NASEO Energy Policy Outlook Conference

EPA's Clean Power Plan: Evaluating State Compliance Plan Options

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MJB&A
M.J. Bradley & Associates LLC
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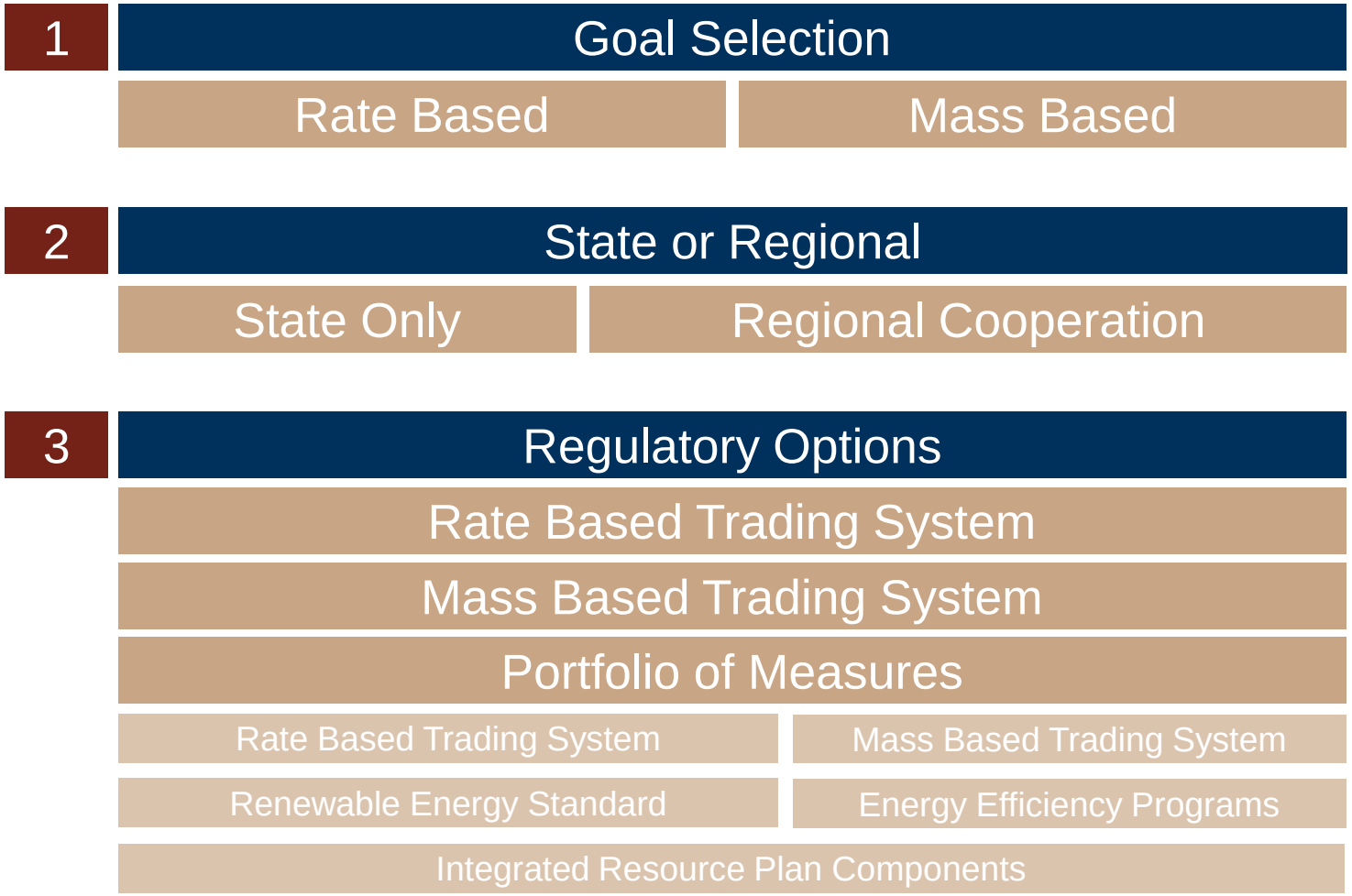
Tools for 111(d) Compliance

- *Incorporating Energy Efficiency and Renewable Energy Policies into Section 111(d) Greenhouse Gas Compliance Plans*. Report prepared for NASEO on state energy efficiency and renewable energy policies, including case studies of potential 111(d) compliance scenarios for Minnesota, Arizona, and Pennsylvania.
- *MJB&A Clean Power Plan Evaluation Tool*. User friendly software tool for evaluating alternative Building Block assumptions.
- *MJB&A Clean Power Plan Evaluation Tool (Second Generation)*. User friendly software tool for evaluating alternative Building Block assumptions and alternative state or regional compliance scenarios.

State Plan Decision Tree

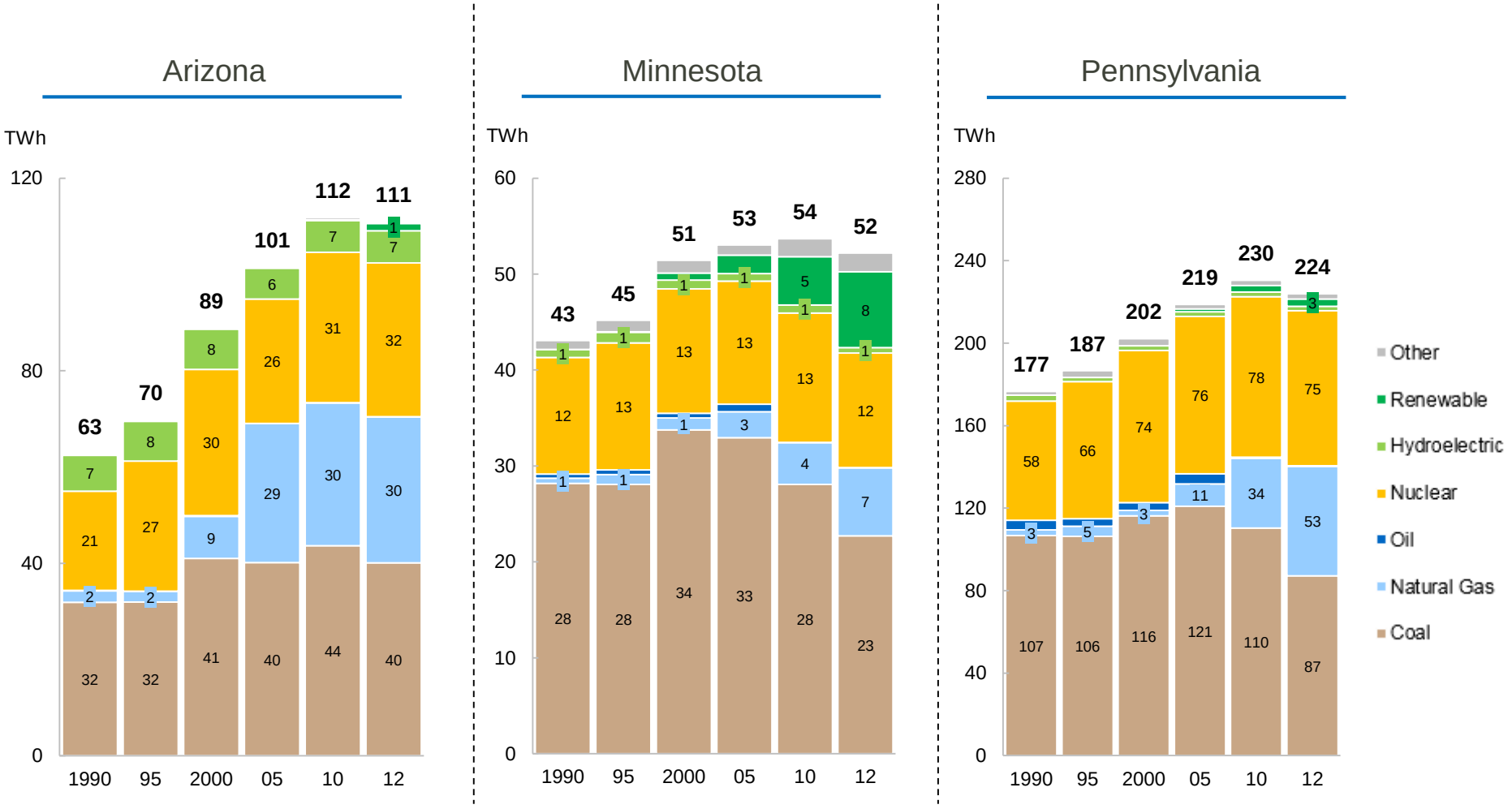


Survey of State Policies

Policy Type	Supply Side	Demand Side
Mandate	Renewable energy standards Alternative energy portfolio standards Renewable energy procurement requirements	Energy efficiency resource standards State appliance standards Building energy codes (and code enforcement)
Financial incentives	Tax credits Grant programs Net metering	State tax credits Alternative rate mechanisms Lead by example programs and energy savings performance contracting

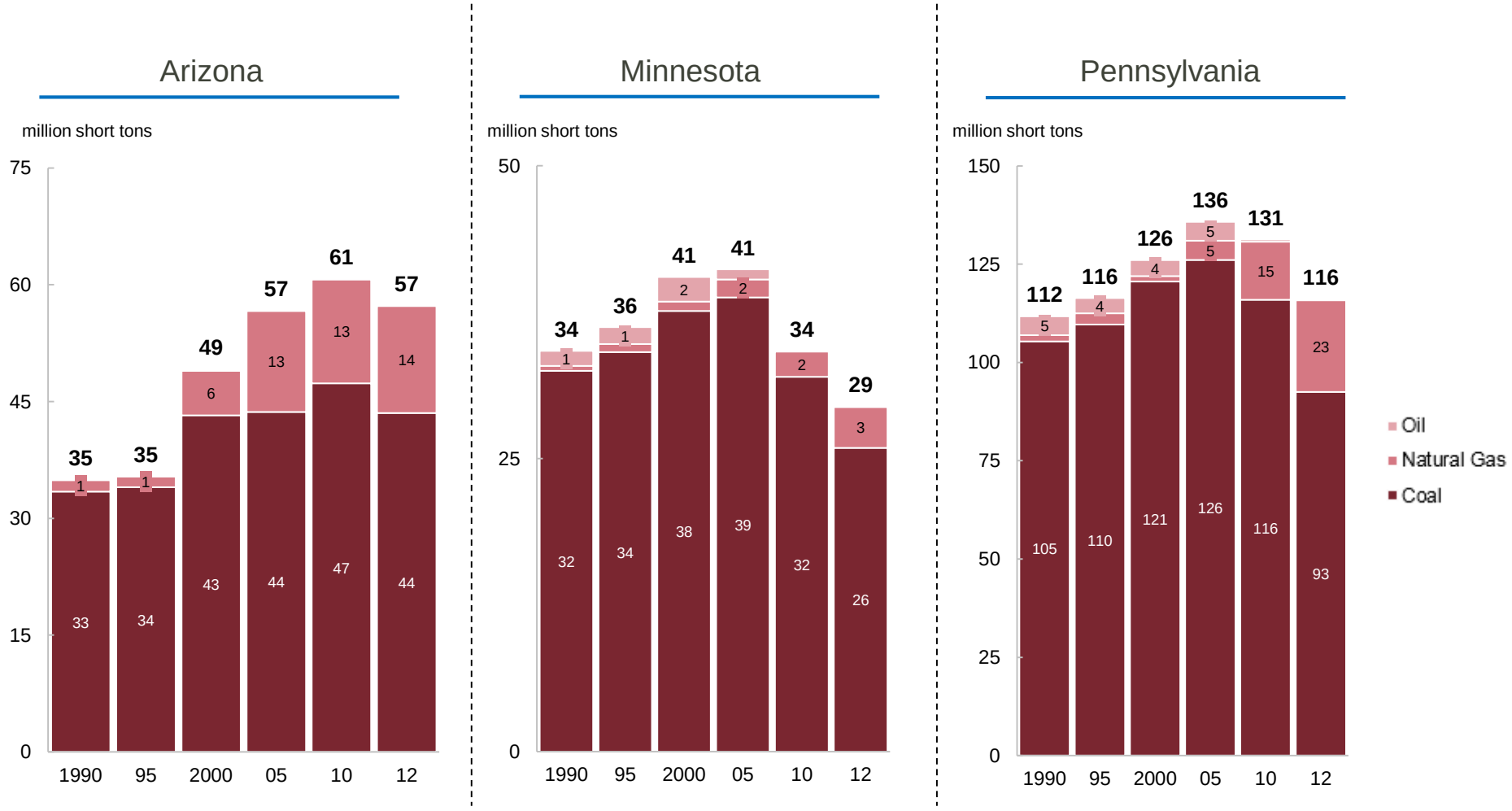
Generation Fuel Mix

Generation by Fuel Type



CO_2 Emissions

Electric Sector CO_2 Emissions Trends



Compliance Analysis

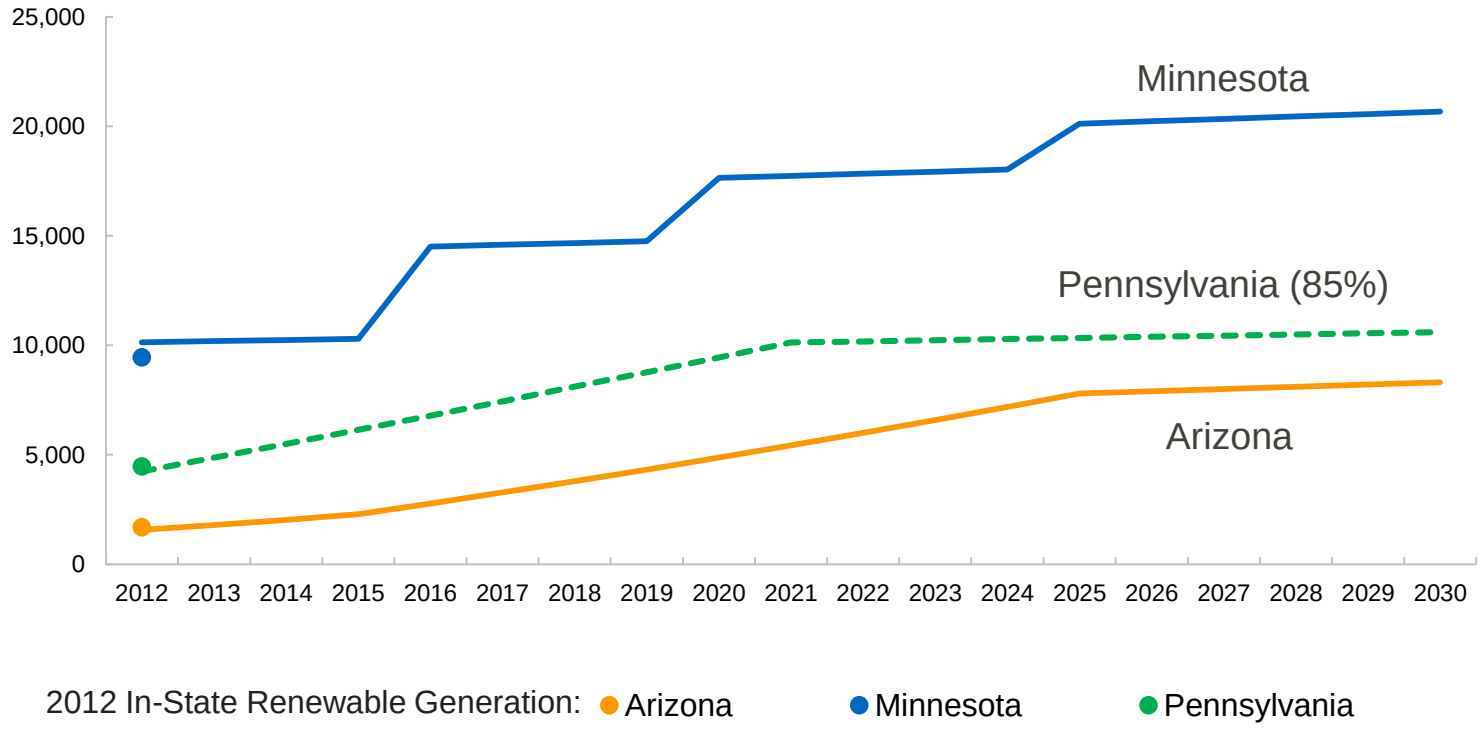
State	RES	EERS
Arizona	15% by 2025 (with distributed energy carve out)	22% cumulative savings by 2020
Minnesota	30% by 2020 – Xcel Energy 25% by 2025 – Other Utilities	1.5% annual savings (from three year average baseline)
Pennsylvania	8% by 2021 (Tier I only)*	Phase III (to be determined)

*Wind, wood waste, and landfill gas accounted for 84% of Tier I resources in 2012.

RES Forecasts

RES Levels by State

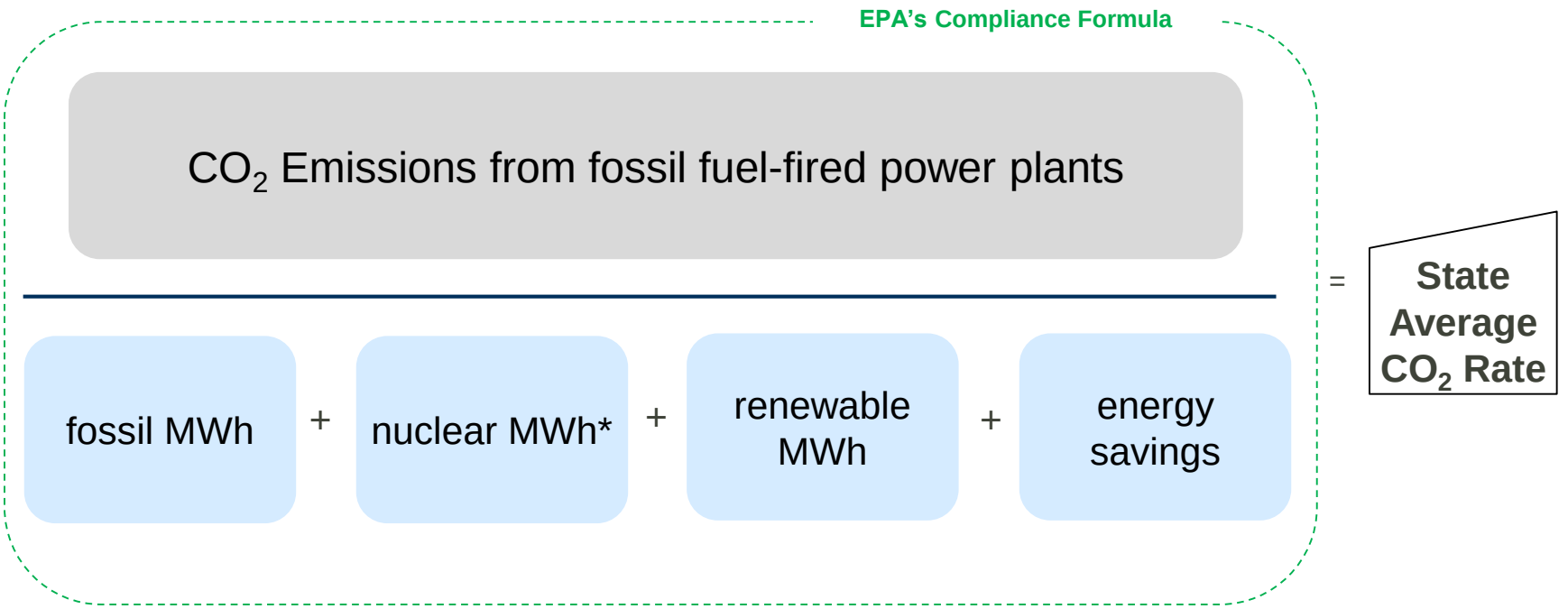
Estimated Level of Renewable Ouput Required by RES
GWh



Analysis Notes:

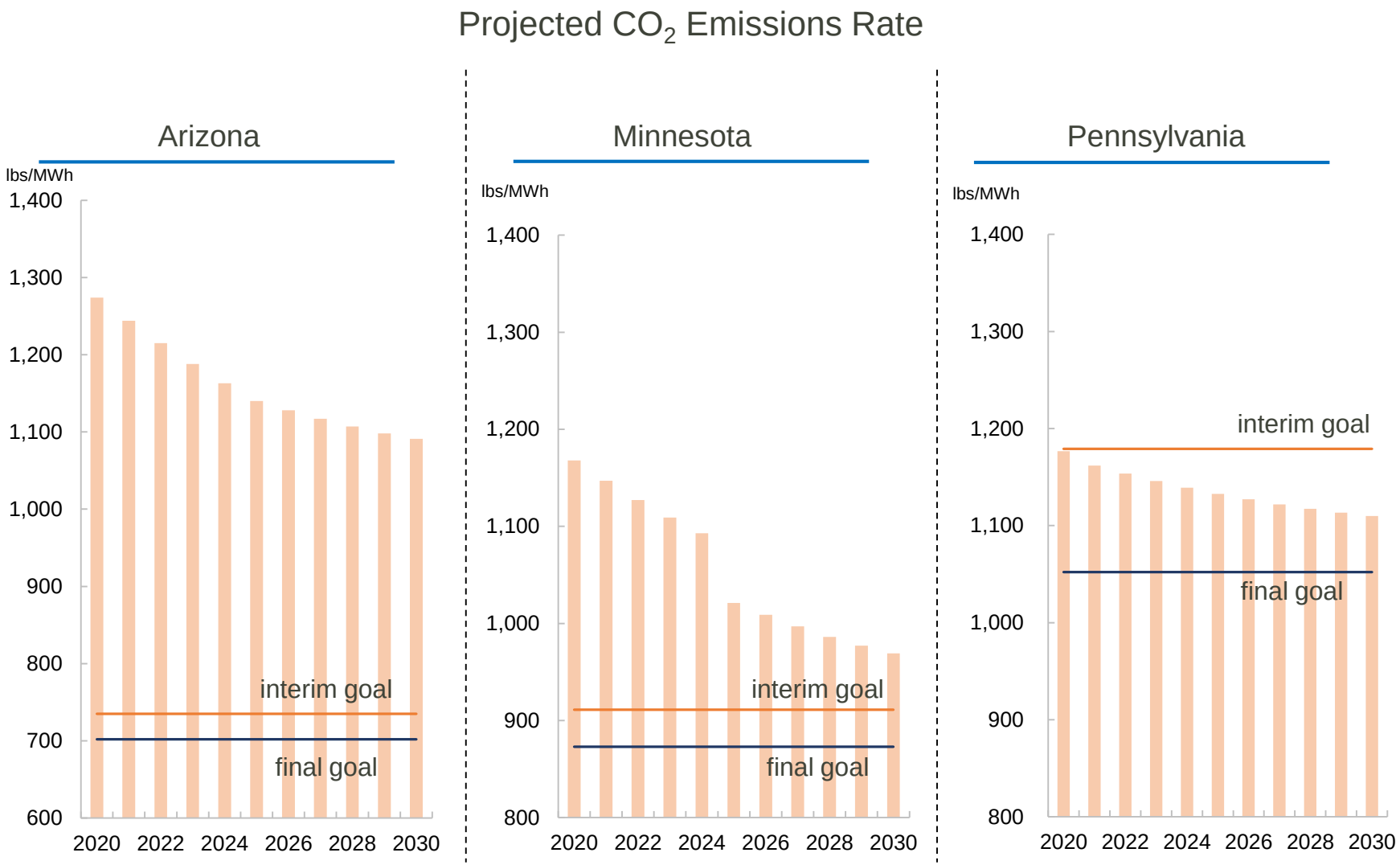
1. Pennsylvania's Alternative Energy Portfolio Standard (AEPS) also includes non-renewable resources. Wind, landfill gas, and wood waste accounted for 84% of Tier I resources in 2012. [PA Public Utility Commission. 2012 Annual Report: Alternative Energy Portfolio Standards Act of 2004. October 2013.]. Because of this, the Estimated Level of Renewable Output for Pennsylvania (green dash line) is adjusted as 85% of the RPS forecast through 2030.

Rate-Based Compliance Formula



*EPA's proposed rule would allow states to include 5.8% of existing nuclear capacity and 100% of under construction nuclear capacity (both at an assumed 90% capacity factor)..

Projected Emissions Rates



MJB&A Clean Power Plan Evaluation Tool – Main Dashboard

Release v. 2.3 Nov 17, 2014

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Clean Power Plan Evaluation Tool

Assumptions

	BB #1: Coal	
1	Coal HRI in 2020	6%
2	Final Coal HRI in End Year	6%
3	Ramp Start Year	2020
4	Ramp End Year	2020
	BB #2: NGCC	
7	Max. NGCC Capacity Factor	70%
8	Cap. Factor Ramp	Overnight
9	Start Year	2020
10	End Year	2029
11	Geographic Limitation	State
14	Coal MWh Decline Rate/Constraint	13%
	Under-construction NGCC	
16	Remove from Dispatch	No
17	Remove from Goal Calculation	No
	BB #3: Nuclear & RE	
21	Existing (at-risk) Nuclear	5.8%
22	New Nuclear	100%
23	Renewable Approach	Proposed
24	Annual RE Ramp (% 2012 sales/gen.)	0%
25	Ramp Basis	Sales
28	Apply Incremental RE Only	No
29	2012 RE RPS Based	No
30	Include Hydro In Goal	No
	BB #4: Energy Efficiency	
33	Ramp-Up Step	0.20%
34	Maximum Ramp-Up Level	1.50%
35	EE Measure Life (yr; linear decline)	20
36	Avg. Measure Life (yr; no decline)	Linear Decline
37	EE Importer Adjustment	On
	NODA Options	
46	Apply minimum level of gen. shift	No
48	Min. shift to NGCC (of 2012 fossil st.)	5%
49	Start Year	2020
50	End Year	2029
	Alt. goal-setting equation (BB3&4)	
52	Approach	Option 1
53	Select Baseline Year	2012

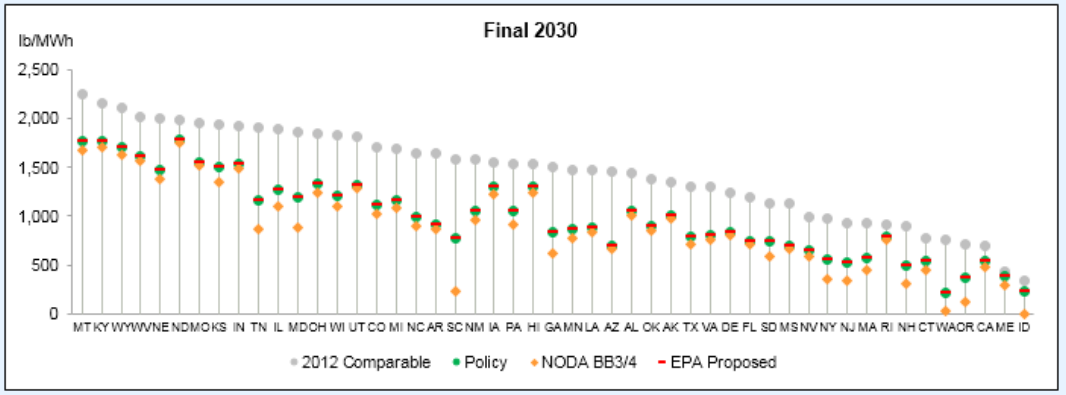
National Level Results

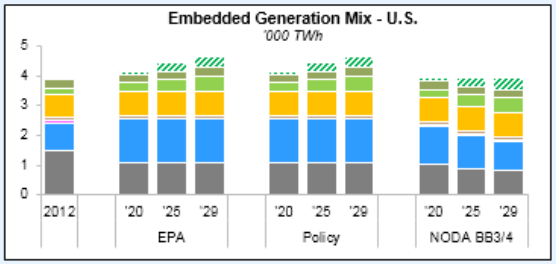
Goal Type: **Final 2030**

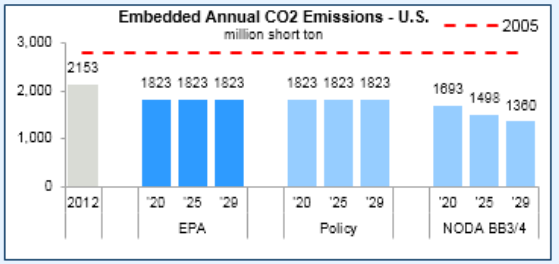
Sort Alphabetically

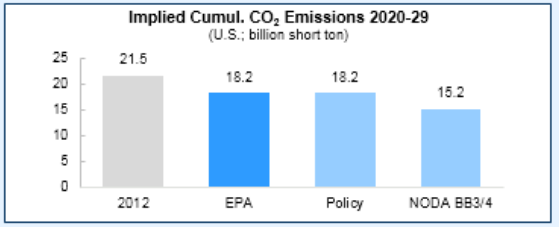
Sort by 2012 Comparable

Reset to EPA Proposed









Compare States | Goal Table | NGCC New Builds | Rate to Mass | Trace Calcs.

Legend:

EPA	EPA's proposed standards (Option 1)
Policy	User specified assumptions (lines 1 through 50, 53)
NODA BB3/4	User specified assumptions (lines 1 through 53)

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Tool Registration

To request a copy of the Clean Power Plan Evaluation Tool, please go to **www.mjbradley.com**