

PIMA COUNTY ENVIRONMENTAL QUALITY ADVISORY COUNCIL

Clean Power Plan
March 18, 2015



Tucson Electric Power



EPA's Proposed Clean Power Plan Overview

Nationwide 30% reduction in CO₂ emissions from existing power plants from 2005 levels by 2030

- 2012 emission rates used as baseline year for individual state reductions
- State-by-State Goals
- Progress measured beginning in 2020
- Arizona has highest unplanned impact

“Building blocks” approach intended to provide flexibility

- Heat rate improvements to existing fossil fuel plants
- Fuel switching from coal to natural gas
- Expanded use of zero or low-emitting generation sources
- Expanded use of energy efficiency

Current TEP Portfolio Diversification Plan reduces CO₂ by 25% but is still 2 times the 2030 limit

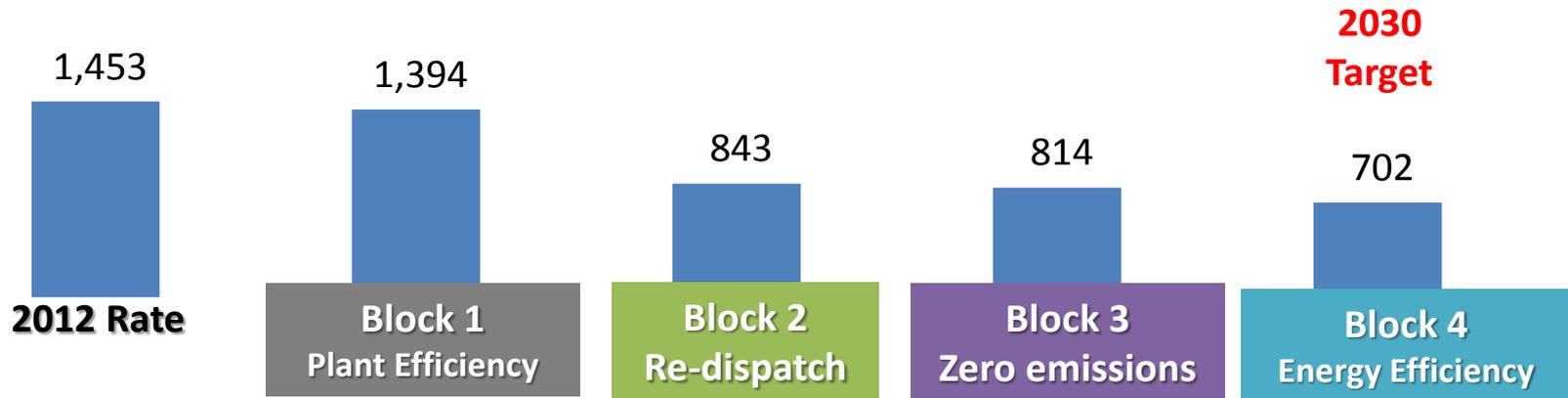
- The goal is not utility specific
- Some ability to keep coal with increased renewables and energy efficiency

EPA Proposed Carbon Reduction by State
(CO₂ lbs / MWh)

State	2012 Rate	2020 Goal	2030 Goal	Reduction from 2012
Washington	756	264	215	72%
Arizona	1,453	735	702	52%
S. Carolina	1,587	840	772	51%
Oregon	717	407	372	48%
New Hampshire	905	546	486	46%
Arkansas	1,634	968	910	44%
Georgia	1,500	891	834	44%
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Rhode Island	907	822	782	14%
Hawaii	1,540	1,378	1,306	15%

EPA's Proposed Clean Power Plan "Building Blocks"

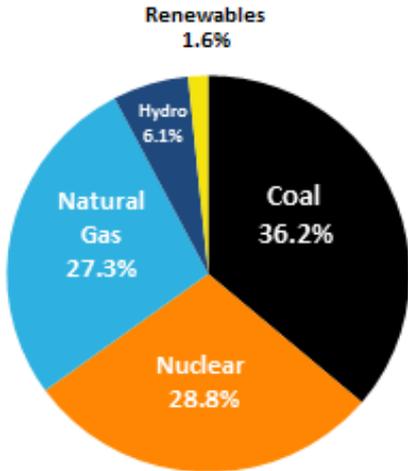
EPA Assumptions for Arizona Emission Rate Reduction (CO₂ lbs / MWh)



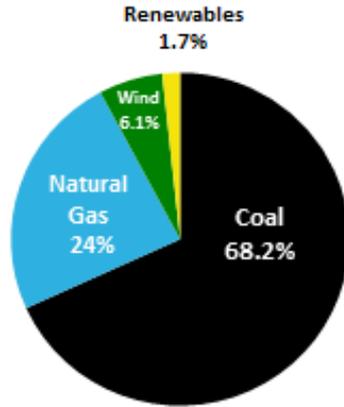
- Block 1**
 - Heat rate improvement of 6% across all coal-fired facilities
- Block 2**
 - 70% capacity factor (CF) from all combined cycle natural gas facilities (existing and under construction)
- Block 3**
 - Applies regional renewable energy target
 - Assumes 6% of national capacity "at risk" (at 90% CF)
- Block 4**
 - Applies regional energy efficiency targets

ENERGY MIX CHART

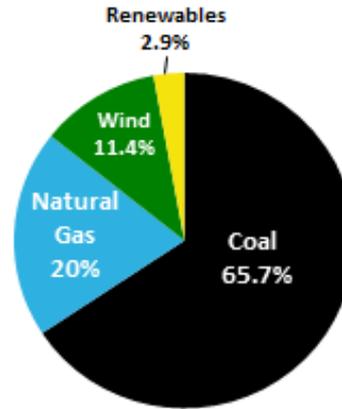
Comparison of CO₂ emissions (lbs.)/state electricity generation in megawatt-hour (MWh)



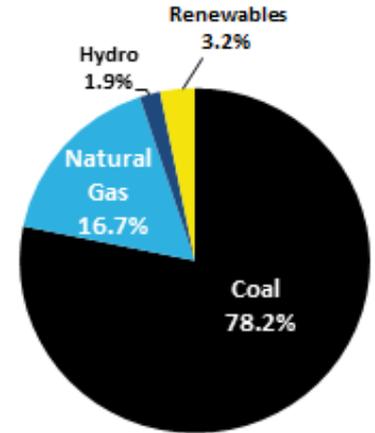
Arizona



**NEW MEXICO: 34.0%
REDUCTION**



**COLORADO: 35.4%
REDUCTION**

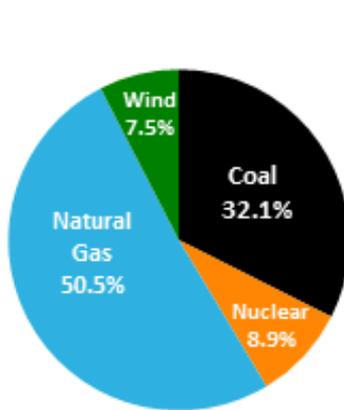


**UTAH: 27.1%
REDUCTION**

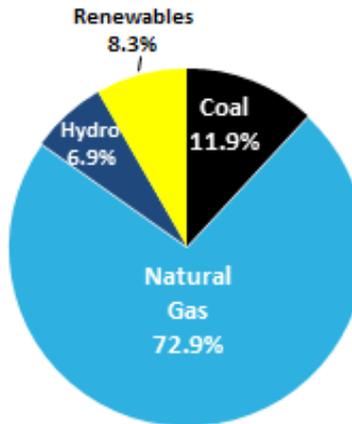
**REDUCTION:
51.7%**

**GOAL:
702 lbs./MWh**

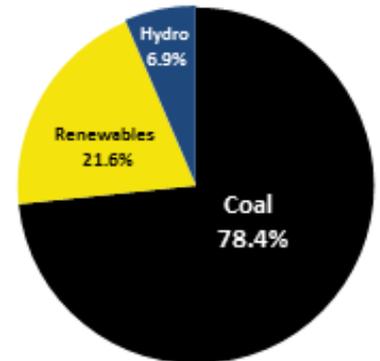
**2012 Actual:
1,453 lbs./MWh**



**TEXAS: 39.1%
DUCTION**



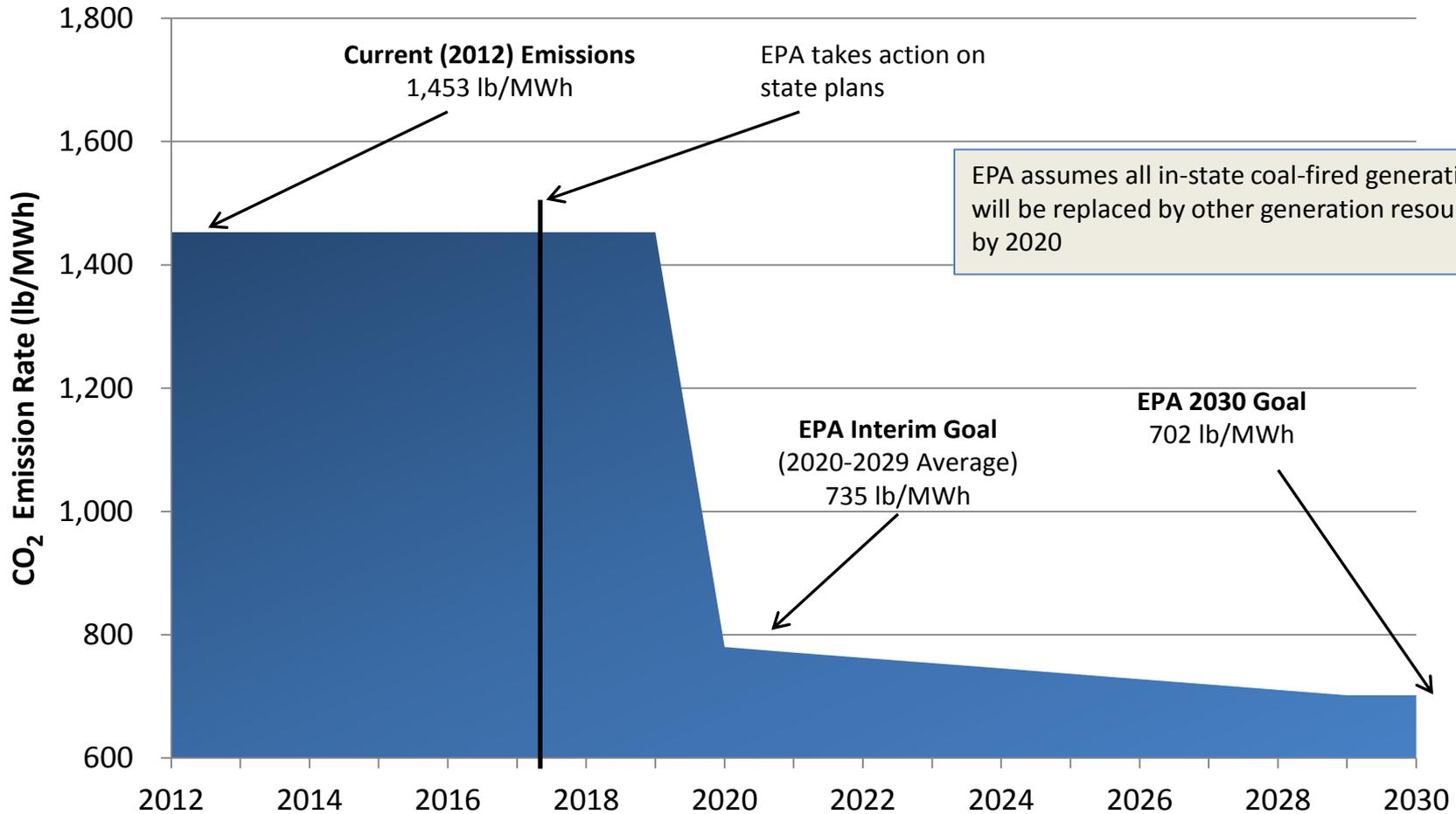
**NEVADA: 34.5%
REDUCTION**



**NORTH DAKOTA: 10.5%
REDUCTION**

Adapted from ADEQ Fact Sheet

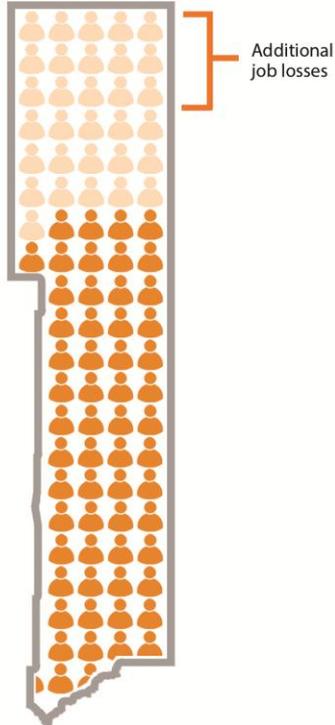
Arizona CO₂ Reductions



Impact to Apache County

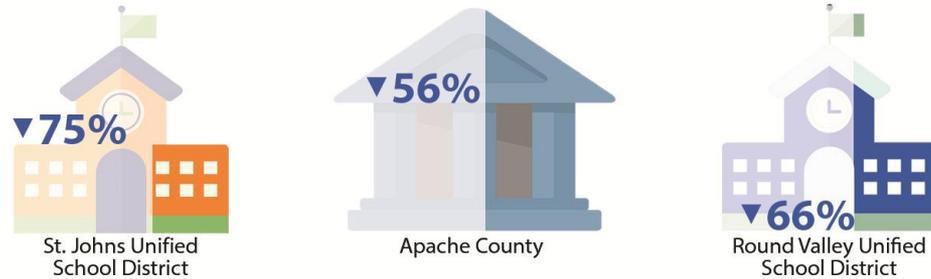
Significant job losses

The closure of both plants would result in the loss of more than 2,700 full-time jobs in Apache County alone. That would reduce total employment by 15 percent in the county, which already suffers from unemployment exceeding 16 percent.



Tax base erosion

Closing the plants would reduce the property tax base of local schools and governments.



Crippled economy

The combined annual incomes of Apache County residents could be reduced by more than \$200 million.

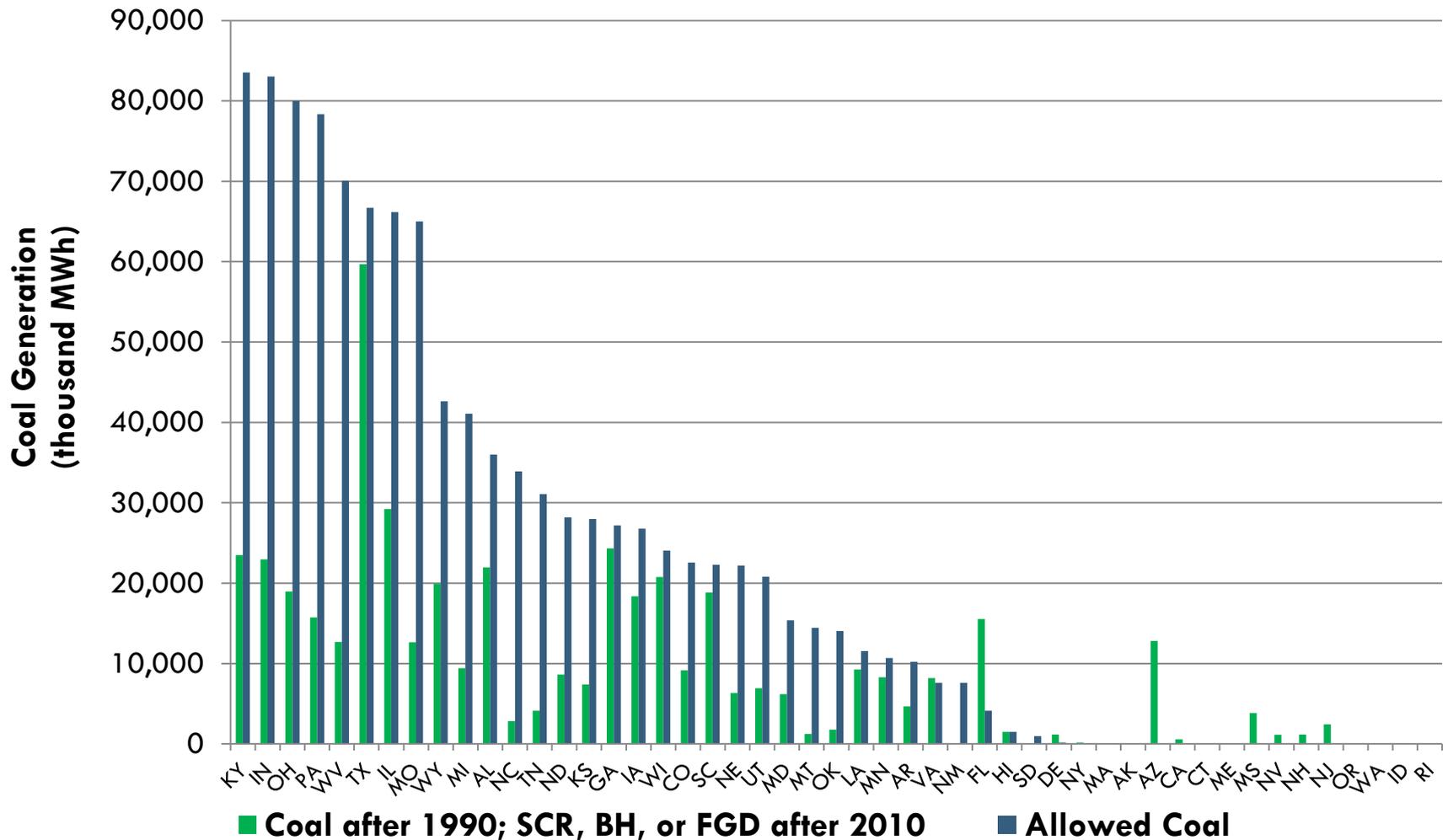


Apache County's share of Gross State Product, which measures the value of all finished goods and services, may fall 25 percent.

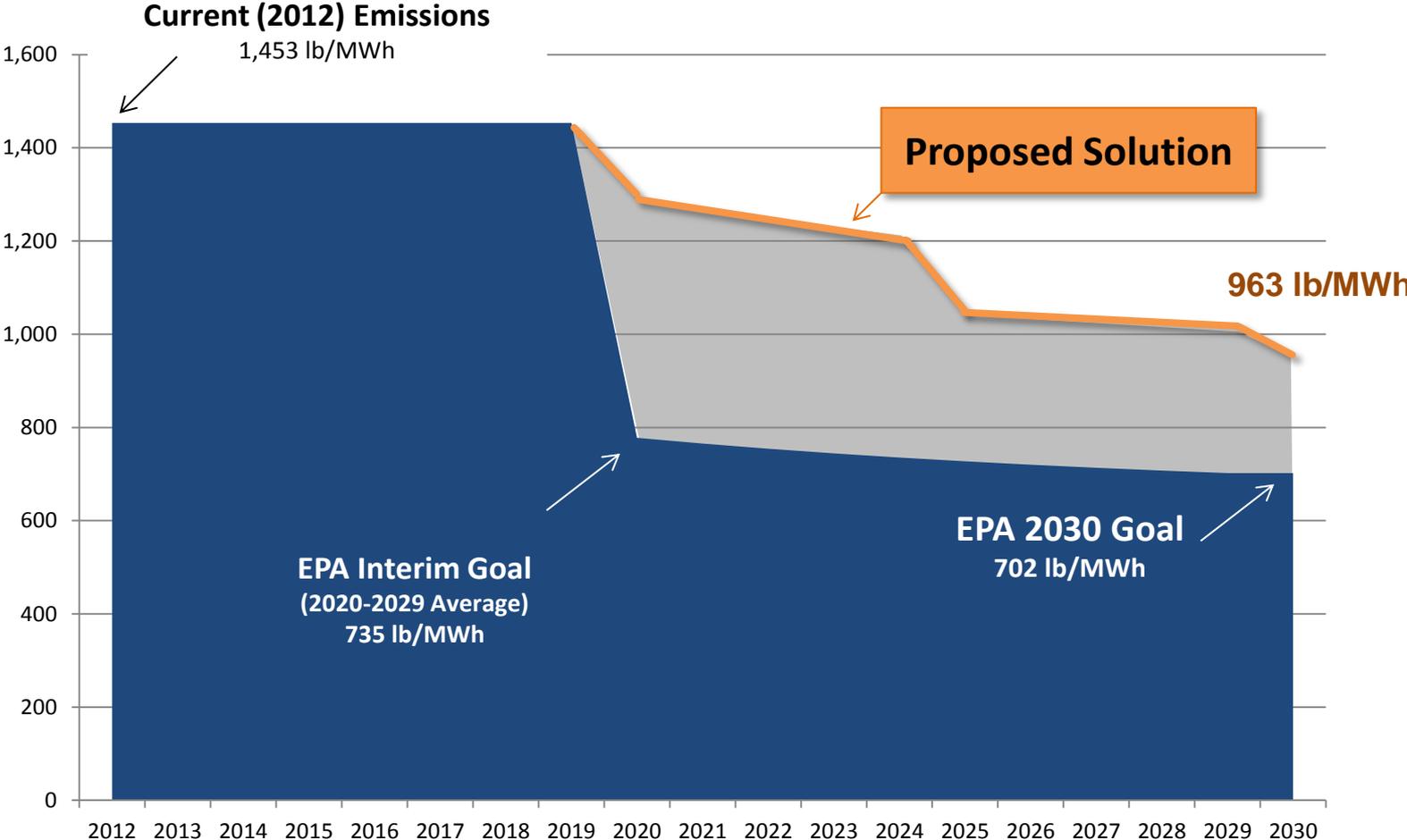
Arizona Utilities Group 111(d) Relief Strategy

- Allows for 40-year “book life” prior to being included in CO₂ goal setting calculation(NODA)
- Units that install major environmental controls prior to final rule have 20 years before they are included in CO₂ goal setting calculation (NODA)
- Allow states discretion in setting interim goal
- Apply appropriate CO₂ rate to NGCC (1,000 v 900 lbs of CO₂/MWh)

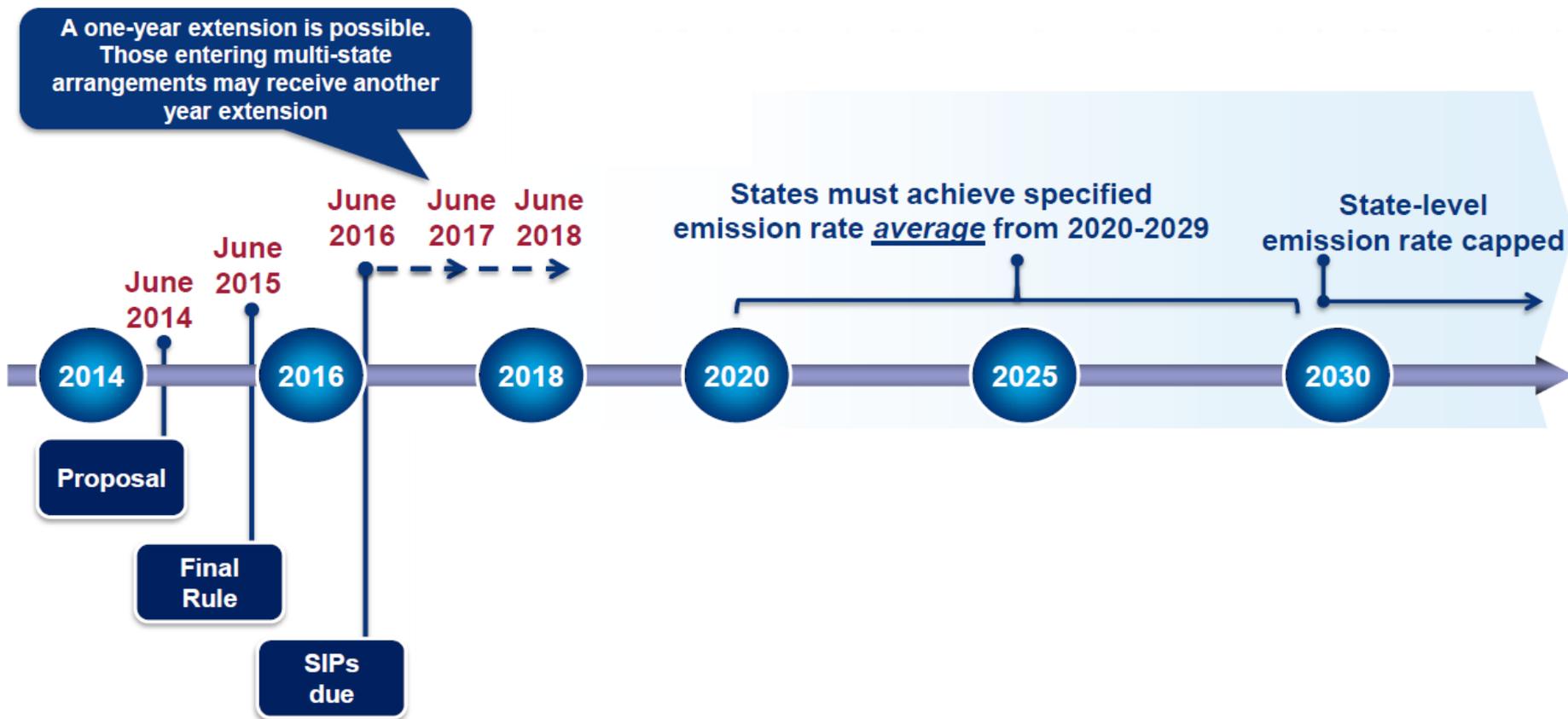
Estimated Nationwide Impact (Brattle Group)



Arizona's Carbon "Cliff" vs Proposed Solution



EPA's Proposed Clean Power Plan Timeline



Source: Wood Mackenzie