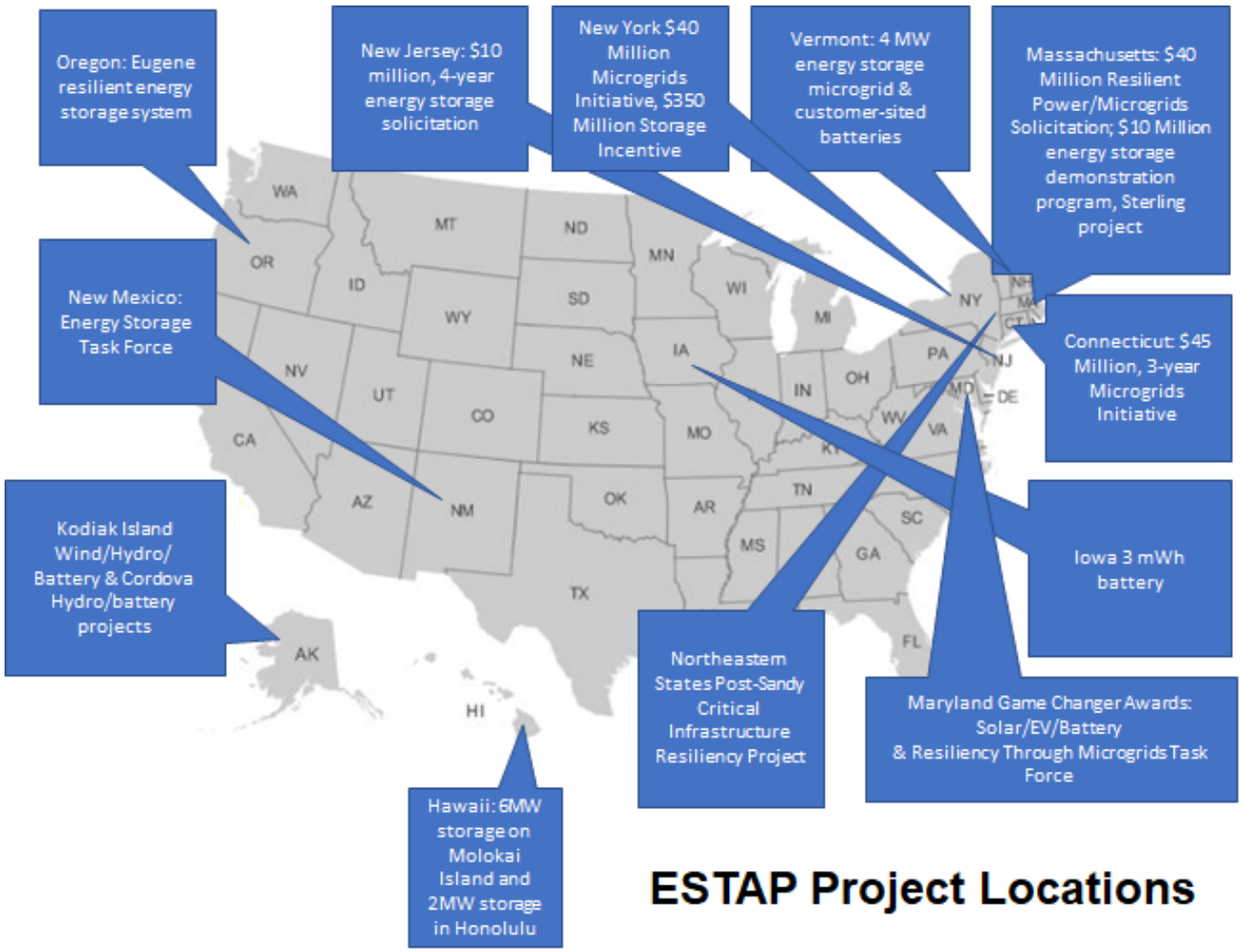
State Drivers for Long Duration Energy Storage

Todd Olinsky-Paul

Clean Energy States Alliance

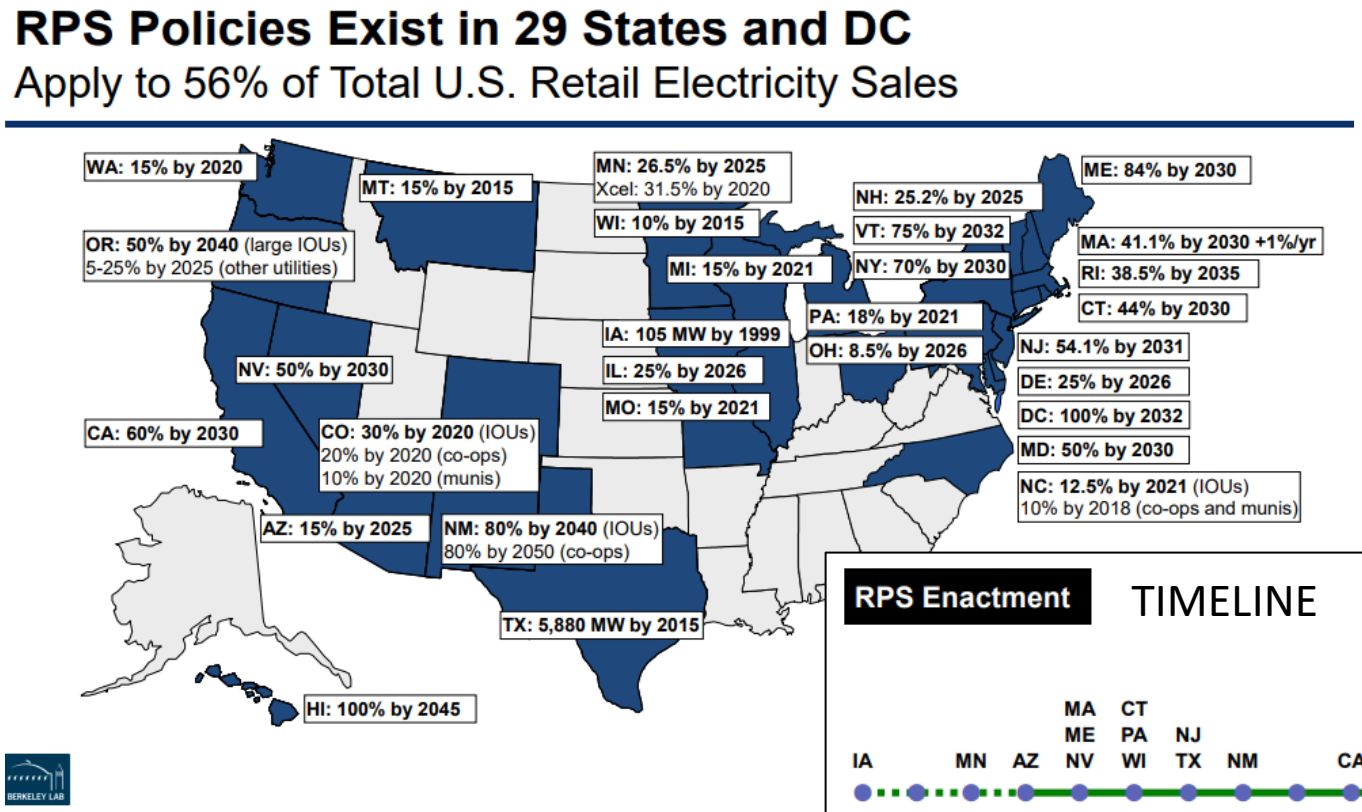
DOE-OE Energy Storage Technology Advancement Partnership (ESTAP)

Clean Energy States Alliance

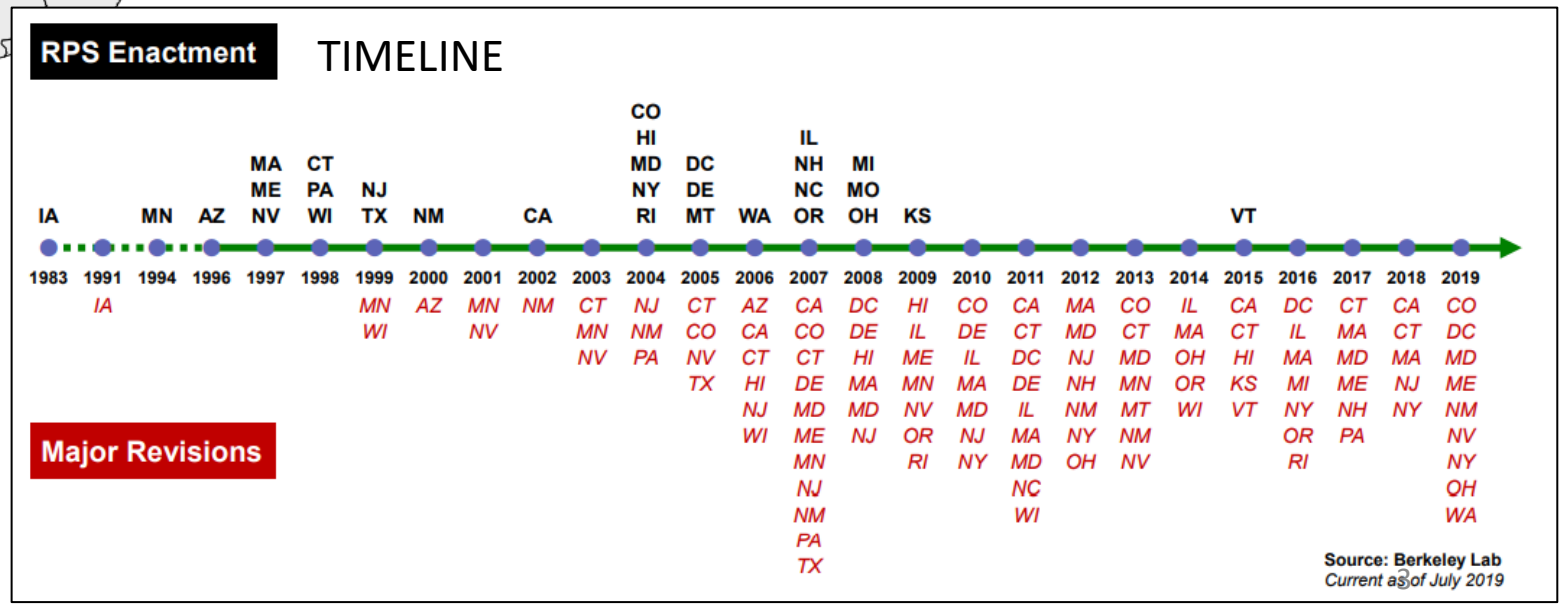


ESTAP Project Locations

States are very effective drivers of clean energy deployment



“62% of growth in all U.S. non-hydro renewable generation and 58% of all new renewable energy capacity additions since 2000 [are] being used to serve current RPS demand.” -LBNL



Source: LBNL annual report

States Have Generally Met Their Interim Targets

And many are well ahead of schedule!

Percentage of RPS Obligations Met with RECs or RE

For most-recent compliance year available in each state

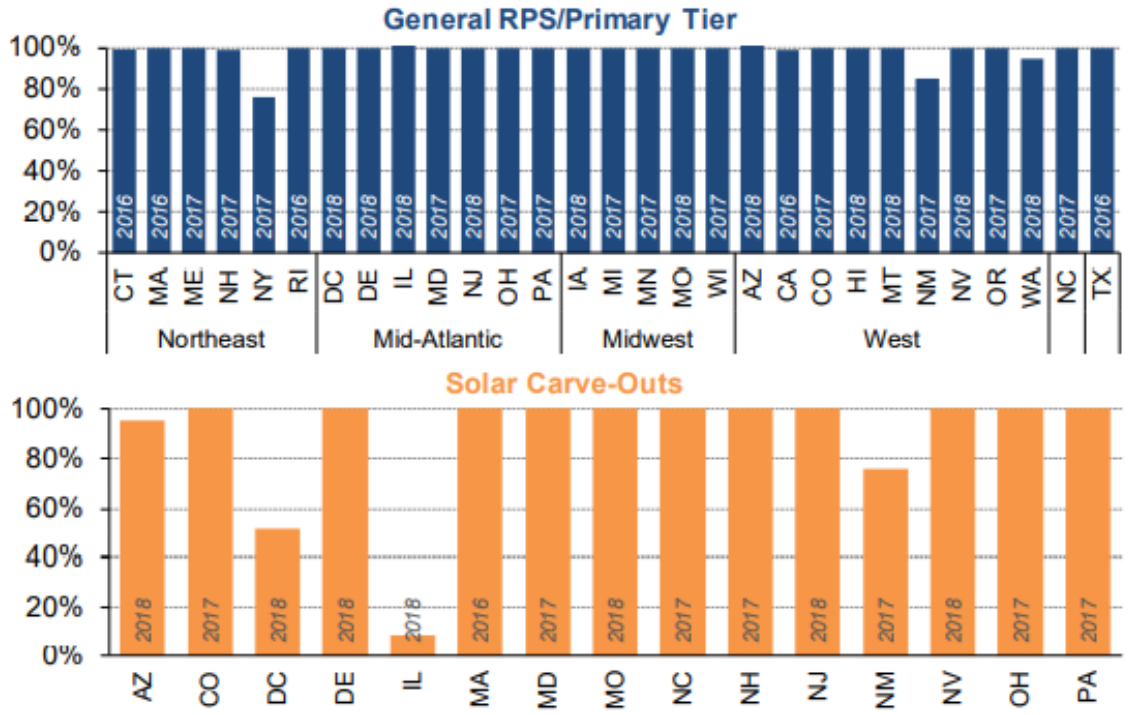
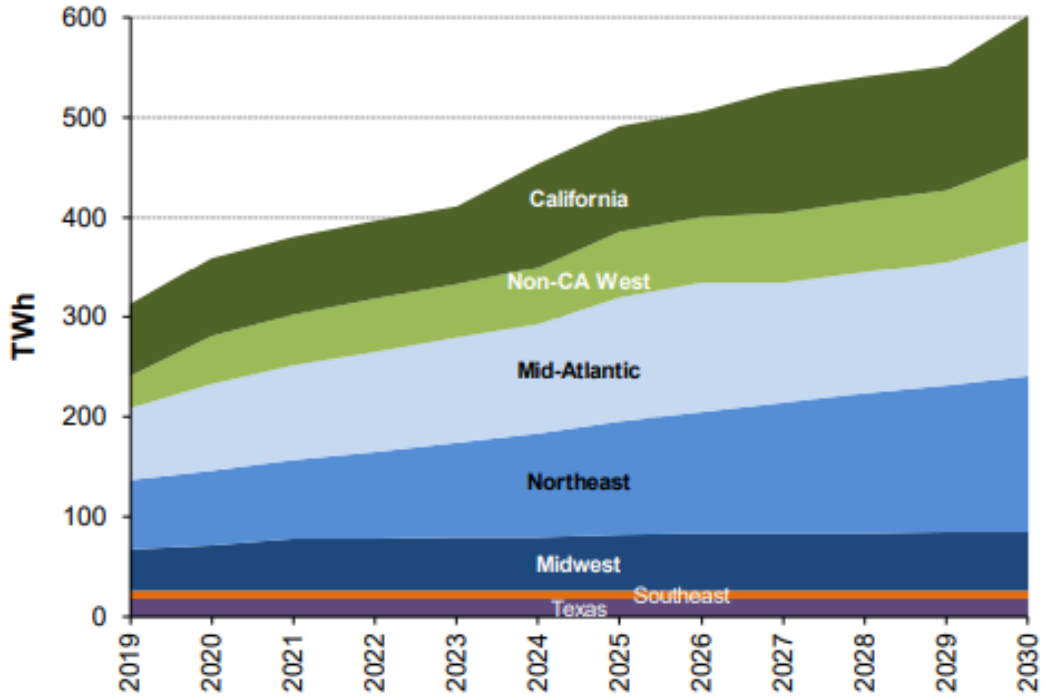


Figure notes: "General RPS Obligations" refers to the non-carve-out portion of RPS requirements in each state. For New England states, it refers to Class I obligations, and for PJM states it refers to Tier I obligations. The years overlaid on each bar refer to the most-recent compliance year for which compliance data are available in each state.

Projected RPS Demand (TWh)



Notes: Projected RPS demand is estimated based on current targets, accounting for exempt load, likely use of credit multipliers, offsets, and other state-specific provisions. Underlying retail electricity sales forecasts are based on regional growth rates from the most-recent EIA Annual Energy Outlook reference case.

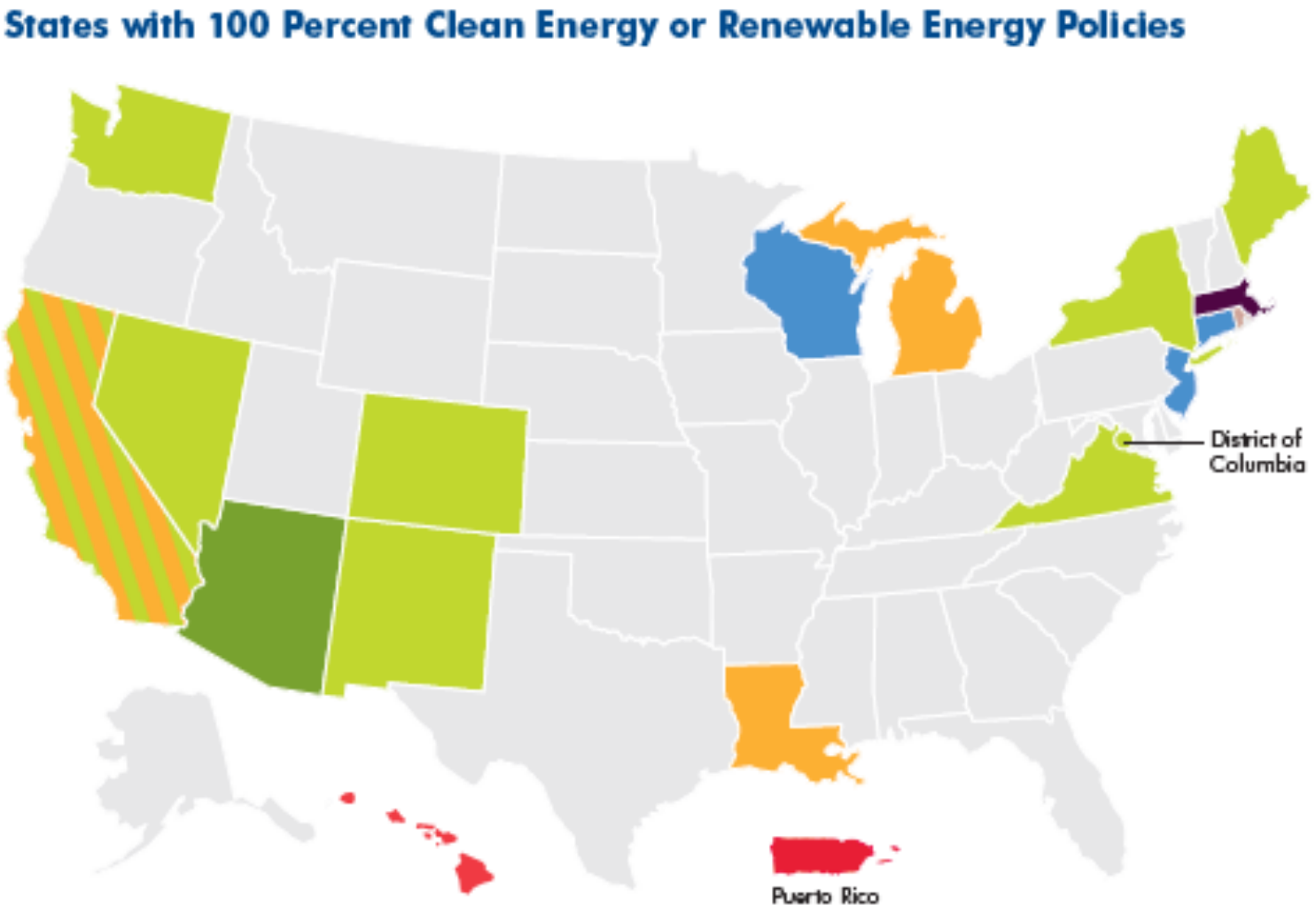
Source: LBNL annual report

Leading States are Now Increasing their Goals to 100% Clean Energy

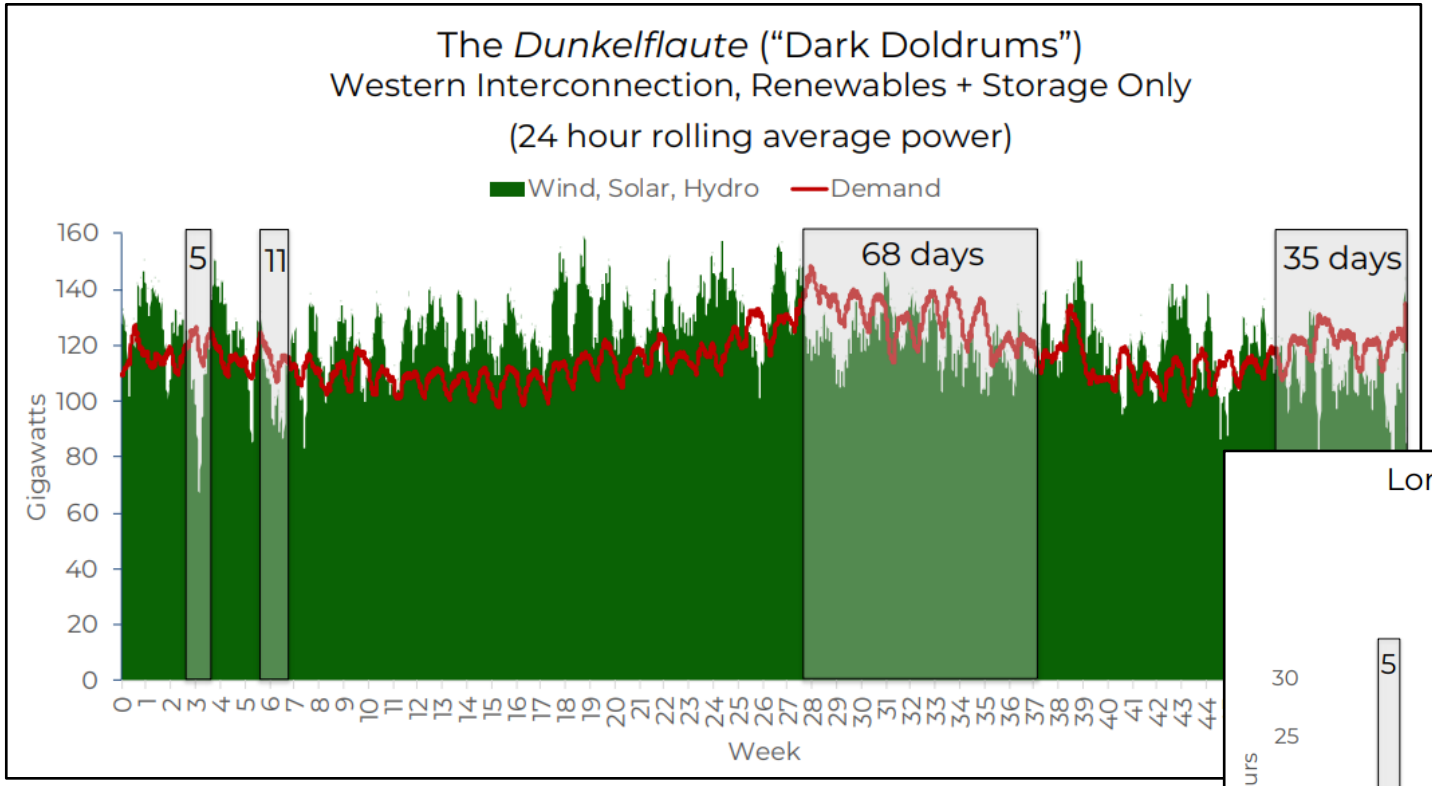
- **In the past three years alone, 19 states have established 100% clean energy or zero GHG energy targets.**

- CESA used to have an RPS Collaborative: CESA now has a 100% Clean Energy Collaborative

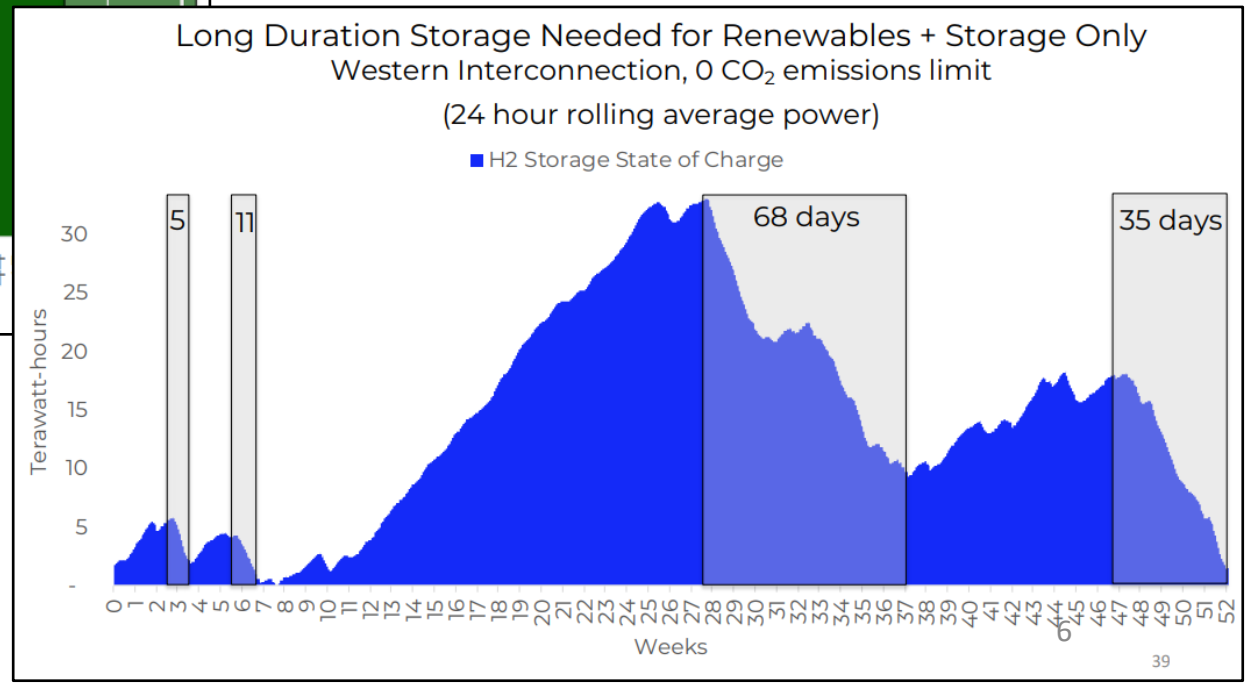
- Most of these 100% clean energy goals come due in 2050.



What do 100% clean energy goals mean for long-duration energy storage?



- US 100% renewable projections call for enough storage to supply 8-16 weeks of average total US electricity consumption
- The ten largest pumped hydro storage facilities in the U.S. have a collective capacity of just 43 minutes worth of U.S. energy consumption (DOE, 2016)



Source: Jesse Jenkins, Princeton University

Thank You to:

Imre Gyuk, US DOE-OE

Dan Borneo, Sandia National Laboratories

Todd Olinsky-Paul
Senior Project Director
Clean Energy States Alliance
Todd@cleanegroup.org

ESTAP Website: http://bit.ly/CESA-ESTAP

ESTAP Listserv: http://bit.ly/EnergyStorageList

CleanEnergy States Alliance

Sandia National Laboratories

U.S. DEPARTMENT OF ENERGY