REGIONAL MARKET DEMAND FOR RENEWABLE ENERGY

New Mexico Revenue Stabilization & Tax Policy Committee
September 27, 2021

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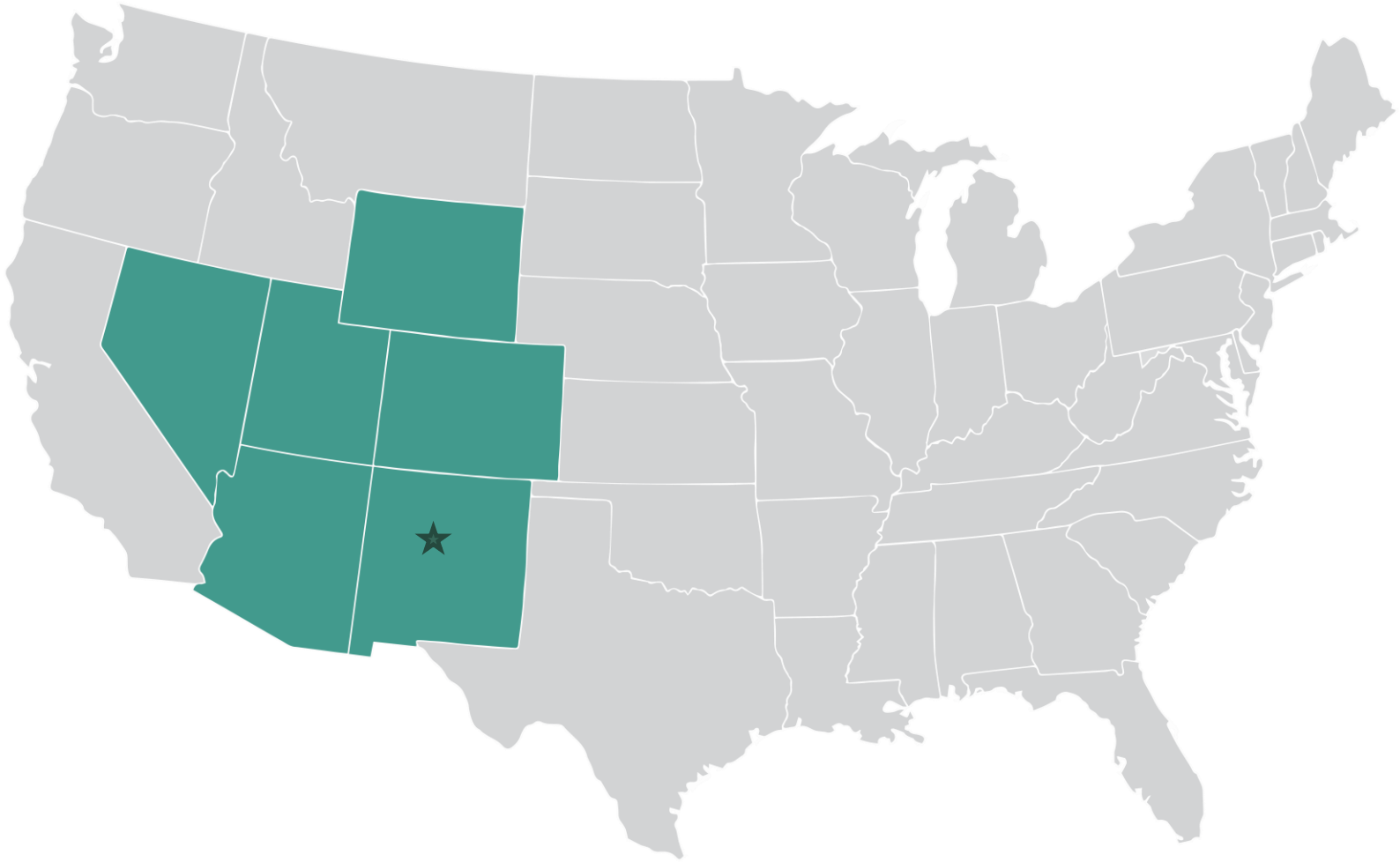
Executive Director
Interwest Energy Alliance

INTERWEST ENERGY ALLIANCE

- **Regional non-profit trade association** representing nation's leading developers and manufacturers of wind, solar, geothermal, and storage technologies, working with environmental NGOs
- **Mission** is to make the Intermountain West a leader in deployment of **reliable, cost-effective, and diverse** renewable energy resources.



New Mexico, Colorado, Wyoming, Utah, Nevada, Arizona


8minute
SOLAR ENERGY

aes

AMERICAN
CLEAN
POWER

APEX
CLEAN ENERGY

AVANGRID
RENEWABLES

Clearway

COMMUNITY
ENERGY

ConnectGEN

CYPRESS CREEK
RENEWABLES

EDF
renewables

enel
Green Power

ENGIE

eolus

GRID UNITED

LEEWARD
renewable energy

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INNERGEX

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Pattern

SIERRA
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SOLARIANT

TRIPLE OAK

Union of
Concerned
Scientists

UTAH
CLEAN
ENERGY

Vestas

VOTE SOLAR

WESTERN
RESOURCE
ADVOCATES

IN-STATE POLICY DRIVERS

Energy Transition Act in 2019

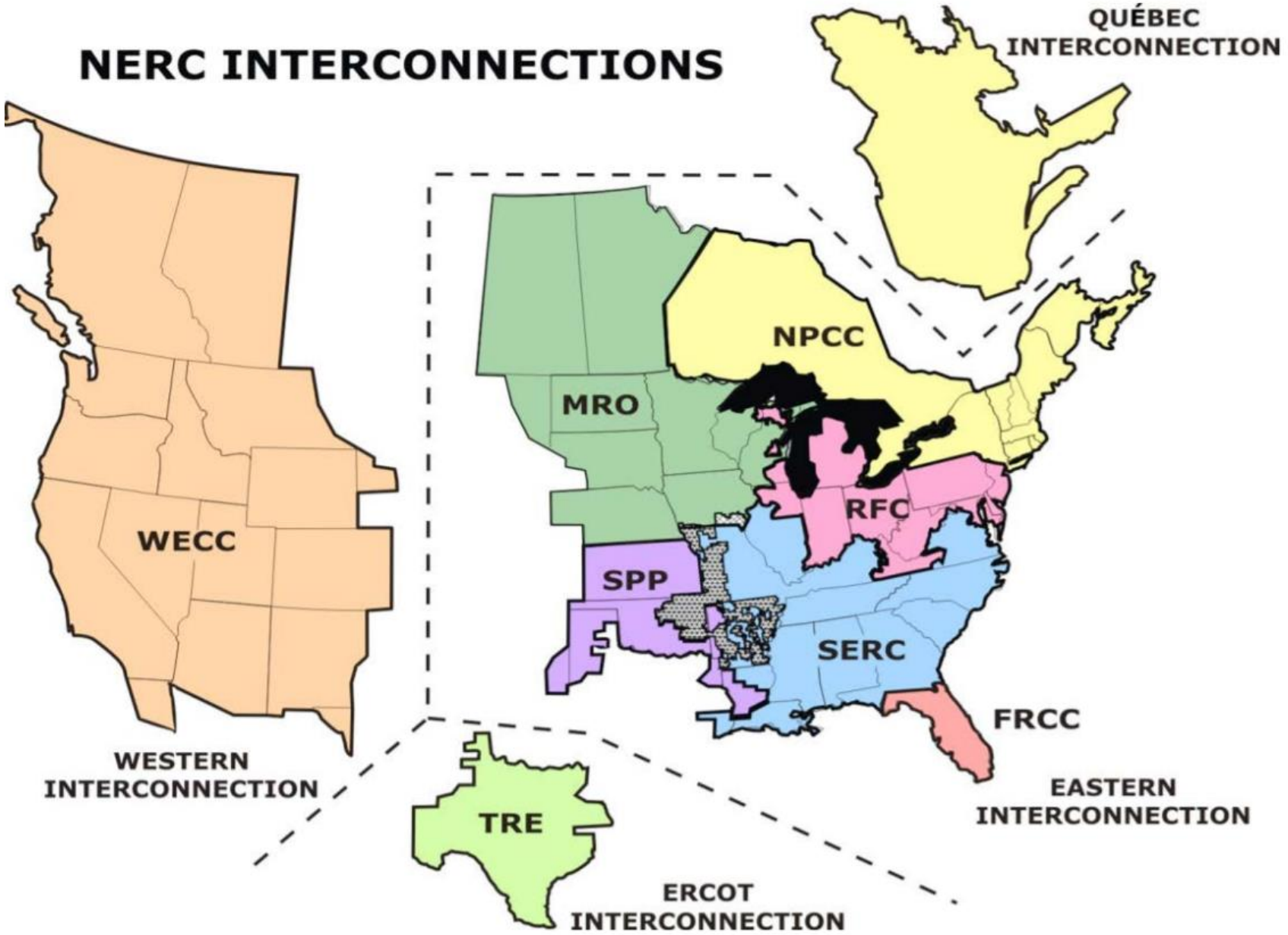
- 100% carbon-free by 2045
- 50% RPS by 2040
- Goal of 80% renewable by 2040

New Mexico Load is Small

- NM electricity demand makes up just 3.5% of total WECC demand
- Total renewables online in NM: 3,582 MW
  - Wind 2,351 MW
  - Solar 1,231 MW

Source: Peak load data: PNM 2020-2040 Integrated Resource Plan presentation Aug. 25, 2020; Wind data: AWEA; Solar data: SEIA

Source: WECC


NERC INTERCONNECTIONS
QUÉBEC INTERCONNECTION
NPCC
MRO
RFC
SPP
SERC
FRCC
WECC
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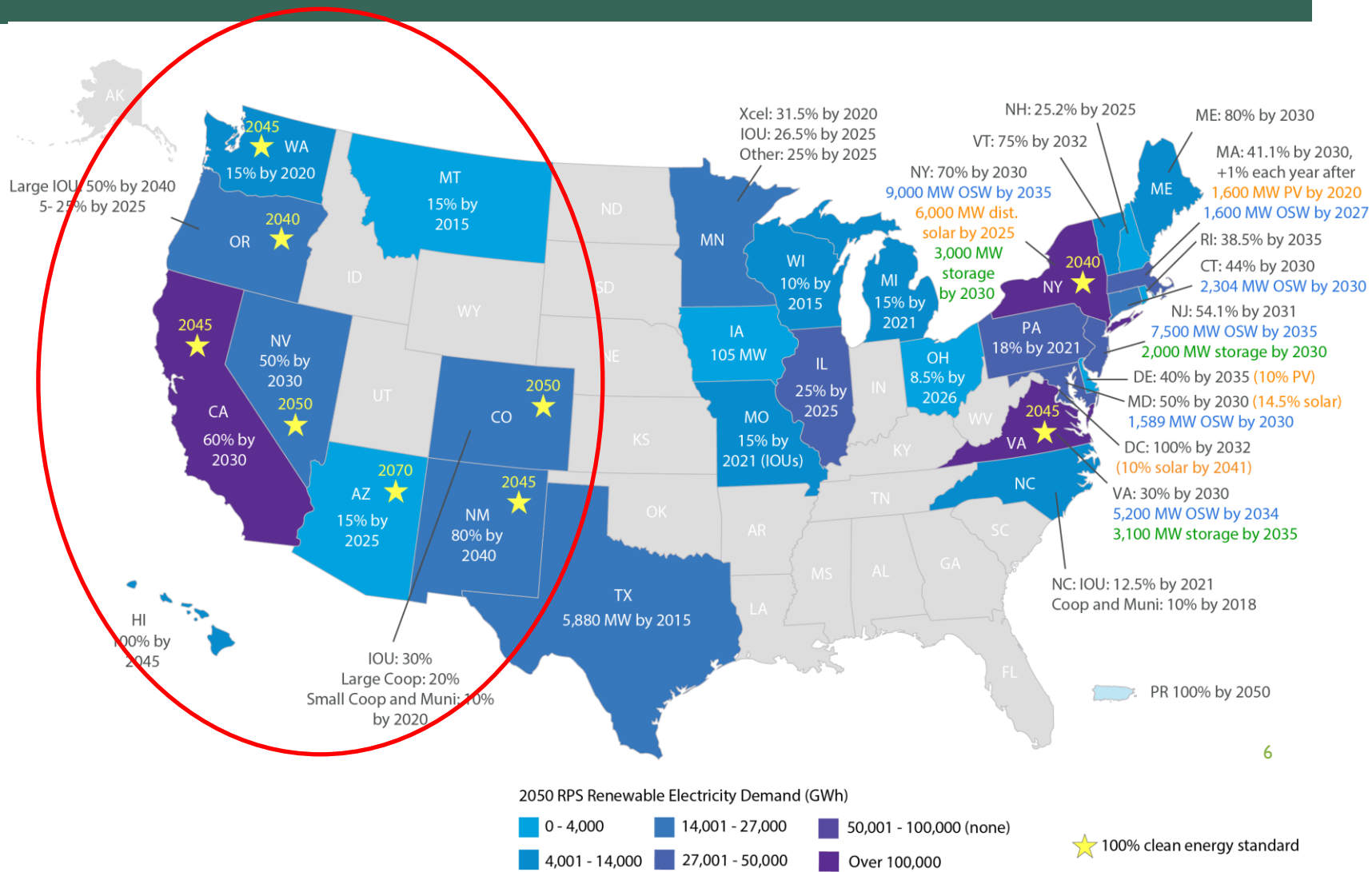
WESTERN INTERCONNECTION
EASTERN INTERCONNECTION
ERCOT INTERCONNECTION

Source: WECC

REGIONAL POLICY DRIVERS

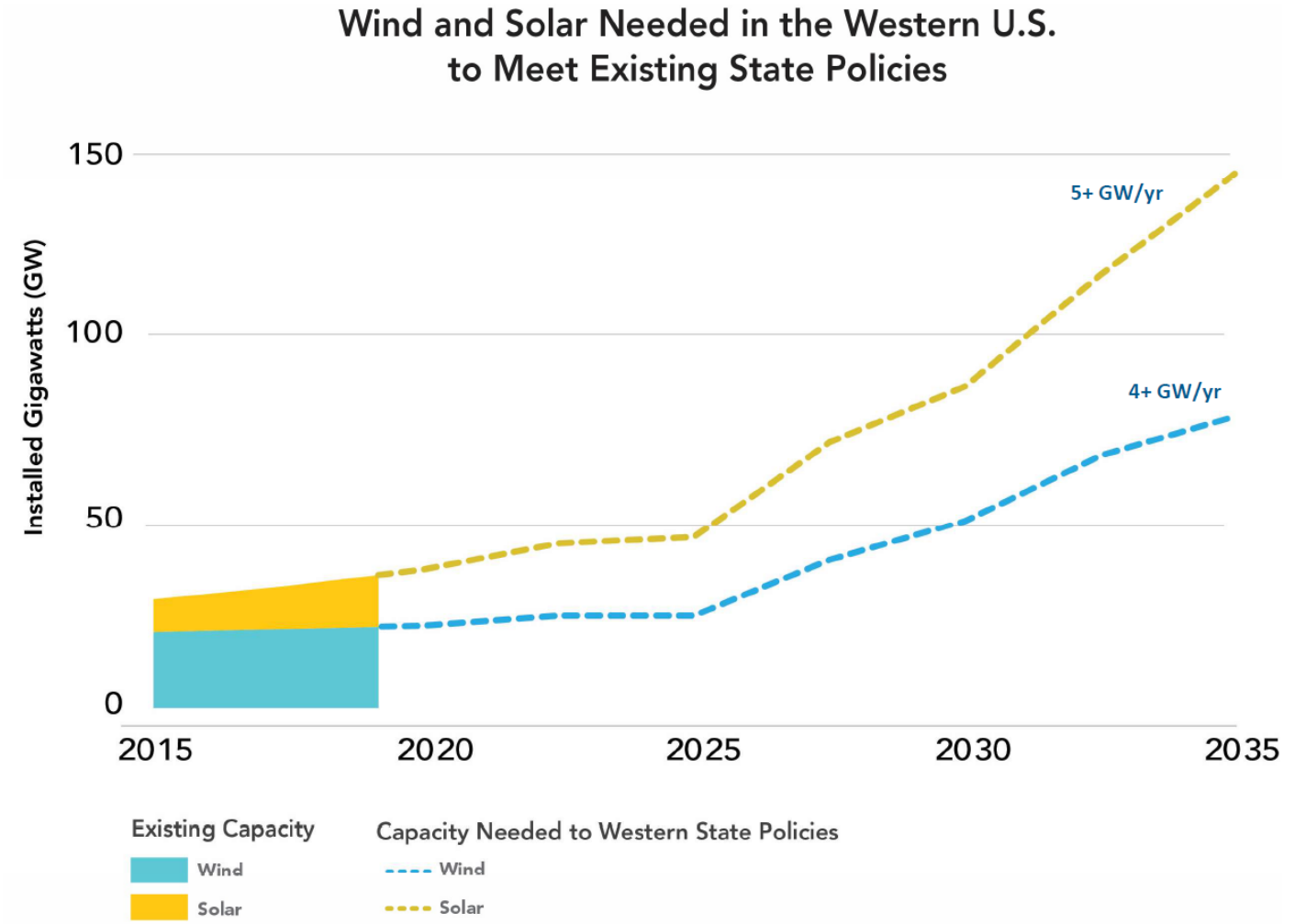
Over 80% of customers in the West are aligned on decarbonization requirements



Source: American Clean Power Association

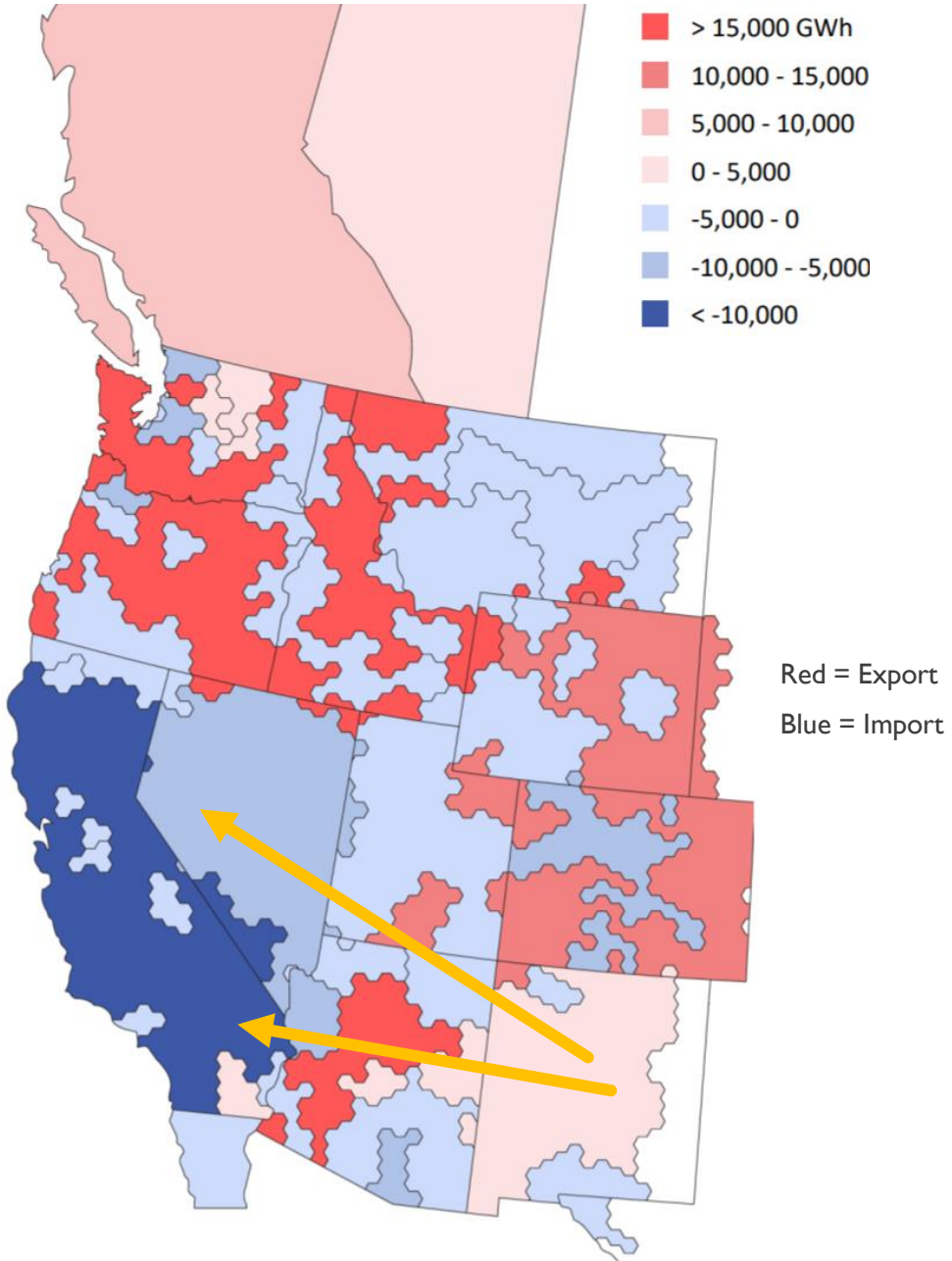
INCREASED DEMAND FOR RENEWABLES

- Existing policies in the West require ~9 GW new renewables <u>per year</u> starting in 2026
  - NM has 3.5 GW installed today
- By 2050 the total demand in the West is upwards of 150 GW



Source: Energy Strategies, "Western Flexibility Assessment" (2019)

2016 Net Interchange by Balancing Area



Source: WECC "State of the Interconnection Digest" (Summer 2018)

New Mexico projects can serve customers around the region, but projects must win competitive solicitations.

Standard steps:

- Utility identifies need
- Utility issues RFP (request for proposals) for resource
- Companies bid in proposed projects from around the region
- Utility selects the best project (considering cost, resource type, etc.)
- **If bid is not selected, project does not get built.**

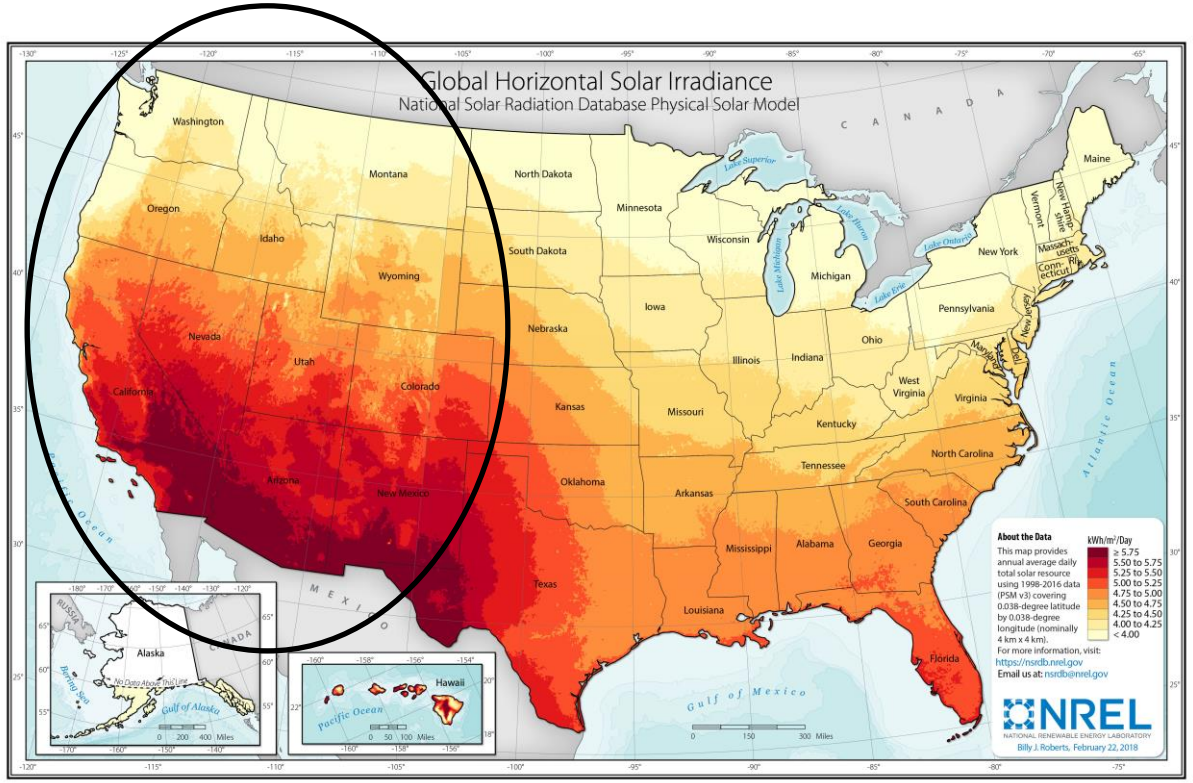
RFP RESULTS: PSCO 2018 RFP FOR 454 MW

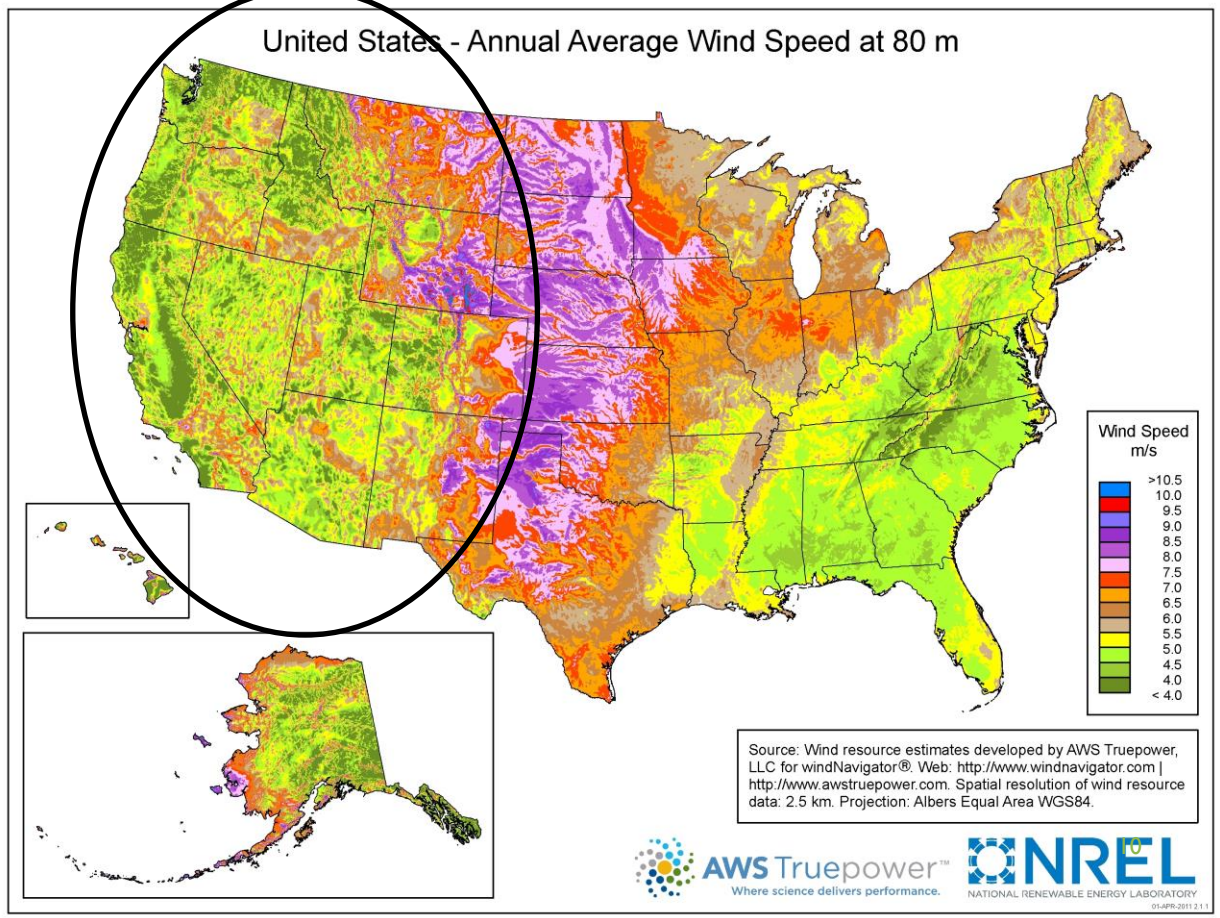
RFP Responses by Technology

Generation Technology	# of Bids	Bid MW	# of Projects	Project MW	Median Bid Price or Equivalent	Pricing Units
Combustion Turbine/IC Engines	30	7,141	13	2,466	$ 4.80	$/kW-mo
Combustion Turbine with Battery Storage	7	804	3	476	6.20	$/kW-mo
Gas-Fired Combined Cycles	2	451	2	451	6.70	$/kW-mo
Stand-alone Battery Storage	28	2,143	21	1,614	11.30	$/kW-mo
Compressed Air Energy Storage	1	317	1	317	14.60	$/kW-mo
Wind	96	42,278	42	17,380	$ 18.10	$/MWh
Wind and Solar	5	2,612	4	2,162	19.90	$/MWh
Wind with Battery Storage	11	5,700	8	5,097	21.00	$/MWh
Solar (PV)	152	29,710	75	13,435	29.50	$/MWh
Wind and Solar and Battery Storage	7	4,048	7	4,048	30.60	$/MWh
Solar (PV) with Battery Storage	87	16,725	59	10,813	36.00	$/MWh
IC Engine with Solar	1	5	1	5	50.00	$/MWh
Waste Heat	2	21	1	11	55.40	$/MWh
Biomass	1	9	1	9	387.50	$/MWh
Total	430	111,963	238	58,283		

Source: CoPUC Proceeding No. 16A-0396E

+RESOURCE



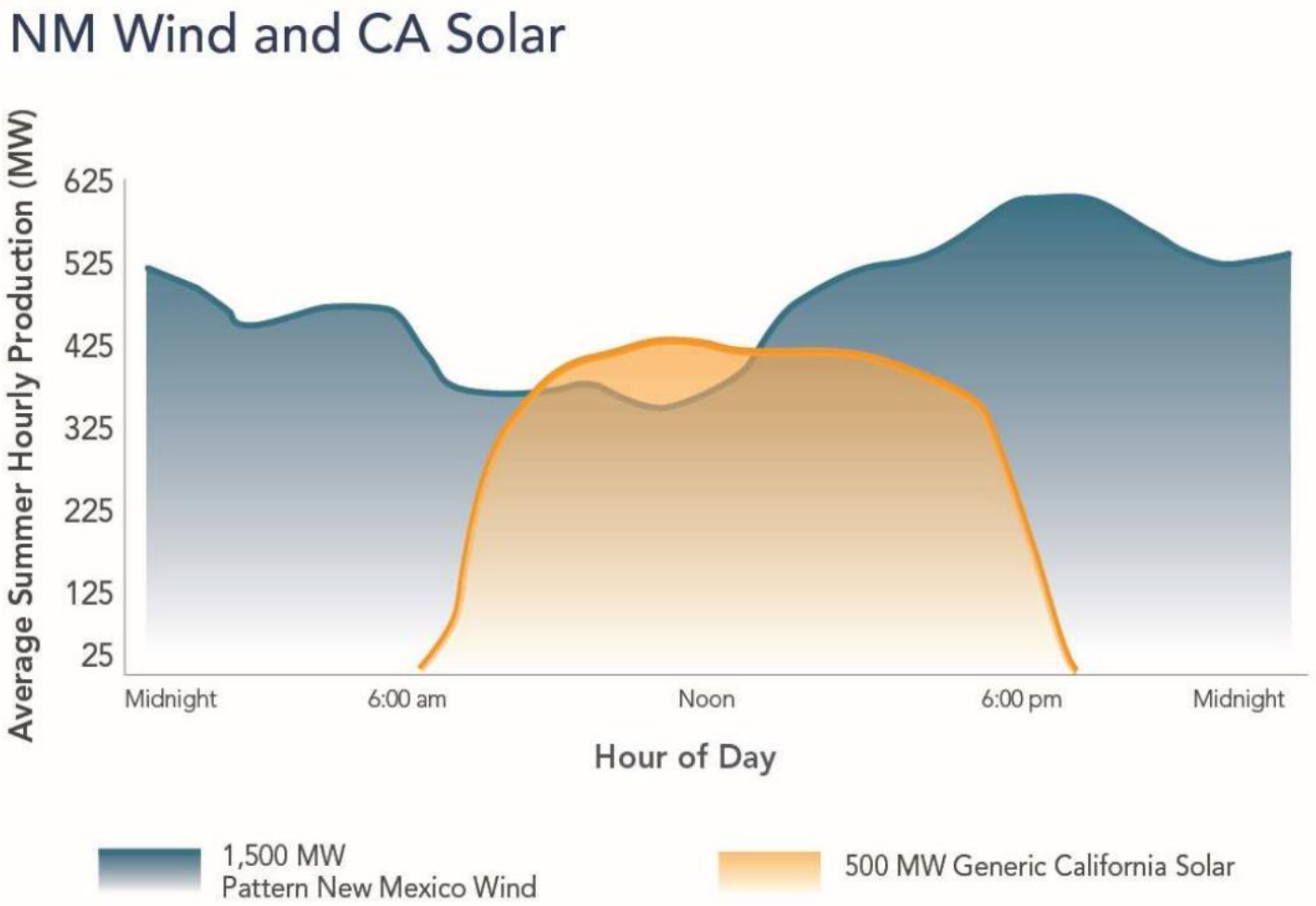


Source: NREL: Global Horizonal Solar Irradiance 1998-2016

Source: NREL: US 80m Wind Resource

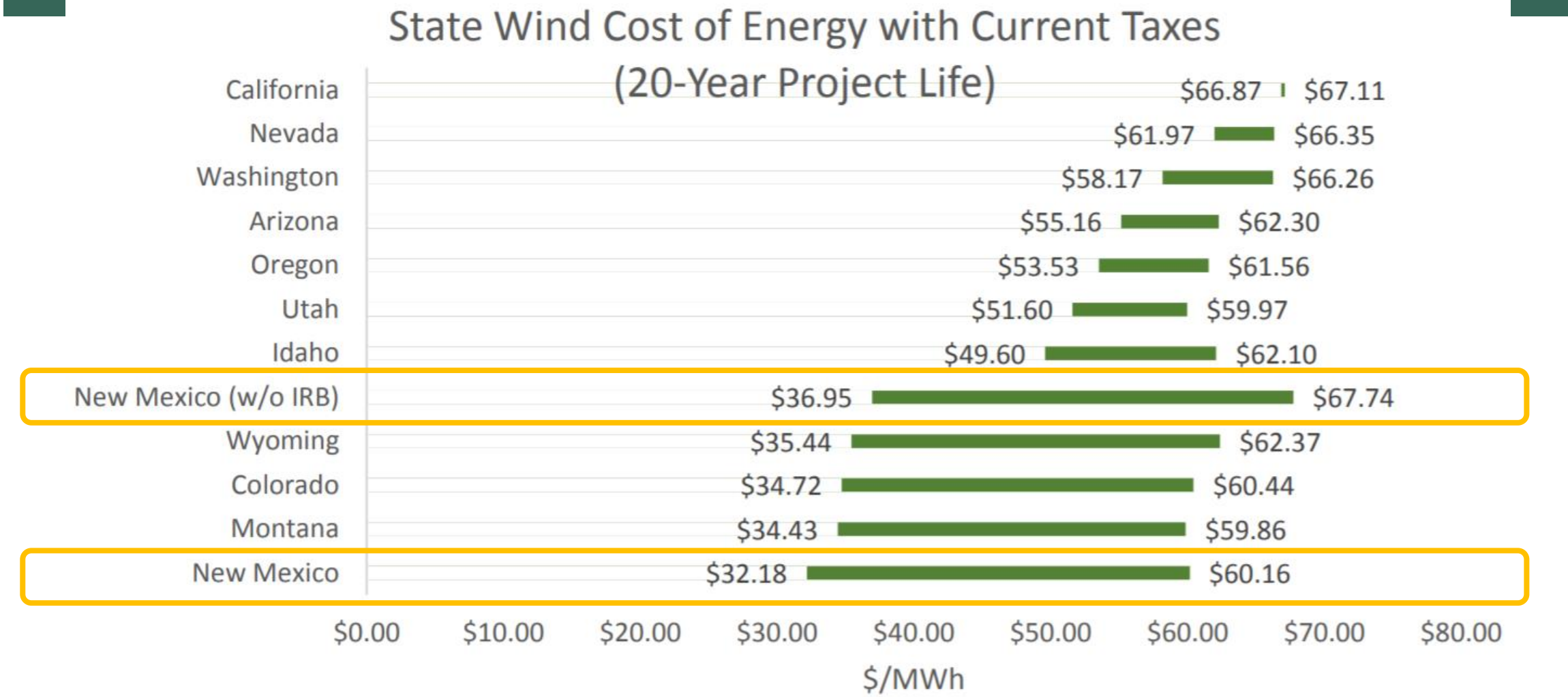
+RESOURCE DIVERSITY

- Regional Electricity markets benefit from geographic diversity
- "Duck Curve" challenges are affecting many markets with high renewable penetration
- Regional coordination enables least cost, highly efficient pairing of wind and solar resources

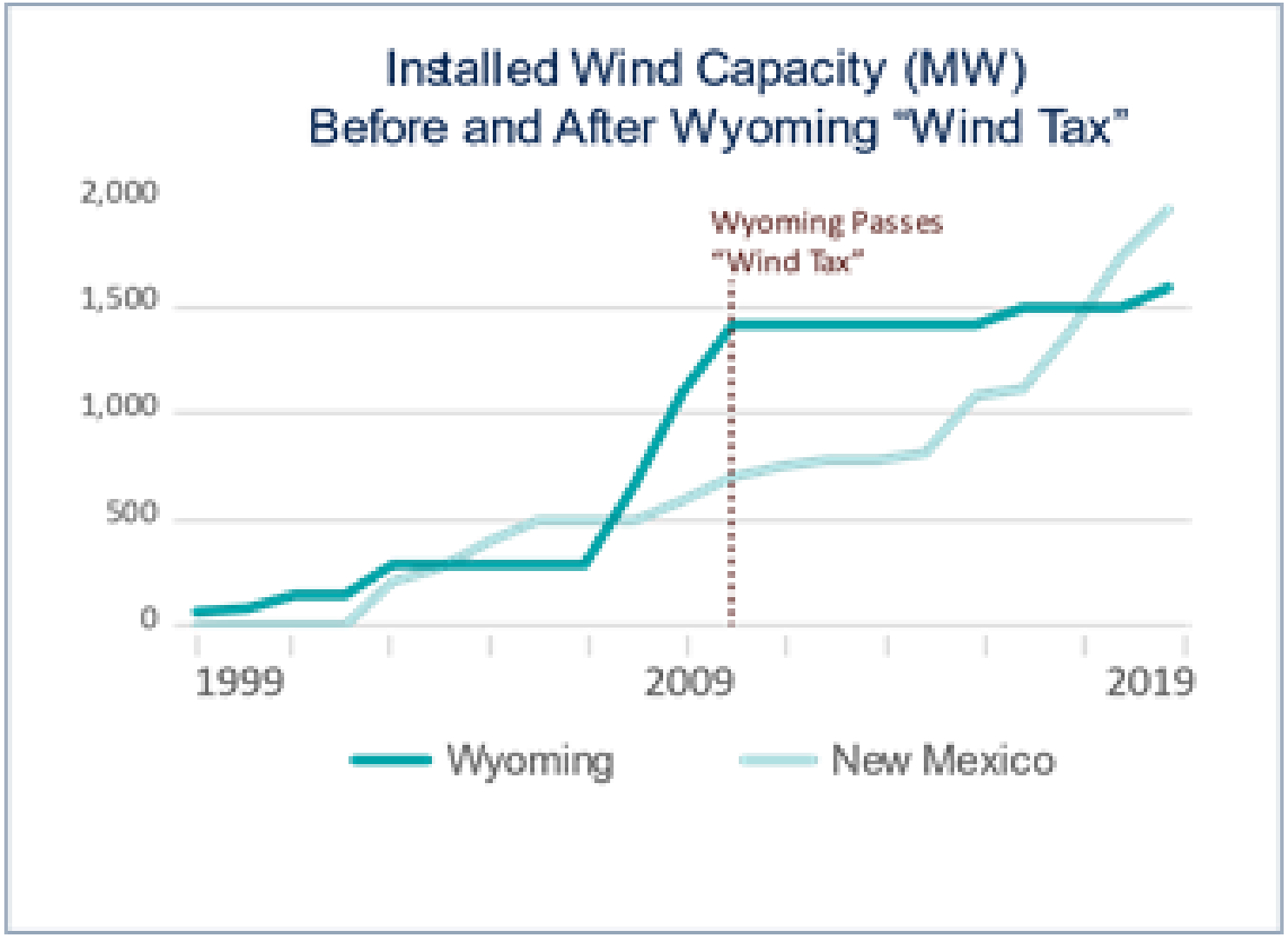


Source: Pattern Energy

+COST



Source: Univ. of Wyoming, "Estimating the Impact of State Taxation Policies on the Cost of Wind Development in the West" (March 2019)



Source: Moss Adams LLP

RFP RESULTS: NVE AND BHE

Price difference is a matter of cents

- NV Energy 2018 RFP Shortlist
  - Approx. difference between highest and lowest bid = $0.50/MWh
- Black Hills Energy 2019 RFP Shortlist
  - Approx. difference between highest and lowest bid = $0.87/MWh

Source: Calculations based on PWRR values published in each utility's RFP response filing with outliers removed.

NM WILL BENEFIT FROM GROWTH SCENARIO

- Need to stay competitive in order to win bids
  - Projects generally will not be built if they cannot win RFPs
- Additional development means additional revenue for the state
  - Bulk of state tax collection comes during construction phase
- Transmission expansion/grid modernization
  - More transmission is needed to move electrons

QUESTIONS?

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