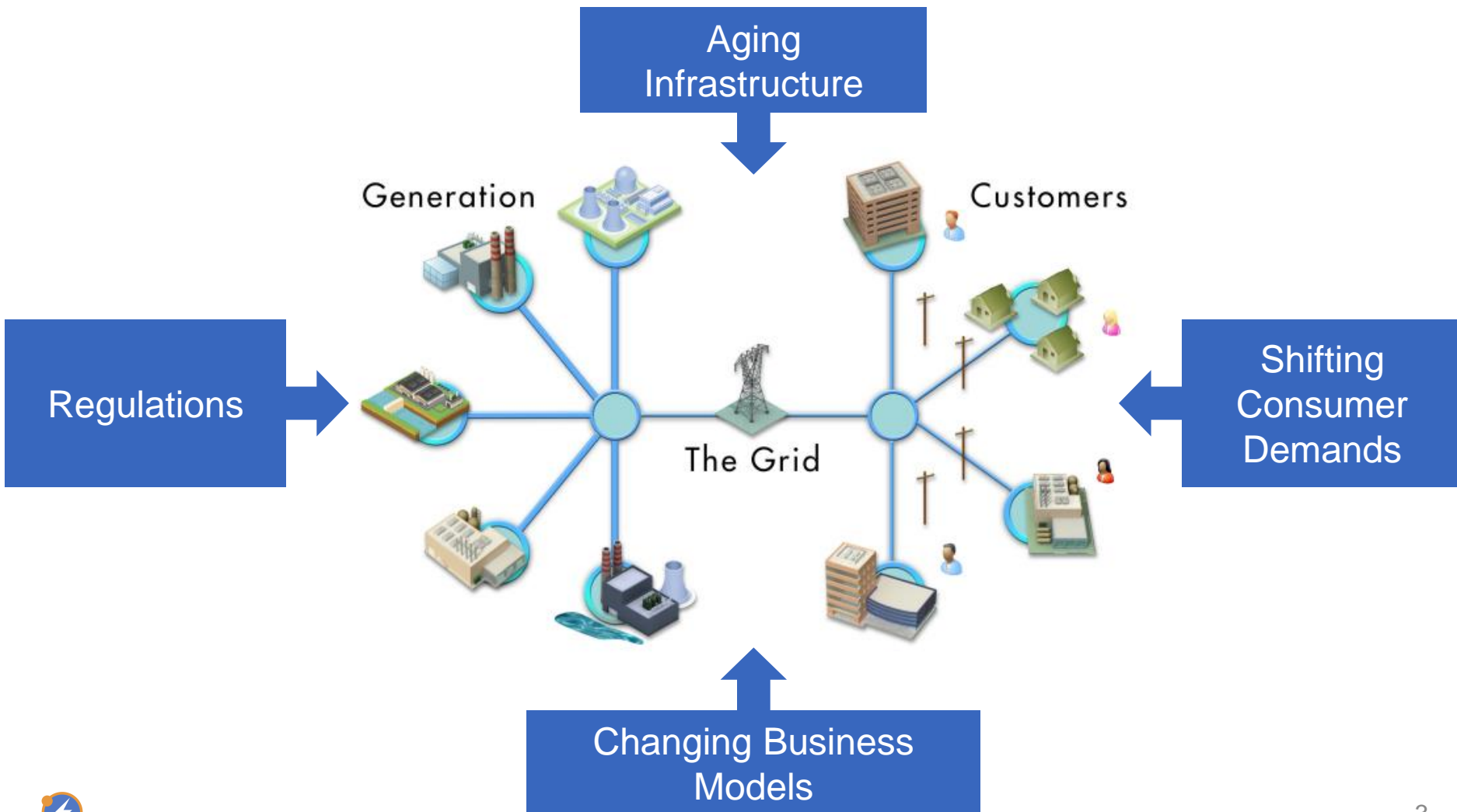
Even among the 27 states that are suing EPA, many are already working on plans

States that filed suit against CPP



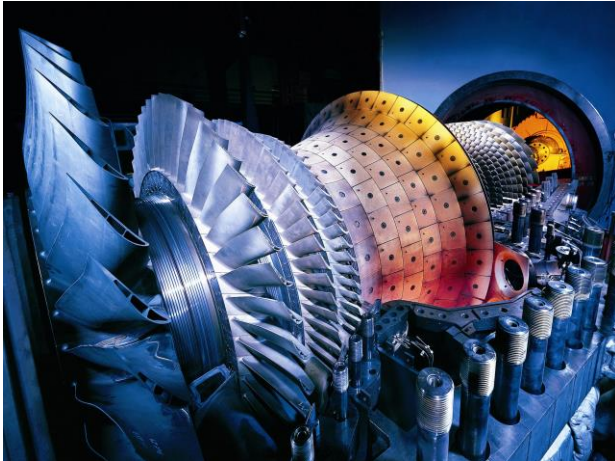
*Current Kentucky Governor preparing compliance plan with term ending this year. Governor-elect Bevin plans not to comply.
Analysis by Advanced Energy Economy

The energy system has been changing in the face of many pressures over the past decade



Technologies to address these challenges are evolving rapidly

Natural Gas Combined Cycle



Renewable Energy



Demand Response



Nuclear Power



AMI



Energy Efficiency



State regulators have many of the same resources available for CPP compliance

OTHER OPTIONS

Carbon capture and sequestration

Demand response*

BSER

Renewables

(onshore wind, utility-scale solar PV and CSP, geothermal, hydro)

Coal-to-existing NGCC switching



Heat rate improvements

Other grid-connected renewables
(offshore wind, DG, biomass, wave and tidal power)



Energy storage**

Zero-emitting fuel cells



End-use energy efficiency

ESCOs, behavioral programs, appliance replacement, building energy codes, appliance codes



CHP, WHP, and cogeneration

New and incremental nuclear



T&D efficiency

(VVO, CVR, smart grid)



*Eligible to the extent it reduces net MWh end-use.

**Cannot receive explicit credit but its benefits can be recognized in plans.

EPA developed the Clean Energy Incentive Program (CEIP) to meet certain goals

Encourage states to submit plans early

Incentivize generators and project developers to act early

Boost RE and EE as compliance options

Minimize rate impacts for low-income communities

The CEIP adds flexibility and helps states earn extra credit for early work.



What is the CEIP, and what projects can participate?

- The CEIP is an optional program that allows qualifying projects to earn **early credits** – both from the state and **free matching credits from EPA**
- To participate, a project must:
 - Be located in a state **participating in CEIP**
 - Fall under one of two categories:
 - **Renewable energy** (solar or wind)
 - Demand-side **energy efficiency** implemented in low-income communities



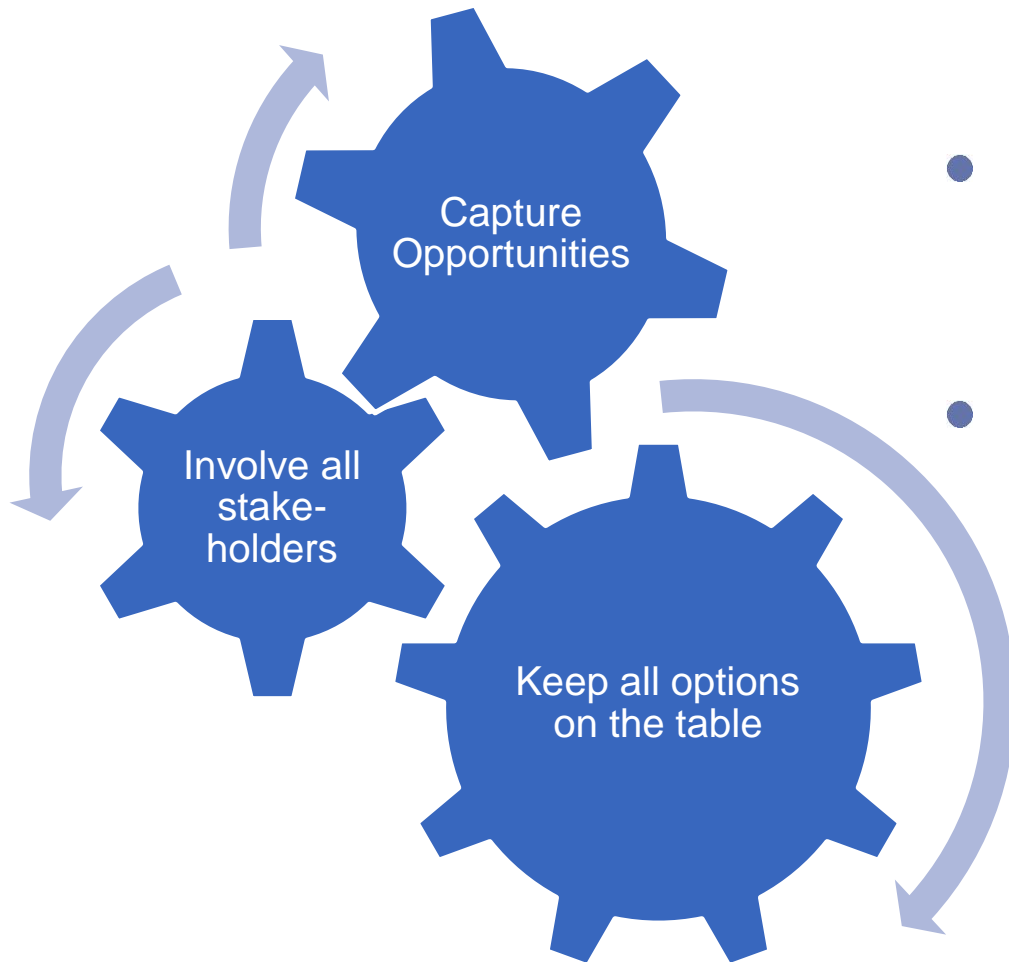
So the next step for most states is 'no regrets' analysis and planning

Planning Benefits

- Planning needs to happen no matter what happens in pending litigation
- Puts state in driver's seat when it comes to implementation rather than the feds
- Allows states to optimize their approach for meeting a variety of needs in the state
- CEIP planning allows for market certainty and helps the state receive matching credits – which reduces the state's work



Legislators can help ensure that regulators have all options at their disposal



- Air regulators are responsible for drafting and submitting a compliance plan
- Legislators can help by:
 - Ensuring all options are on the table
 - Enabling stakeholder processes
 - Setting complementary policy goals



Questions?

Malcolm Woolf

Senior Vice President, Policy and Government Affairs

Advanced Energy Economy

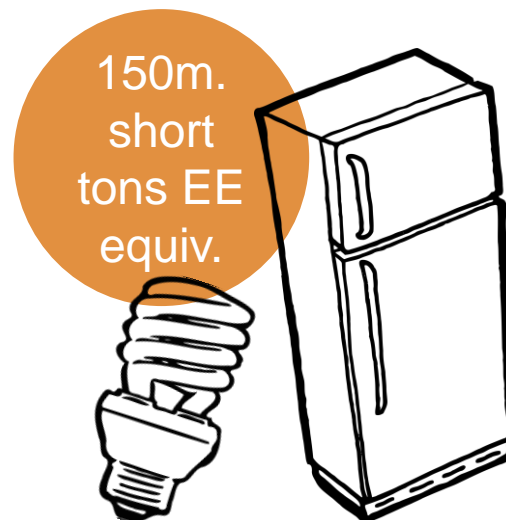
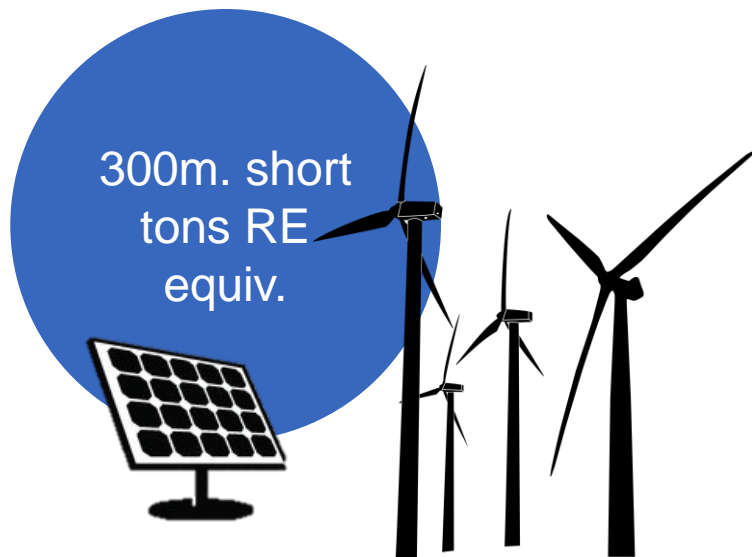
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Appendix



EPA is giving away the equivalent of 300M short tons RE or 150M short tons EE



190 TWh per year of RE*

- 76 GW of new RE
- Equivalent to 19 GW added annually from 2017 through 2020

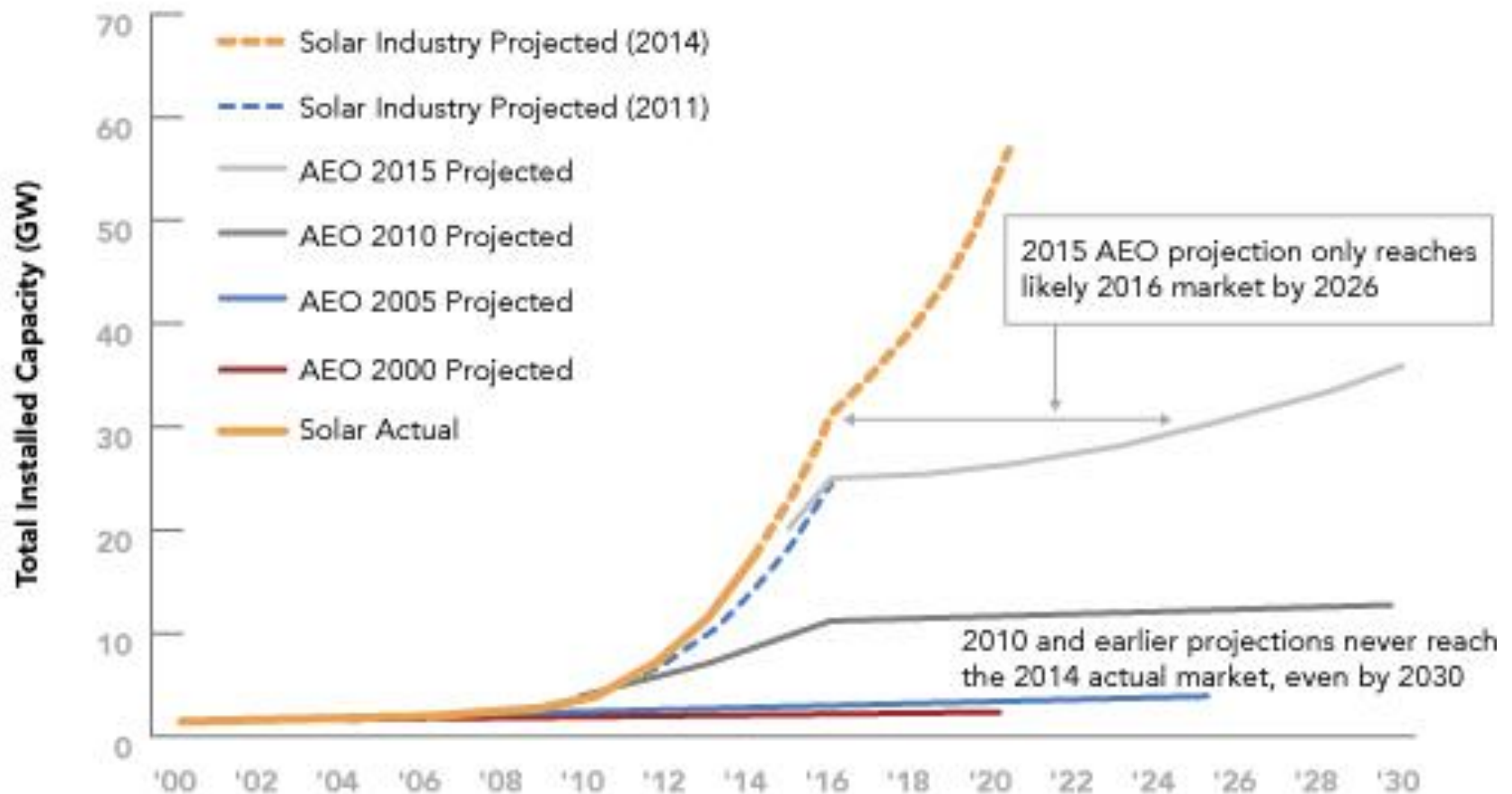
94 TWh per year of EE*

- Equivalent to nearly 4 times the total savings from all EE programs in 2013 (24.3 TWh)



Natural gas is not the only technology that is beating expectations

Actual vs. EIA AEO Projected U.S. Solar Capacity

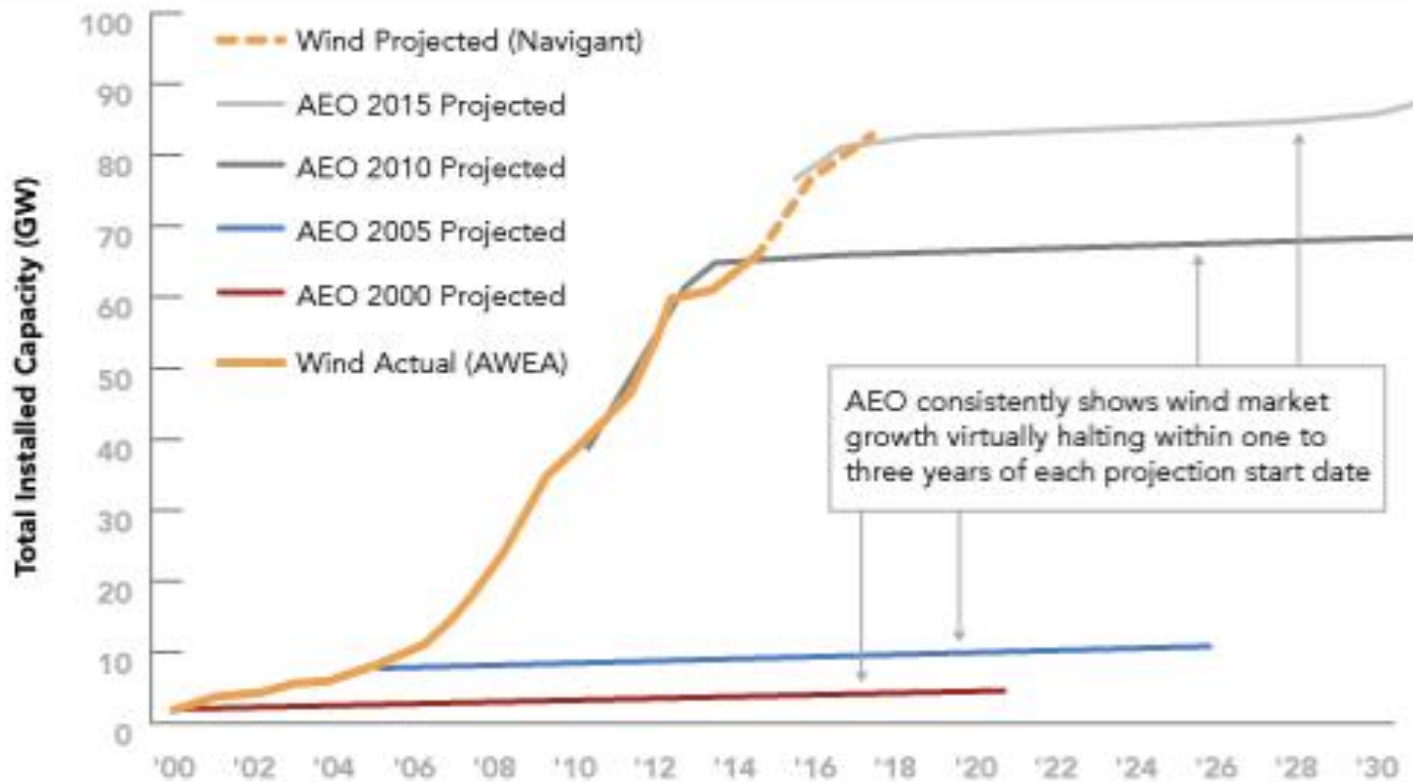


Sources: Actual data are from Interstate Renewable Energy Council, and SEIA/Greentech Media, and include PV and CSP. Solar Industry Projected are SEIA/GTM projections from 2011 and 2015 Solar Market Insight (SMI) Reports, and include PV and CSP. Solar actual and industry data were converted from DC to AC using a factor of 0.77 for utility-scale and 0.87 for residential and commercial. AEO Projected data are for the EIA Reference Case.



Wind power is a very similar story

Actual vs. EIA AEO Projected U.S. Wind Capacity



Sources: Wind Actual data are from AWEA, Wind Projected data are from Navigant Consulting, US Wind Market Outlook presentation, May 2015. AEO Projected data are from the Reference Case for each year shown.



CEIP projects are subject to a different timeline than other compliance measures

Applies to all eligible measures:

Must be installed after 2012.
No early action credits.

Start generating credit in 2022.

Applies to Clean Energy Incentive Program measures:

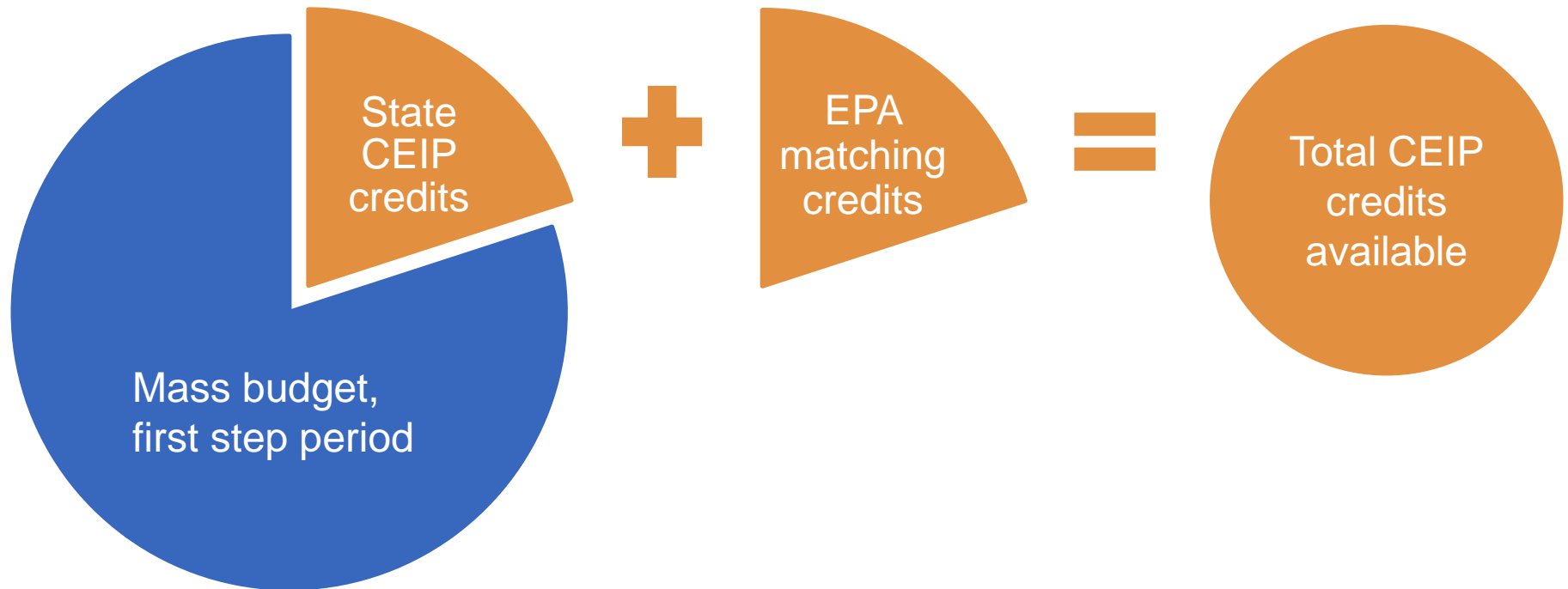
Must commence construction (RE) or operation (EE) after state submits plan or Sept. 2018, whichever comes first.*

Start generating credit in 2020 when CEIP begins.



*The CEIP commence construction/operation date for all Federal plan states is Sept. 2018.

The EPA matching credits are “free” but states must account for state CEIP credits

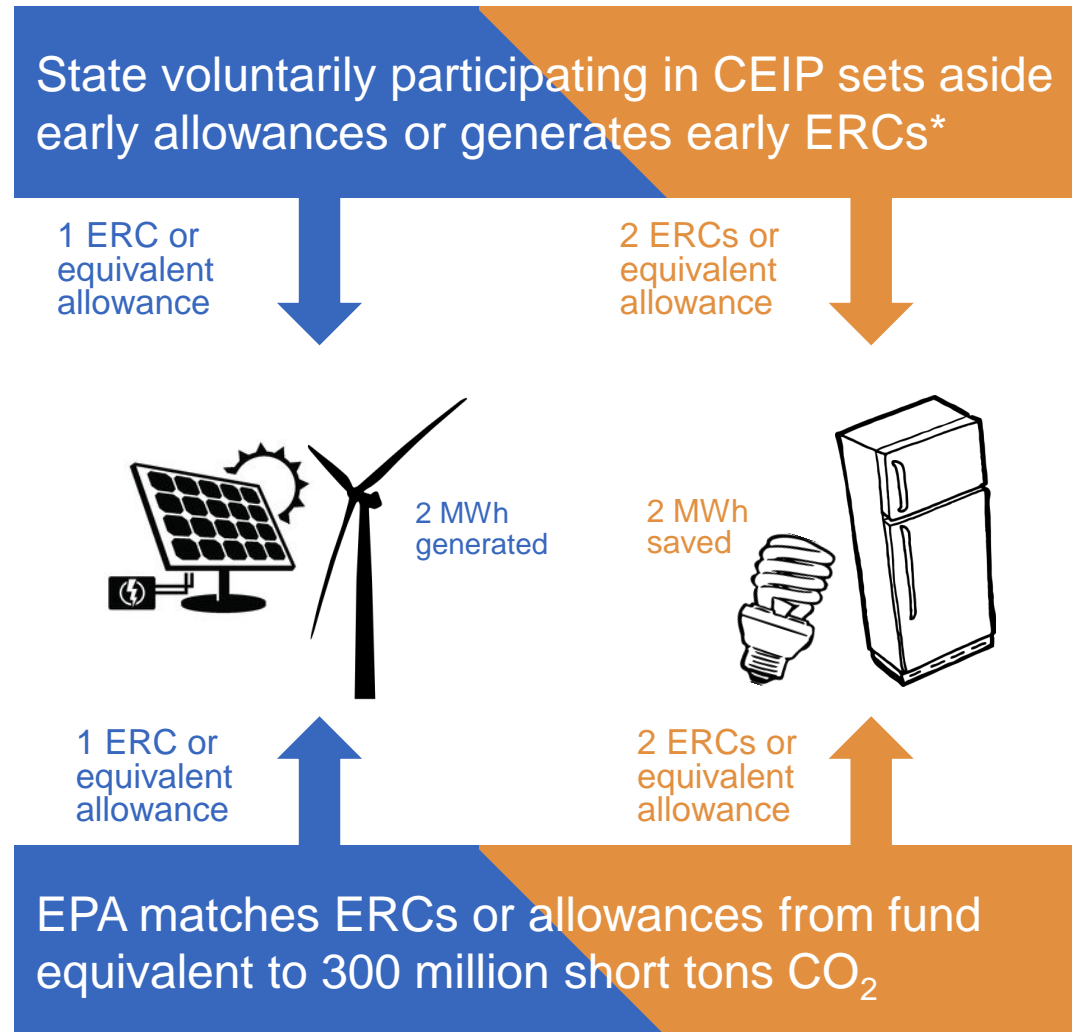


- States may set aside allowances from the state emission budget (mass) or may “borrow” early action ERCs (rate) to credit early projects



Eligible projects receive credits from the state, and matching credits from EPA

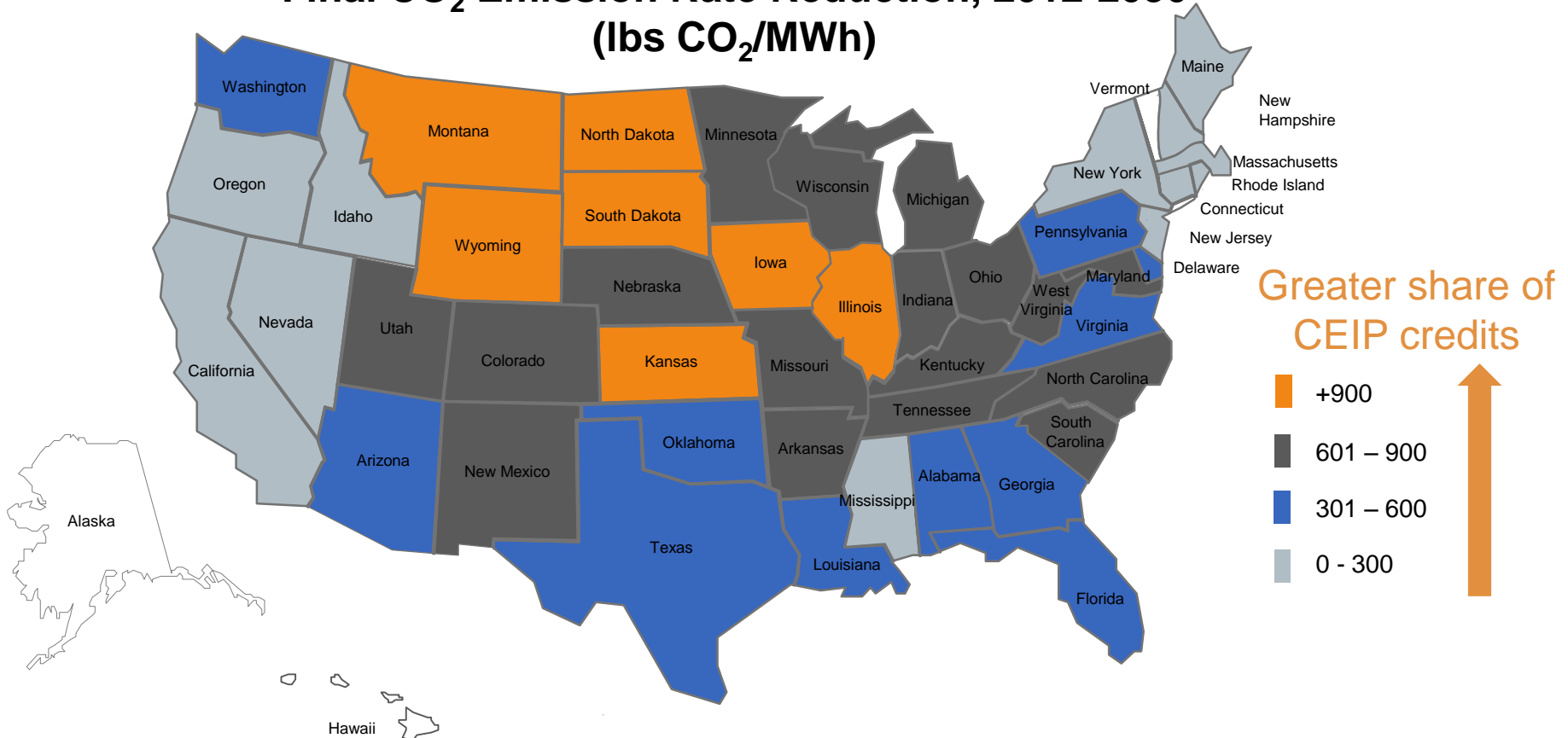
- EE receives double credit for emission reductions under the CEIP
- M&V is required



*Participation is mandatory, not voluntary, for states under the Federal plan.

Matching credits from EPA are allocated to states on pro-rata basis

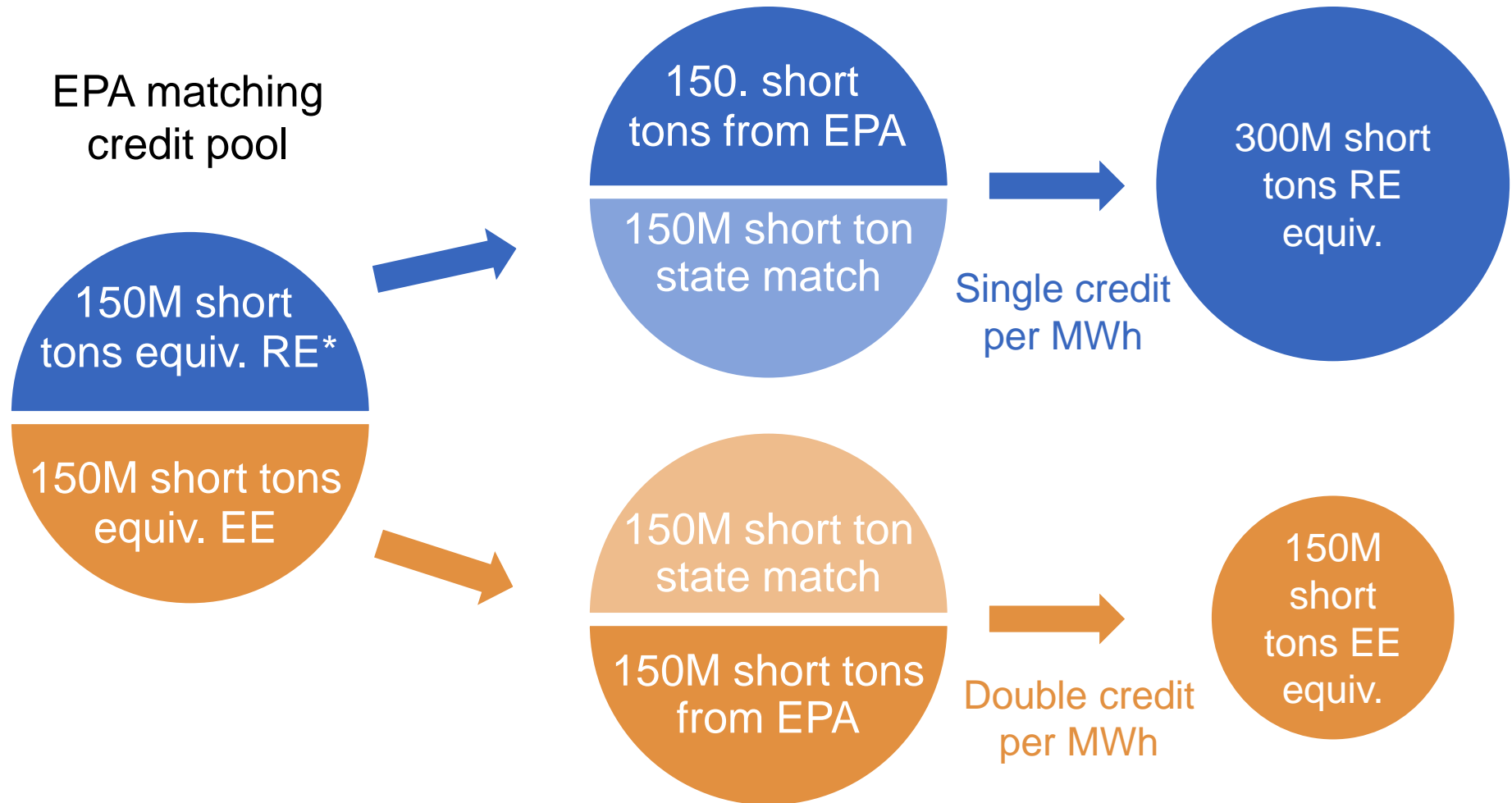
**Final CO₂ Emission Rate Reduction, 2012-2030
(lbs CO₂/MWh)**



States whose EGUs must achieve greater reductions are eligible to receive a greater share of the EPA matching credits.



If EPA splits the 300 million short tons 50-50, how much RE and EE can CEIP support?



*EPA uses 0.8 short tons per MWh for calculation purposes; the final equivalency is still to be determined.