Committees on Energy Resources & the Environment and Electricity

100 % Clean Energy: What Comes Next for Regulators

NARUC Summer Policy Summit

100% Clean Energy What comes next for regulators?

Leia Guccione, Rocky Mountain Institute NARUC Summer Policy Summit, July 2019



We are entering an era of 100% clean energy for U.S. states, cities and utilities

11 States + DC + PR

~26% of U.S. electricity sales

12 Utilities

~10 million customers

>110 Cities ~6% of the U.S. population

100% Renewable Clean Carbon-Neutral Carbon-Free



Sources: S&P Global (2017), U.S. Census Bureau (2018 estimates), utility websites

States with 100% clean energy goals or commitment represent 26% of all U.S. retail electricity sales and ~10% of current U.S. fossil generation.





Cities with 100% targets extend far beyond the borders of state targets



Source: Sierra Club "Ready for 100"



The timelines for reaching 100% commitments vary between cities, states, and utilities





Carbon neutral, zero carbon, and renewables-only goals allow different technologies to be used for compliance, and entail different pathways for implementation

	Carbon Neutral	Zero Carbon	Renewables	
Key Feature	Can allow CCS	No fossil fuels	Can exclude nuclear	
States	New Jersey	California, Nevada, New Mexico, New York, Washington, Wisconsin	Colorado, Washington DC, Hawaii, Maine	
Utilities	Avangrid, Avista, Madison Gas & Electric, SMUD	Austin Energy, Xcel Energy, PNM, New York Power Authority, Platte River Power Authority	Green Mountain Power, Hawaiian Electric	

These categories are not necessarily mutually exclusive



Carbon neutral, zero carbon and renewables-only goals allow different technologies to be used for compliance... **California requires** 60% renewables by 2030 and zero-carbon power (and carbon ` neutrality state-wide) by 2045 <u>Renewables</u> Zero Carbon **Carbon Neutral** Key Feature No fossil fuels Can exclude nuclear Can allow CCS States New Jersey California, Nevada, New Mexico, New York, Colorado, Washington DC, Hawaii, Maine Washington, Wisconsin Utilities Avangrid, Avista, Madison Gas & Electric, Austin Energy, Xcel Energy, PNM, New York Power Green Mountain Power. SMUD Authority, Hawaiian Electric Platte River Power Authority Washington has a statewide carbon Avista has a 2027 neutral by 2030 goal & carbon neutral goal a zero-carbon by 2045 and a 2045 carbon power sector goal free goal These categories are not necessarily mutually exclusive!



Other design details matter for implementation too.





Other design details matter for implementation too.

State	100% GOAL (Year)	Definition	Sectors	Interim Milestones	State-wide GHG Reduction Goal		
Executive Action							
Colorado	Renewables (2050)	Governor Polis' "Roadmap to 100%" mentions renewables only, and includes policies for the building and transportation sectors.	Electricity, Transportation, Buildings	30%/2020	90%/2005/2050		
New Jersey	Carbon Neutral (2050)	The draft EMP defines "100% clean energy" as "100% carbon-neutral" generation and "maximum electrification of the transportation and building sectors" to meet the state's GHG goals.	Electricity, Buildings, Transportation	50%/2030	80%/2006/2050		
New York	Zero Carbon (2040)	Governor Cuomo's Green New Deal directs New York's power to be "100% carbon-free."	Electricity	70%/2030	40%/1990/2030 80%/1990/2050		
Wisconsin	Zero Carbon (2050)	Governor Evers' Budget directs that all electricity <u>produced</u> in the state should be 100% carbon- free.	Electricity	10%/2015	26%/2005/2025		
Legislative Action							
California	Zero Carbon (2045)	100% of <u>retail electricity sales to California end-users</u> must be supplied from "renewable & zero- carbon resources."	Electricity	50%/2025 60%/2030 (RE only)	80%/1990/2050 Carbon-neutral by 2045		
Washington DC	Renewables (2032)	No less than 95% from tier one resources, and at least 5% from solar.	Electricity	54%/2025 83%/2030			
Hawaii	Renewables (2045)	100% of <u>electricity sales</u> must be produced by renewable energy resources.	Electricity	30%/2020 40%/2030 70%/2040	Net zero emissions by 2045		
Maine	Renewables (2050)	100% of <u>retail sales</u> electricity in the state must come from renewable resources	Electricity	80%/2030	45%/1990/2030 80%/1990/2050		
New Mexico	Zero Carbon (2050)	Zero carbon resources (emit no carbon or reduces methane) must supply 100% of <u>all retail sales</u> of electricity in New Mexico.	Electricity (IOUs & rural coops)	20%/2020 50%/2030 80%/2040	45%/2005/2030		
Nevada	Zero Carbon (2050)	Energy production from "zero carbon resources equal to the <u>total amount of electricity sold</u> by providers of electric service" in the state.	Electricity	50%/2030	26%/2005/2025		
Washington	Zero Carbon (2045)	80% of power sales must be from "non-emitting electric generation and electricity from renewable resources." Up to 20% can be via RECs, ACPs or ETPs.	Electricity	100% coal free by 2025	57%/2005/2050; Carbon-neutral by 2030		



10

The time to prepare is now, as more 100% goals may be on the way...



Michigan lawmaker proposes going to 100% renewable energy by 2050



POLICY

New Illinois Bill Targets 100% Renewable—Not Just Clean—Electricity by 2050

★ BILL H.2836

Posted Oct 18, 2018

Getting to 100 percent renewables is "not just a pie-in-the-sky idea," according

JULIA PYPER | MARCH 04, 2019

MAY 7, 2019 | 3:46 PM

'What does the science say?': Bipartisan group of legislators reintroduces bills to get Pennsylvania 100% powered by renewable energy STATE MPACT

An Act re-powering Massachusetts with 100 percent renewable energy

By Representatives Decker of Cambridge and Garballey of Arlington, a petition (accompanied by bill, House, No. 2836) of Marjorie C. Decker, Sean Garballey and others relative to renewable energy. Telecommunications, Utilities and Energy

UTILITY DIVE Deep Dive Opinion Podcasts Library Events Jobs Topics ~

Minnesota 100% carbon-free bill joins flurry of state level clean energy action





QUESTIONS & DISCUSSION

Committees on Energy Resources & the Environment and Electricity

100 % Clean Energy: What Comes Next for Regulators

NARUC Summer Policy Summit