RENEWABLE ENERGY DEVELOPMENT AND MARKET DRIVERS

Presentation to New Mexico Interim Science, Technology, & Telecommunications Committee
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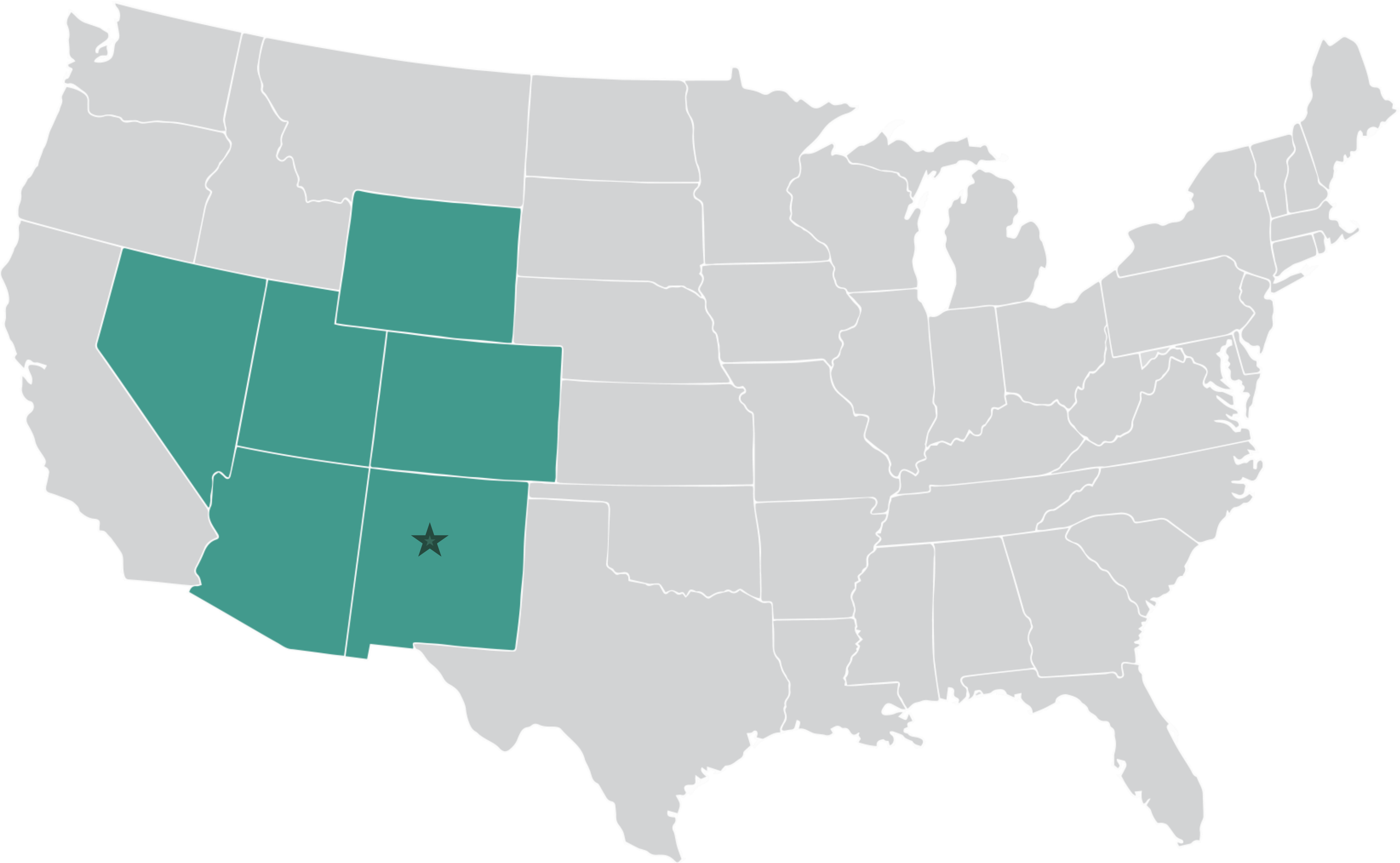
PRESENTATION OVERVIEW

- Interwest Introduction
- What is Driving Demand?
  - Renewables Generally
  - In-State Policy Drivers
  - Regional Policy Drivers
- Why New Mexico Renewables?
- Economic Impacts
- Looking Forward

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

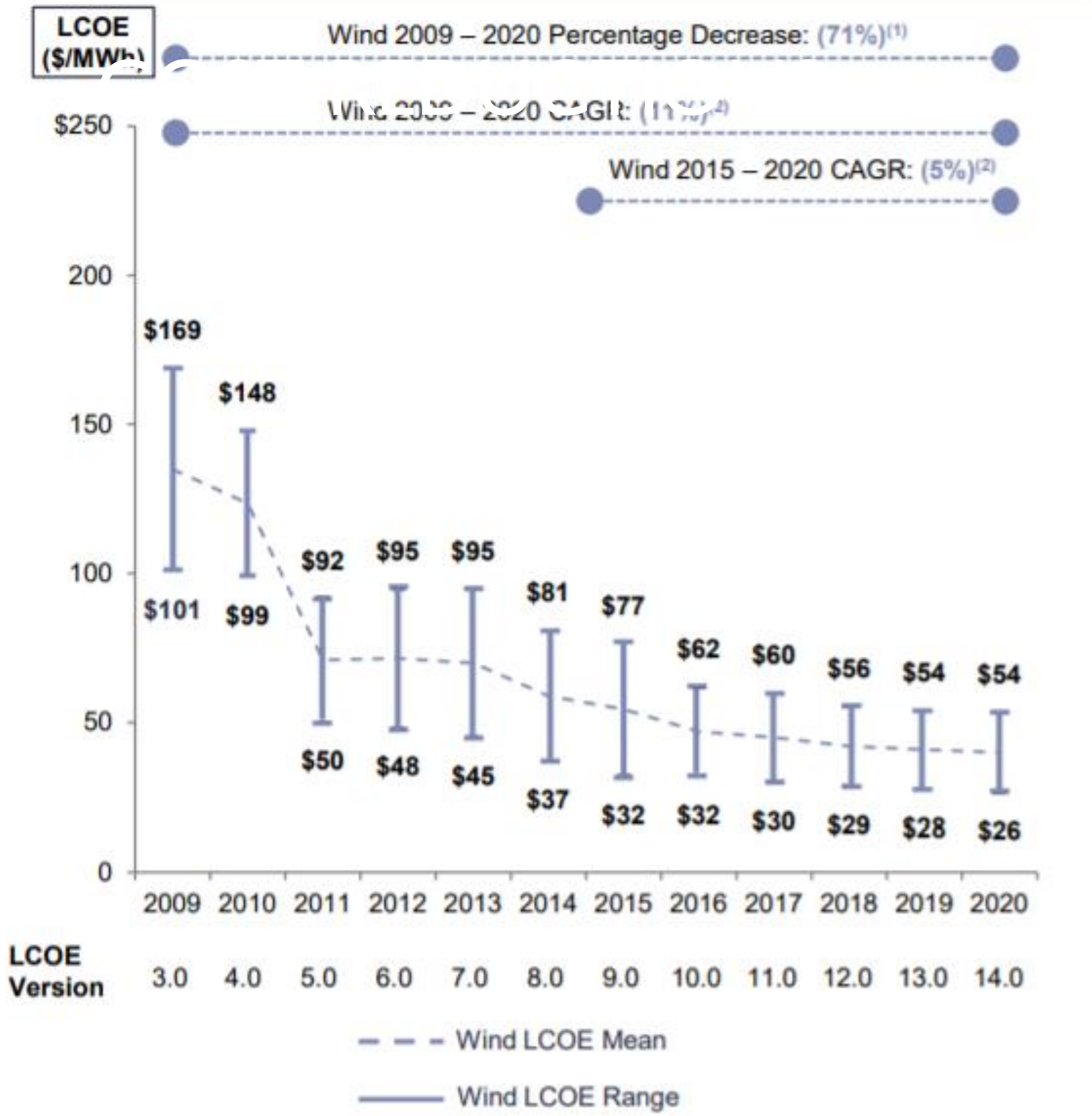
eolus
GU GRID UNITED
LEEWARD renewable energy
Invenergy
INNERGEX
NRDC

NEXTera® ENERGY RESOURCES
edp renewables
Pattern
SIERRA CLUB
RWE
SOLARIANT

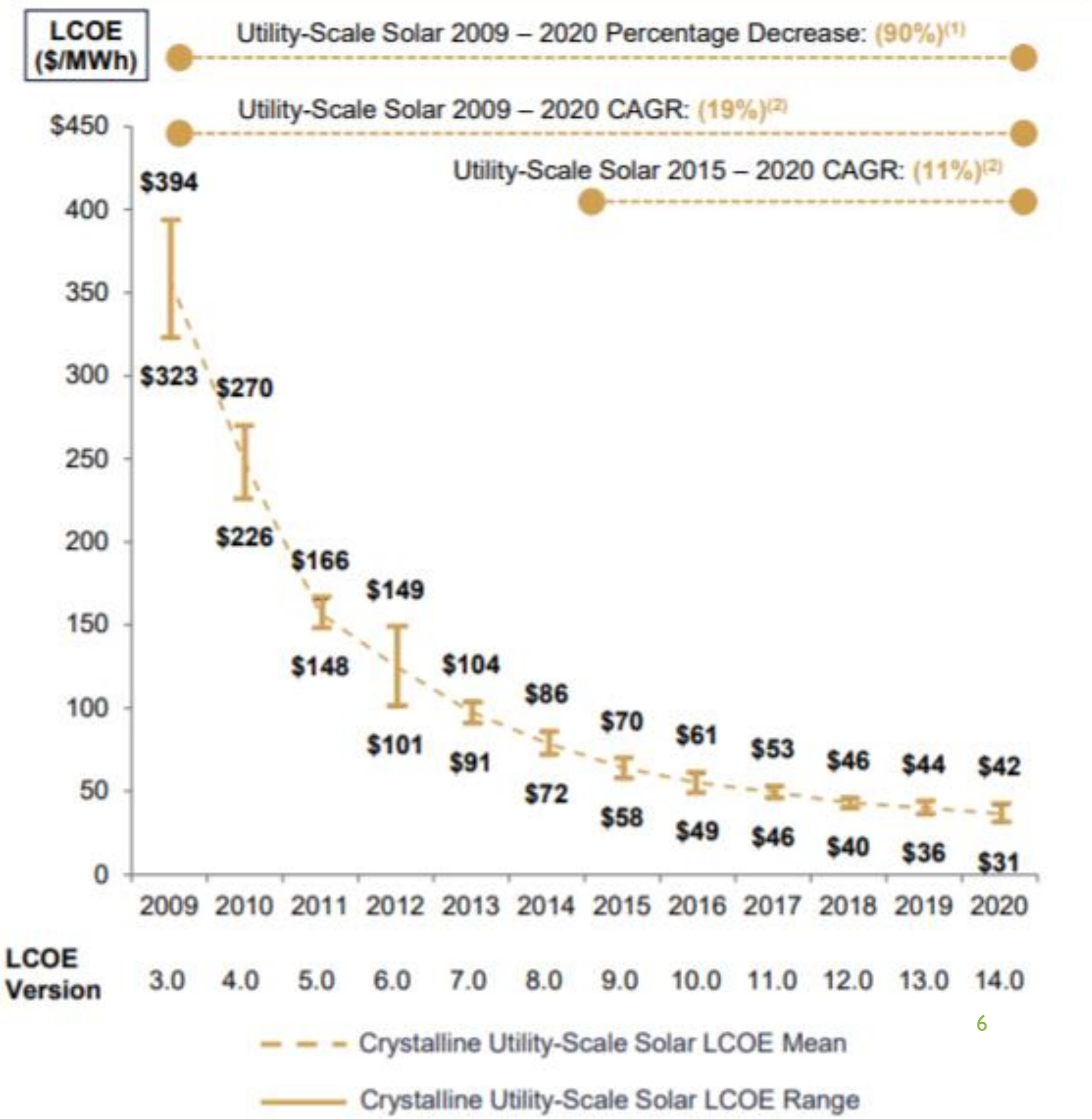
TRIPLE OAK
Union of Concerned Scientists
UTAH CLEAN ENERGY
Vestas
VOTE SOLAR
WESTERN RESOURCE ADVOCATES

WHAT IS DRIVING DEMAND?

Unsubsidized Wind LCOE



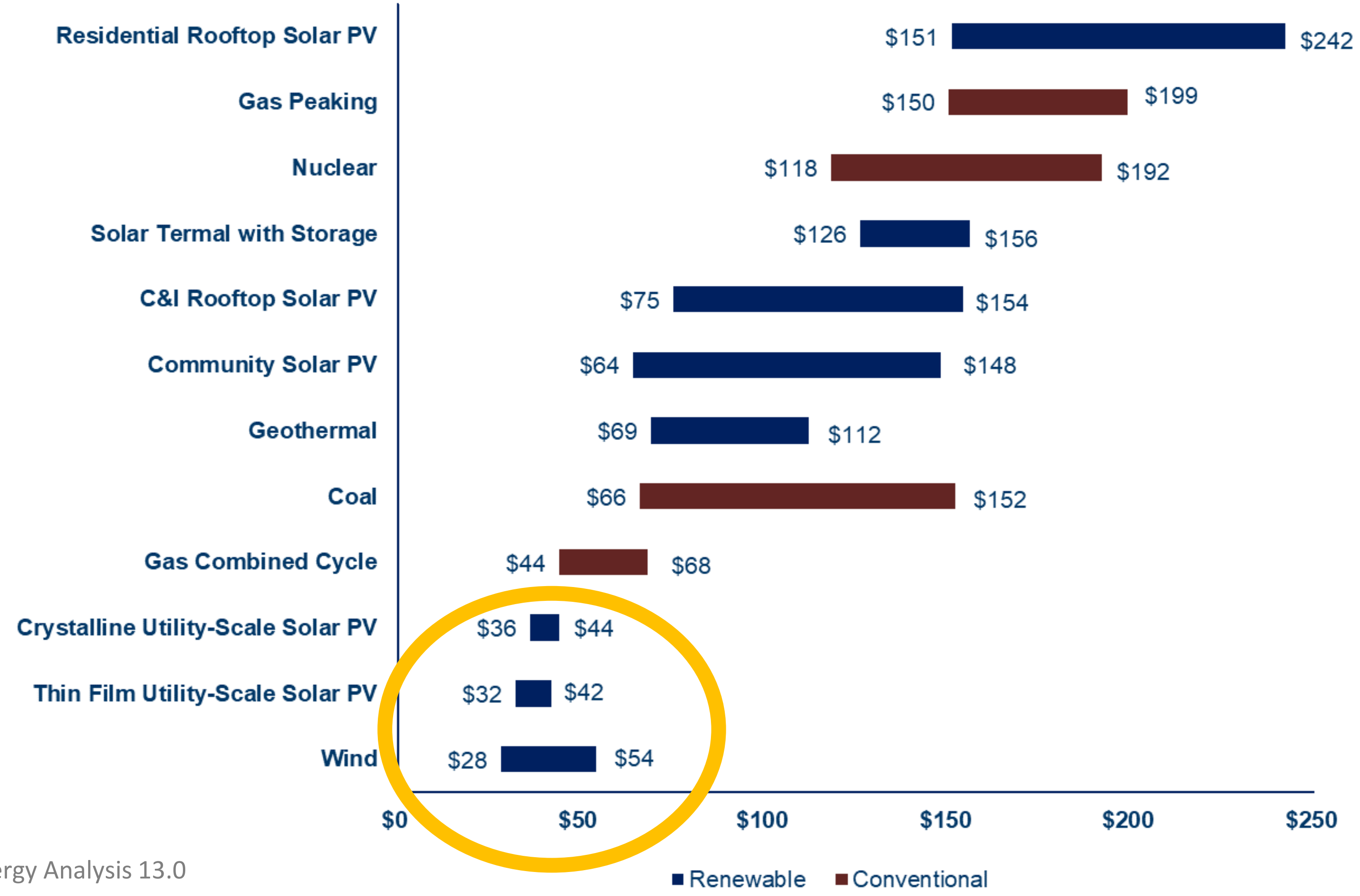
Unsubsidized Solar PV LCOE



Source: Lazard's Levelized Cost of Energy Analysis 14.0

COST REDUCTIONS

LCOE Comparison Across Technologies



Source: Lazard's Levelized Cost of Energy Analysis 13.0

IN-STATE POLICY DRIVERS

IN-STATE POLICY DRIVERS

Energy Transition Act in 2019

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

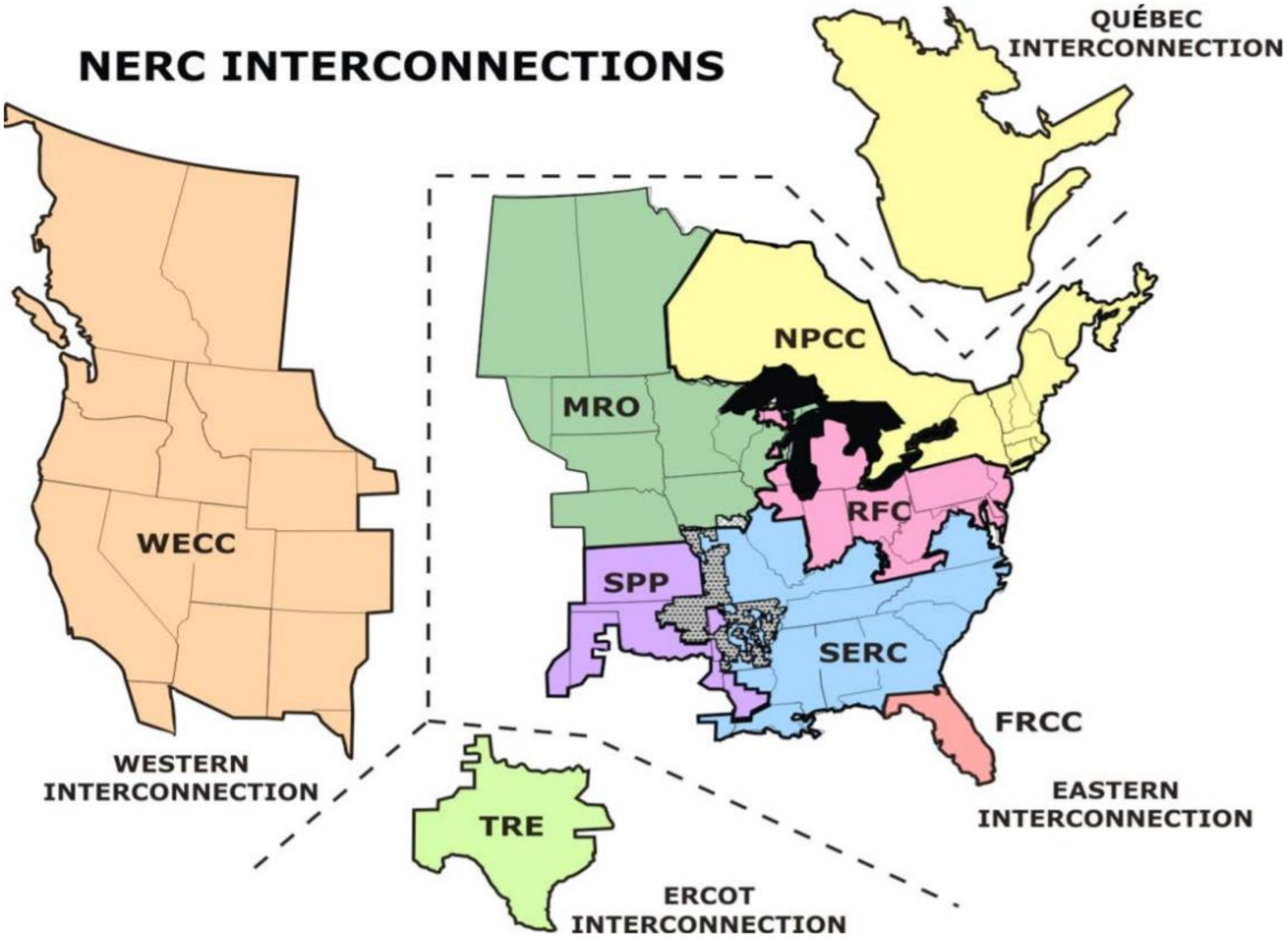
New Mexico Load is Small

- 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

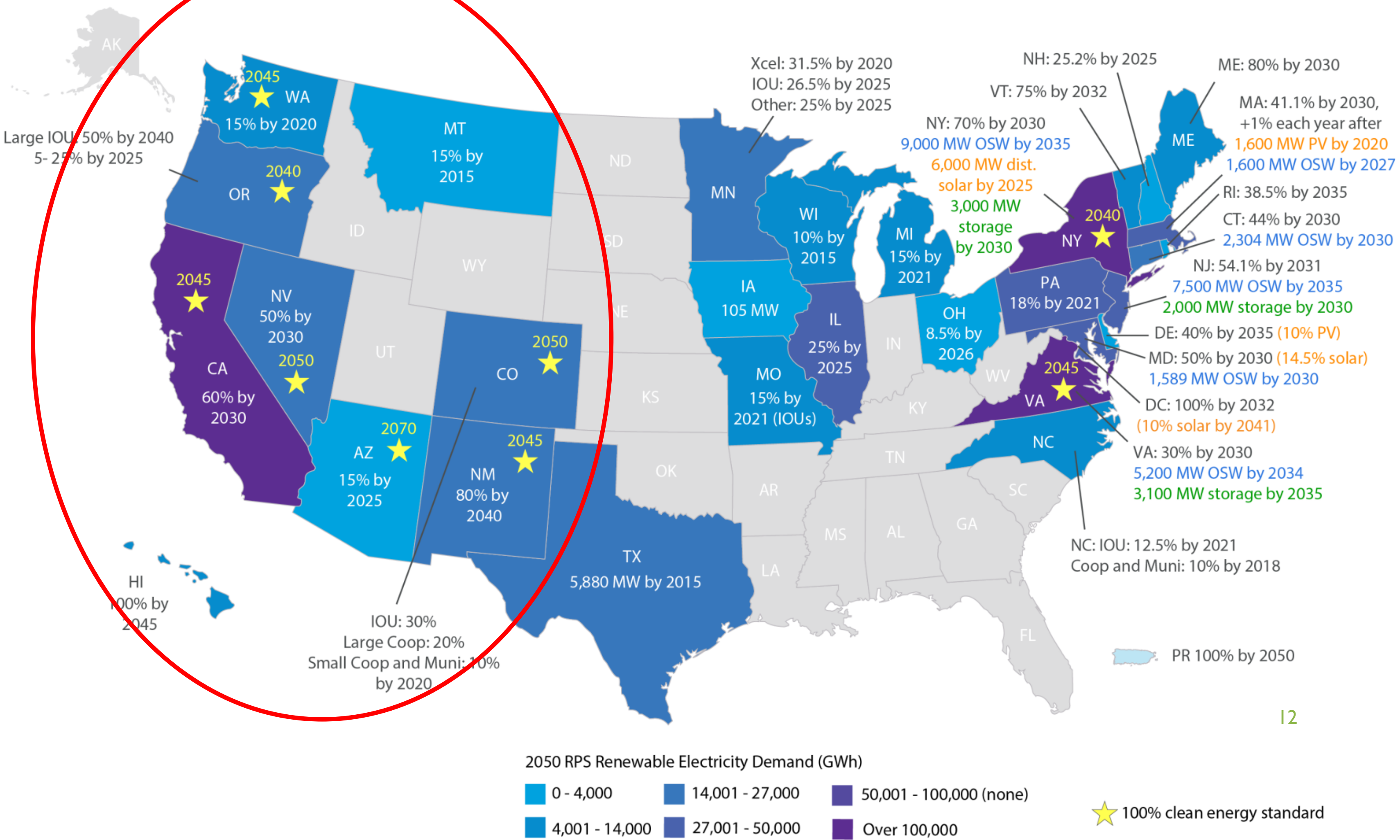
REGIONAL POLICY DRIVERS


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

Source: WECC

REGIONAL POLICY DRIVERS

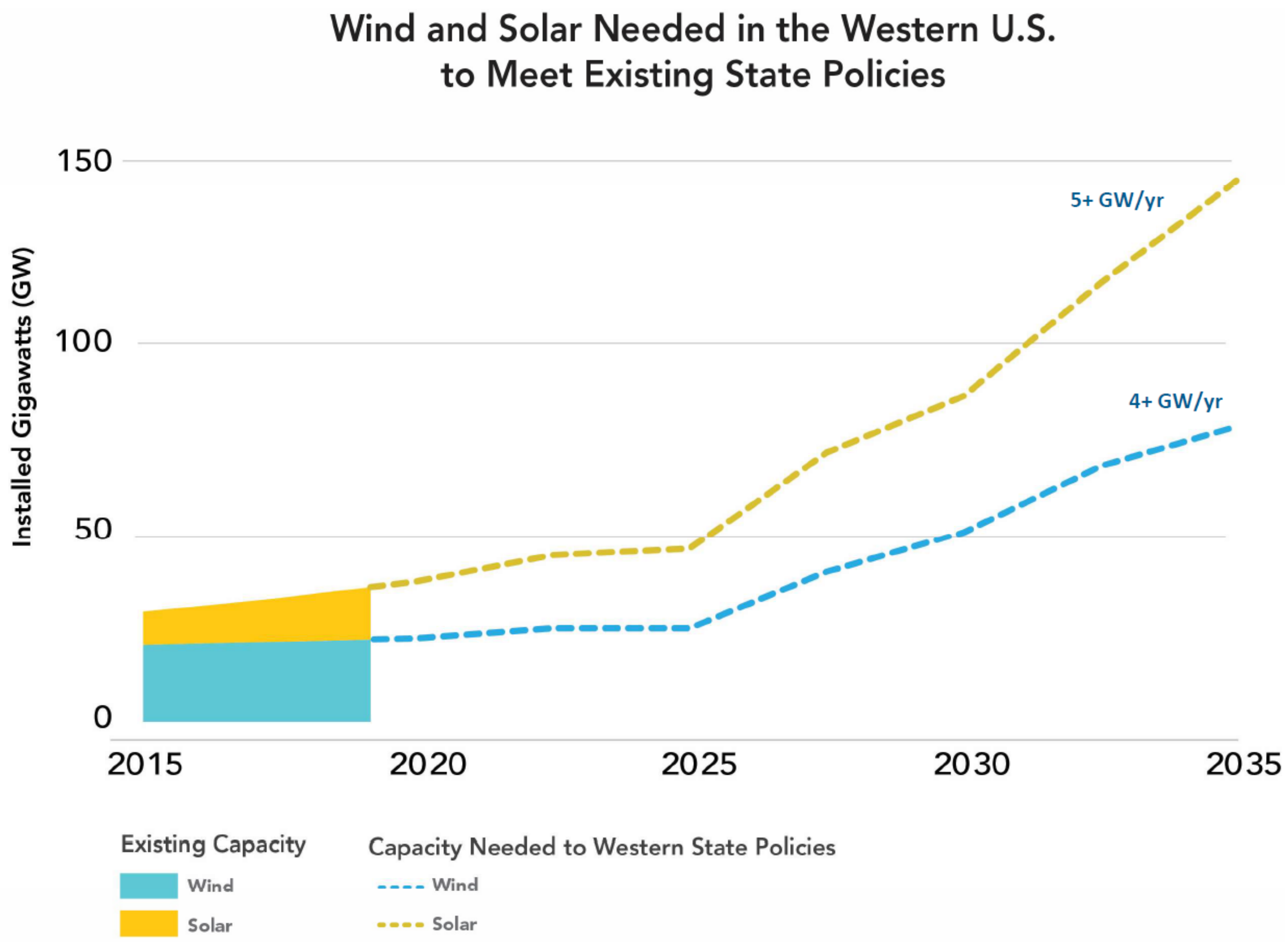
80% of energy use in the West is now aligned on decarbonization policies



Source: American Clean Power Association

INCREASED DEMAND FOR RENEWABLES

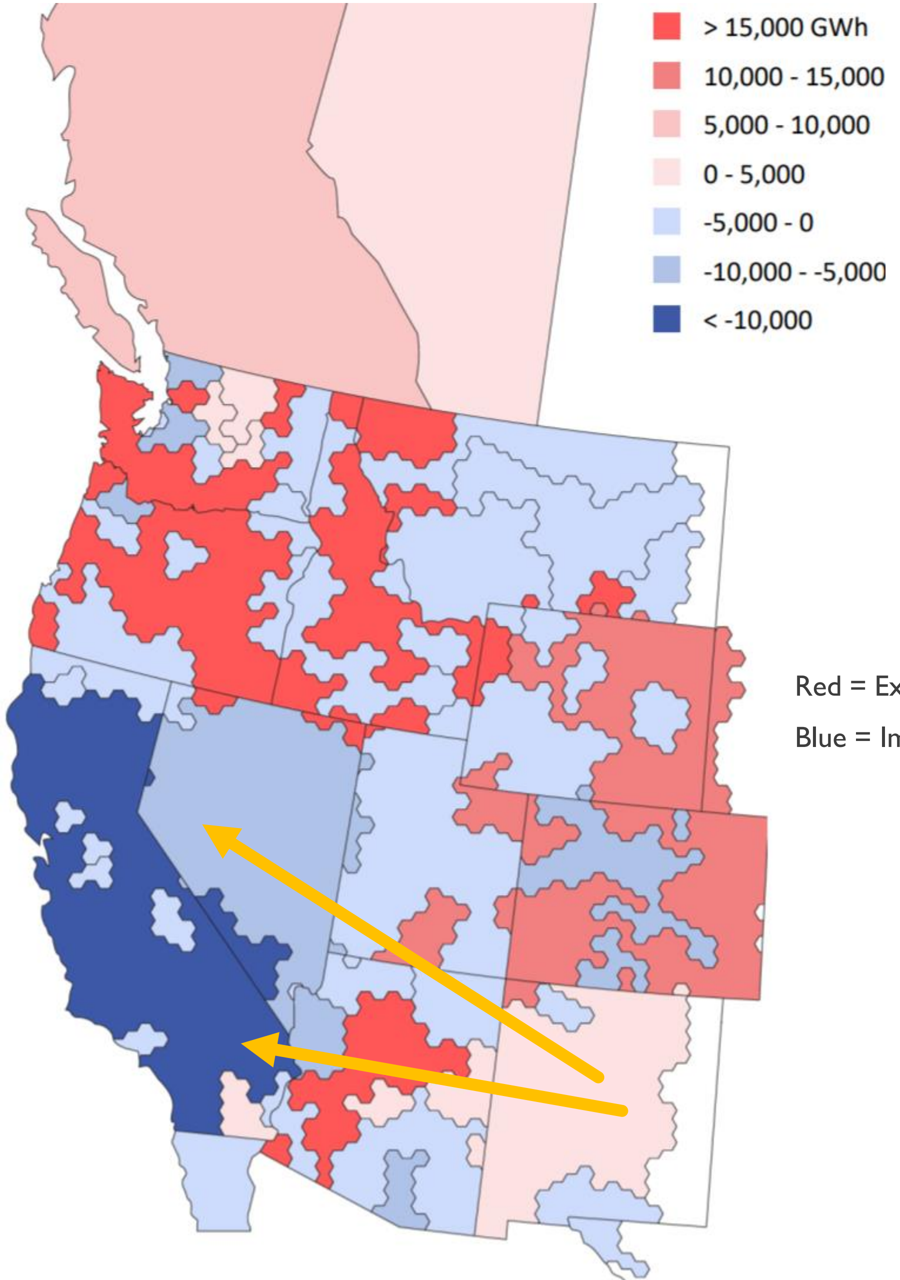
- Existing policies in the West require ~9 GW new renewables per year starting in 2026
  - NM has 3.5 GW installed today
- By 2050 the total demand in the West is upwards of 150 GW



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

WHY
NEW MEXICO
RENEWABLES?

2016 Net Interchange by Balancing Area



Red = Export

Blue = Import

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 issues RFP (request for proposals) for energy 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,**
  <u>project does not get built.</u>

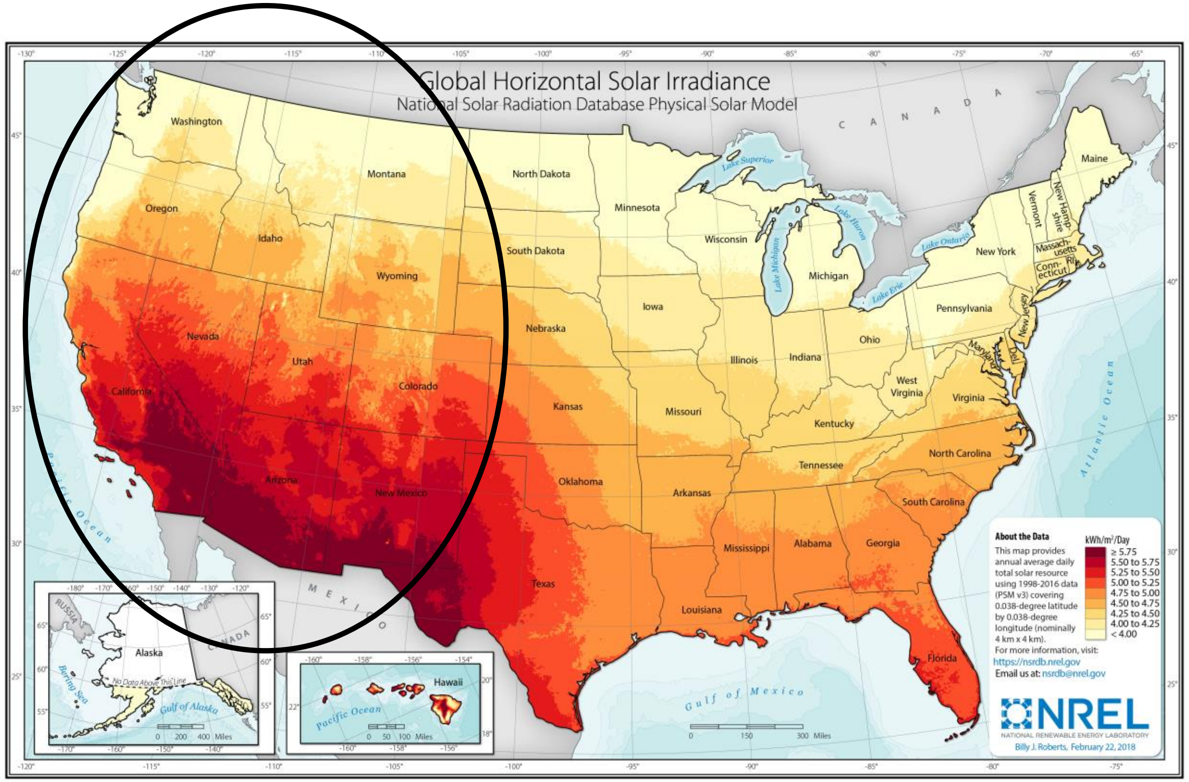
RFP RESULTS: PSCO 2018 RFP FOR 454 MW

RFP Responses by Technology

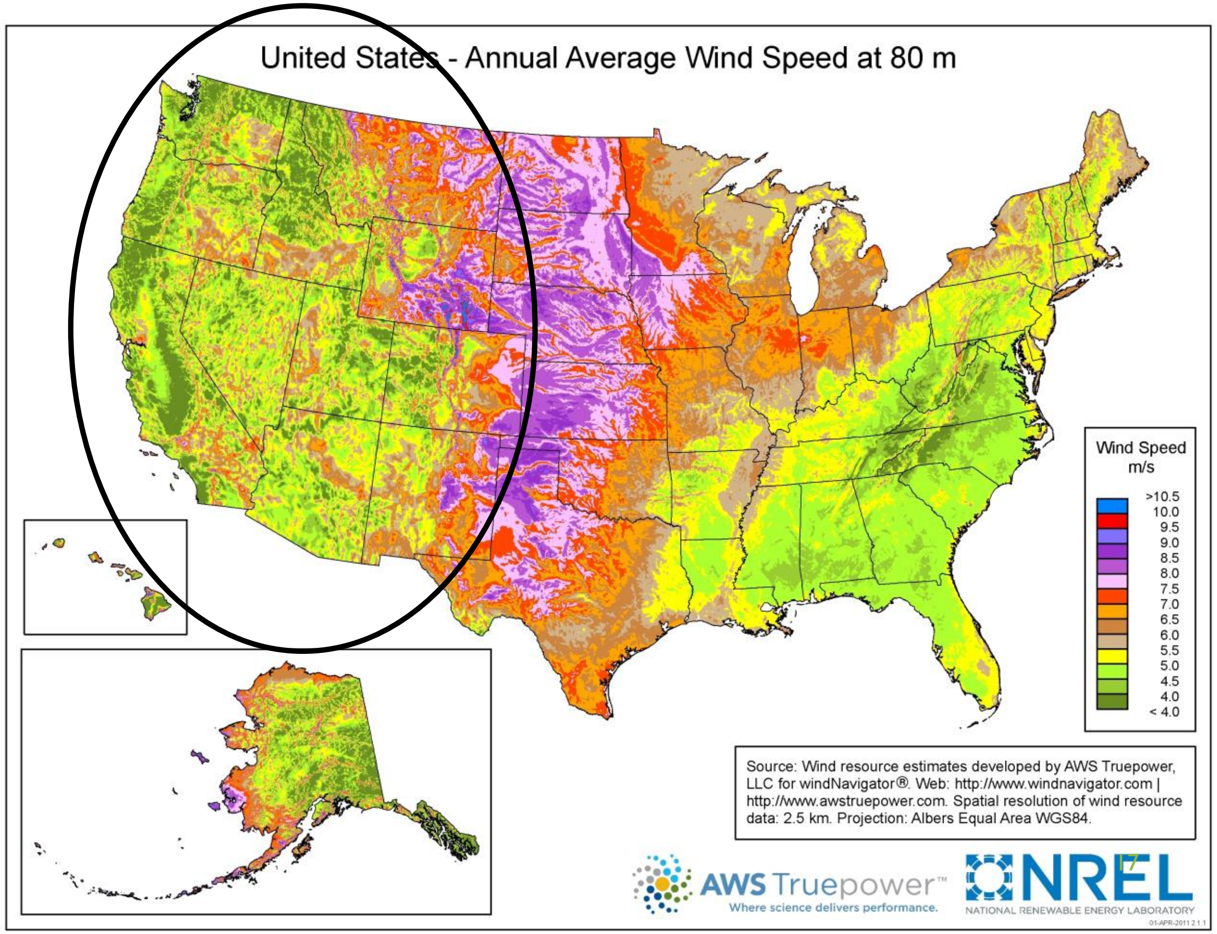
Generation Technology	# of Bids	Bid MW	# of Projects	Project MW	Median Bid Price or Equivalent	Pricing Units
Combustion Turbine/IC Engines	30	7,141	13	2,466	$ 4.80	$/kW-mo
Combustion Turbine with Battery Storage	7	804	3	476	6.20	$/kW-mo
Gas-Fired Combined Cycles	2	451	2	451	6.70	$/kW-mo
Stand-alone Battery 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

CONSIDERATIONS: RESOURCE



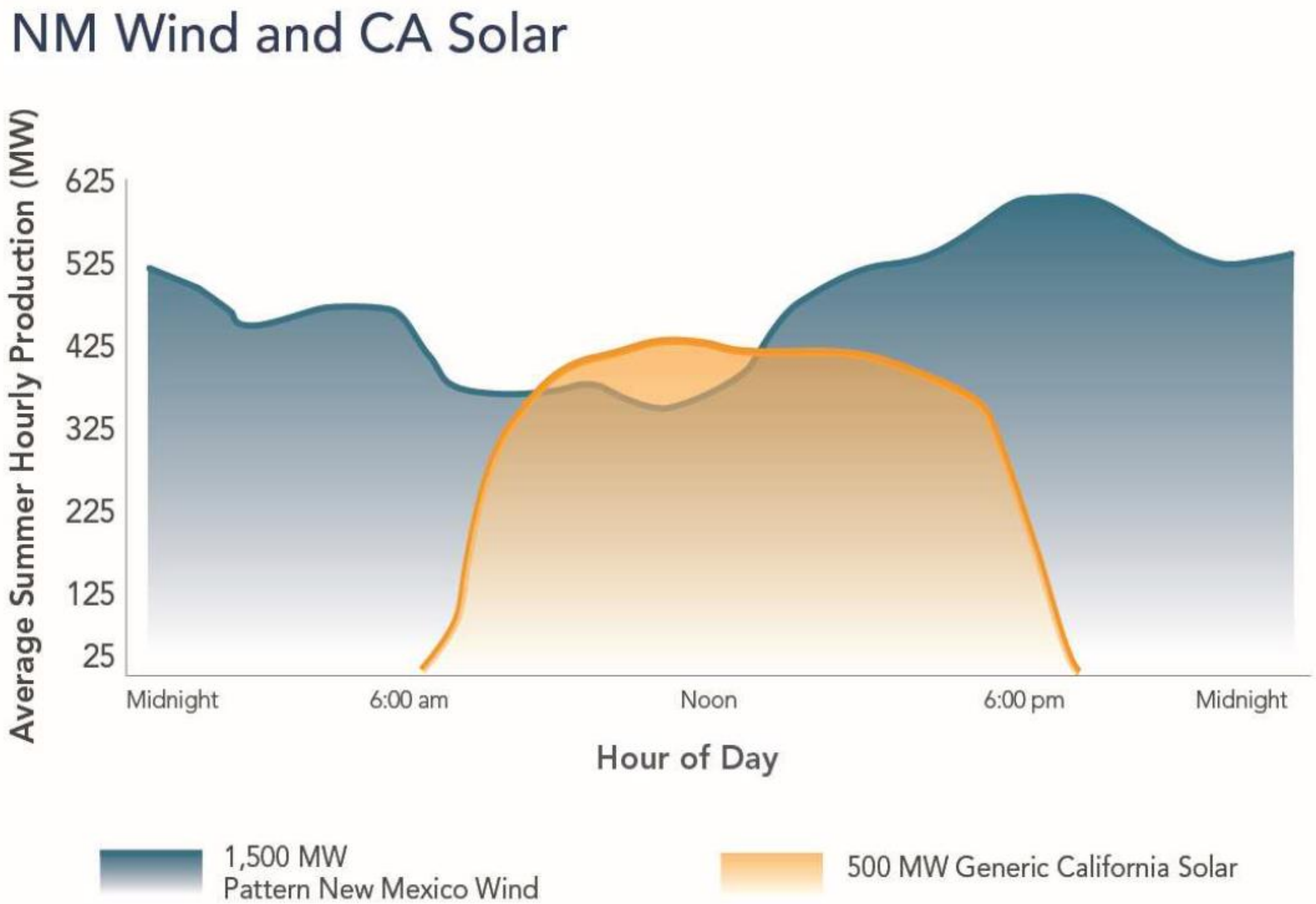
Source: NREL: Global Horizonal Solar Irradiance 1998-2016



Source: NREL: US 80m Wind Resource

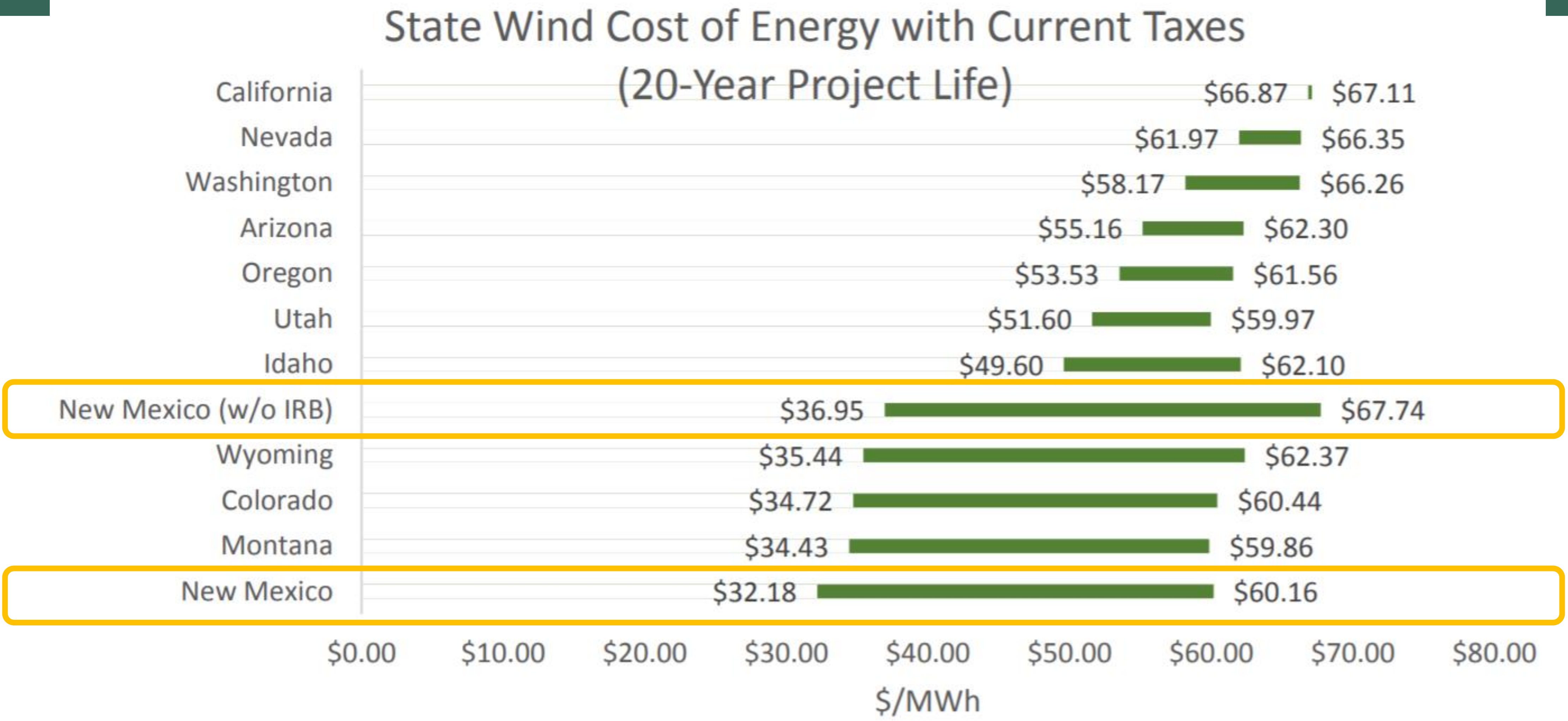
CONSIDERATIONS: RESOURCE

- 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

CONSIDERATIONS: COST



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

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.

ECONOMIC IMPACTS

TAXES FROM RENEWABLE ENERGY DEVELOPMENT

- **Gross Receipts Tax** (direct and induced) on:
  - Construction
  - Operations (example: any purchased services like maintenance)
  - Consumed electricity and other purchased commodities
- **Corporate Income Tax**
- **Personal Income Tax** on:
  - Payroll
  - Land Lease Payments to Property Owners
  - Operating revenue of vendors providing contract services
- **Property Taxes,** if a non-IRB project, or Payment in lieu of taxes **(PILT)** to each county and school district touched by the project with an IRB

REVENUE SHARING ON STATE TRUST LANDS

- According to the New Mexico State Land Office, there exists about nine million acres of land in the state available for lease to renewable energy companies.

- Current wind and solar leases bring in ~$2 million per year in lease payments to the state.
  - 16 Active Wind leases = 619 MW
  - 11 Active Solar leases = 303 MW

- More revenue on the horizon (expecting ~$3million per year):
  - 12 Wind Lease Applications = 2,570 MW
  - 35 Solar Lease Applications = 3,146 MW

Source: NM State Land Office

ECONOMIC DEVELOPMENT

Landowner Payments: $26.6 million annually

- Consistent income that flattens peaks and valleys
- Keeps local farmers and ranchers on their land

Jobs: 4,000-5,000 wind and solar jobs in the state

- Employment numbers highest during construction
- Additional jobs in Engineering, Tech, Law

Source: American Clean Power Association and SEIA

- “RE 100” has 300+ companies publicly committed to 100% renewable electricity
- 2028 is average target year for RE100 companies to reach 100% renewable electricity

Source: RE 100

LOOKING FORWARD

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 bids
- 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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INTERWEST
ENERGY ALLIANCE