

Factsheet:

State and utility climate change targets shift to carbon reductions, technology diversity

November 19, 2019

The last eighteen months have seen a marked shift in state and utility company energy and climate policies towards ambitious carbon targets and an embrace of diverse technologies to achieve them through “Clean Electricity Standards” (or CES’s). For many years, clean electricity policies focused either on achieving targets for renewable energy through “renewable portfolio standards” or setting emissions caps. Instead, CES’s typically require an increasing percentage of zero-carbon electricity. As opposed to carbon emission limits or pricing, CES’s focus on bringing more clean energy resources to market.

California, which would be the world’s fifth largest economy if it were a country, was the first state to move forward with this construct, passing a 100% CES in September 2018; the target takes full effect in 2045. In the three months that followed, some of the nation’s largest power companies, including FirstEnergy and Xcel Energy, pledged to run near zero- or zero-carbon systems by 2050. New Mexico followed suit in March 2019, Nevada in April 2019, Colorado and Washington State in May. (Several of these laws also require an increasing percentage of renewable electricity.) In July, New York lawmakers passed legislation to eliminate greenhouse gas emissions by 2050. Other power companies too are increasingly making commitments to significant carbon reductions with technological pathways left open.

The new focus on carbon and technology diversity in the CES builds on the success of state renewable portfolio standards while reflecting increasing awareness that the addition of low- or no-carbon, always-available energy – such as nuclear energy or gas-type power plants in which the carbon is removed and permanently stored – could substantially reduce the costs of reaching stringent carbon targets¹.

A listing of recently enacted and proposed CES’s and utility company pledges is attached as Appendix A; the charts in Appendix B show their significance in terms of national electric market share and carbon emissions covered; and Appendix C maps the commitments by geographic area covered.

Notable findings:

- 6 states have enacted 100% carbon free standards, representing 14.8% of national electric sales and 7.2% of national utility carbon emissions.
- Adding in utilities that have made 80-100% carbon-free pledges the total coverage for deep committed carbon reductions (as opposed to renewables-only policies) is about 36% of US electricity sales and 29% of national utility CO₂ emissions.

¹ See, e.g. Jenkins, Jesse D., Max Luke, and Samuel Thernstrom. "Getting to Zero Carbon Emissions in the Electric Power Sector." *Joule* 2.12 (2018): 2498-2510.

Appendix A: State Technology-Inclusive Clean Energy Standards and Corporate Commitments – The National State of Play

State Laws

Arizona - Discussions around an 80-100% clean energy standard are prominent following an RPS ballot resolution failure last November; the Arizona Corporation Commission is continuing to hear the question.

California - Passed in 2018, SB100 requires a 100% carbon free power grid by 2045, and further mandated that 60% of electricity come from renewable energy other than hydro by 2030. Recently introduced A.B.915 would expand the mandate to 80% zero carbon energy by 2038 and define zero carbon energy in a tech-neutral manner.

Colorado – SB 236 was signed by the Governor in May 2019. It requires a zero-carbon supply by 2050 from Xcel Energy, confirming the company's previous voluntary commitment. This law covers roughly 60% of the state's load; other utilities (mostly publicly owned) are exempted.

Illinois - H.B. 2861 adjusts the Illinois Power Agency Act to expand the procurement of clean energy to target a 100% clean energy goal for Northern Illinois (Exelon service territory) by 2032.

Massachusetts - The Clean Energy Standard of 2017 requires 80% low carbon electricity by 2050 with a minimum of 60% from qualified renewable energy.

Minnesota - Gov. Walz has stated that he will push for legislation that would lead to 100% carbon free electricity by 2050 and wants utilities to be able to determine how and at what pace they achieve the goal. There is some bipartisan legislative support for the "Clean Energy First" portion of the package that boosts renewable projects before the MN Public Utilities Commission. Other proposals in the state legislature have been more prescriptive with paths to the same 100% carbon free goal.

Nevada - S.B. 358 has passed and mandates that 50% of power from investor owned utilities (covering more than 95% of state load) come from renewable sources by 2030, while setting a target of zero carbon power by 2050. The bill is awaiting the Governor's signature.

New York - S.B. S6599, the "climate leadership and community protection act," was signed by the Governor in July. It requires New York to reduce its planet-warming pollution 85 percent below 1990 levels by 2050, and offset the remaining 15 percent, possibly through measures to remove carbon dioxide from the atmosphere. The bill requires New York to get 70 percent of its electricity from renewable sources by 2030 and shift entirely to carbon-free power a decade later.

New Mexico - Recently signed S.B. 489 sets a target that all retail sales of electricity in New Mexico from investor owned utilities be zero carbon by 2045, with up to 80% renewable if cost justified. Distribution cooperatives, serving roughly 25% of state load, are exempted.

Pennsylvania - H.B. 11, expands the current Alternative Energy Purchasing Standard to include nuclear, effectively increasing the ambition of the Pennsylvania zero carbon energy mandate to 68%.

Washington - The Governor is prepared to sign SB5116 requiring all electricity generation in the state to be carbon neutral by 2030 and completely carbon free by 2045.

Wisconsin - Gov. Evers has proposed a statutory 100% clean energy goal in his 2019-2021 budget proposal.

The table below shows the timeline of state legislative actions regarding CES's:

<i>Month/Year</i>	<i>Jurisdiction</i>	<i>Legislative Action</i>	<i>Legislation Type</i>
Jan/2017	CA	Introduced in Senate (SB 100)	100% CES
Sep/2018	CA	Approved (SB 100)	100% CES
Jan/2019	WA	Introduced (SB 5116)	100% CES
Feb/2019	IL	Introduced (SB 2132)	100% CES
	MN	Introduced (SF 850 / HF 700)	100% CES
	NM	Introduced (SB 489)	100% CES
Mar/2019	CO	Introduced (HB 19-1261)	100% CES
	NV	Introduced (SB 358)	100% CES
	NM	Approved (SB 489)	100% CES
Apr/2019	NV	Approved (SB 358)	100% CES
May/2019	CO	Approved (SB 19-236 / HB 19-1261)	100% CES
	WA	Approved (SB 5116)	100% CES
Jun/2019	NY	Introduced (S 6599)	100% CES
Jul/2019	NY	Approved (S 6599)	100% CES
Aug 2019	WI	Executive Order	100% CES

Utility Company Pledges

The table below shows the timeline of utility pledges, and the nature of such pledges, for deep carbon emission reductions:

<i>Month/Year of Pledge</i>	<i>Utility</i>	<i>Pledge</i>
Nov/2015	Madison Gas & Electric Co.	Carbon neutral by 2050
Jan/2016	AVANGRID	Carbon neutral by 2035
Apr/2016	MidAmerican	100% renewable energy by 2020
Sep/2017	Ameren Missouri	80% reduction in GHG emissions (from 2005 levels) by 2050
Feb/2018	AEP Portland General Electric	80% reduction in GHG emissions (from 2000 levels) by 2050 80% reduction in CO2 (from 2010 levels) by 2050
Apr/2018	Southern Company	"Low to no-carbon" by 2050
Jun/2018	National Grid	80% reduction in GHG emissions (from 1990 levels) by 2050
Aug/2018	Alliant Energy WEC Energy Group	80% reduction in GHG emissions (from 2005 levels) by 2050 80% reduction in GHG emissions (from 2005 levels) by 2050
Sep/2018	FirstEnergy	90% reduction in CO2 emissions (from 2005 levels) by 2045
Oct/2018	Sacramento Municipal Utility District (SMUD)	90% reduction in CO2 emissions by 2050
Nov/2018	NiSource	90% reduction in CO2 emissions by 2028
Dec/2018	Xcel Energy	Zero carbon by 2050
Mar/2019	Consumers Energy Co. Dominion DTE Energy Co. Idaho Power Co.	90% reduction in CO2 emissions (from 2005 levels) by 2040 80% reduction in GHG emissions (from 2005 levels) by 2050 80% reduction in CO2 (from peak levels) by 2040 Zero carbon by 2045
Apr/2019	Avista Green Mountain Power PNM Resources	100% clean energy by 2045 100% renewable energy by 2030 Zero carbon by 2040
Jul/2019	Public Service Enterprise Group (PSEG)	80% reduction in CO2 (from 2005 levels) by 2046
Aug/2019	Duke Energy	Net zero carbon emissions by 2050

Appendix B: Cumulative total of electricity sales and CO2 emissions covered by deep decarbonization state legislation and utility pledges

(To avoid DOUBLE counting, the charts do not include utility sales and CO2 emissions within states that have enacted or are considering deep decarbonization legislation.)

Figure 1. Percent of Total US Electricity Sales Accounted for by State and Utility Deep Decarbonization Commitments, 2016 to Present

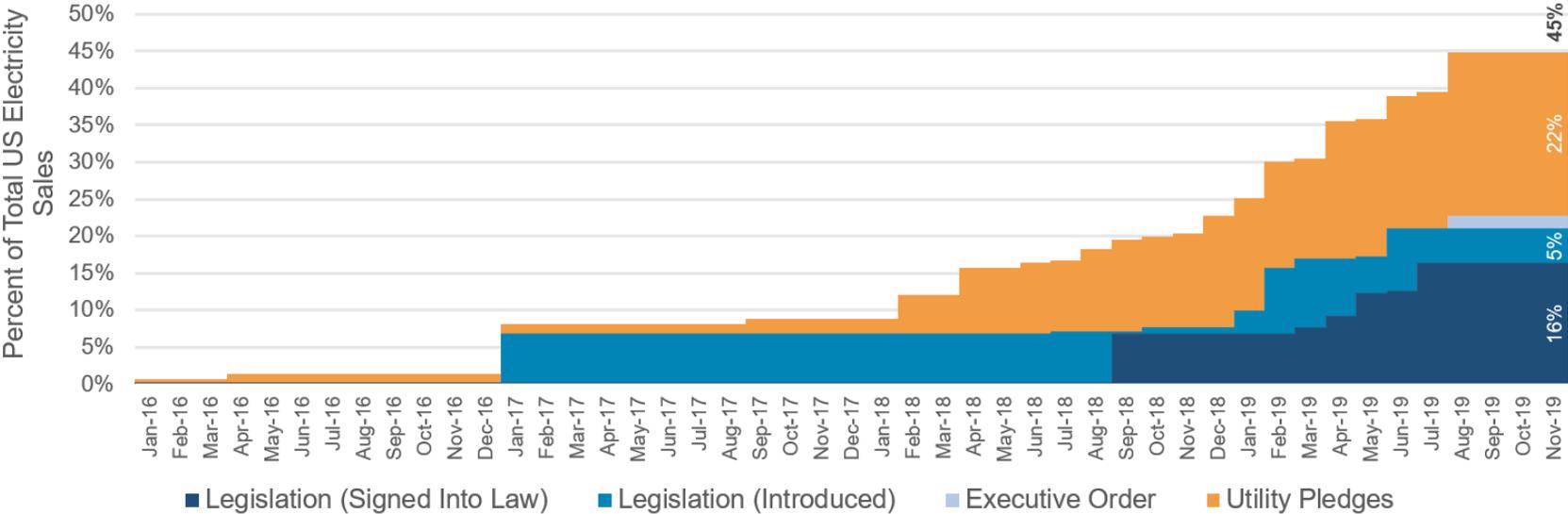
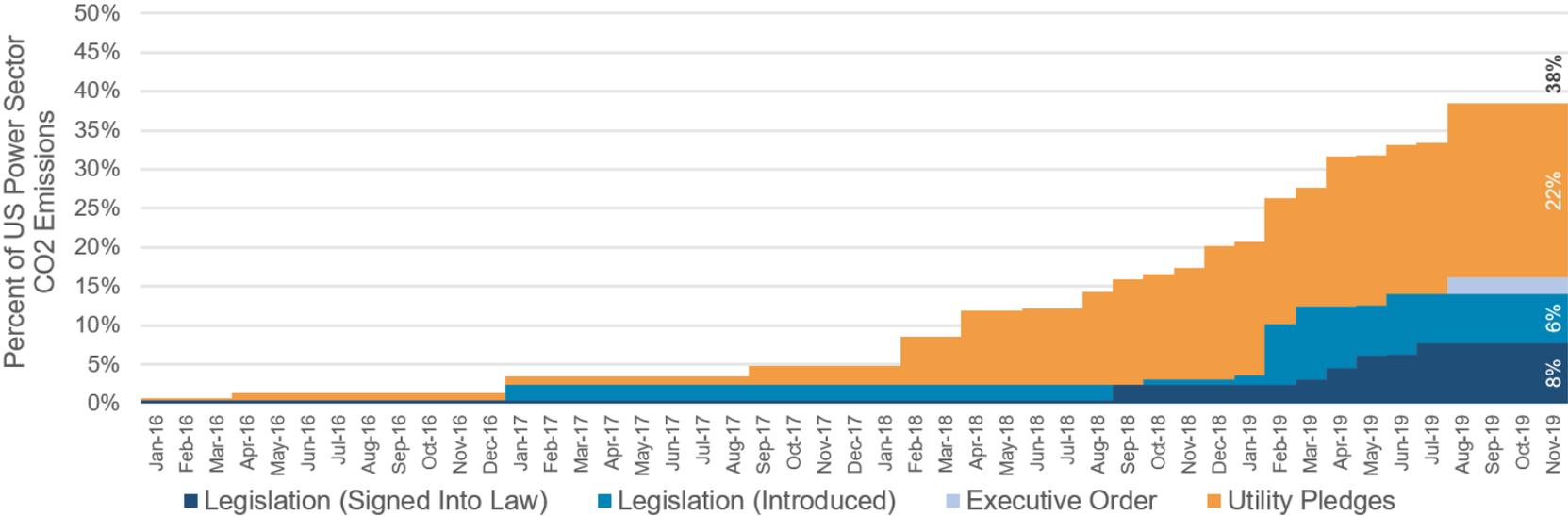


Figure 2. Percent of Total US Power Sector CO2 Emissions Accounted for by State and Utility Deep Decarbonization Commitments, 2016 to Present



Appendix C: Map of State laws enacted and proposed, and power company carbon pledges

