



Nevada Regional Transmission Task Force

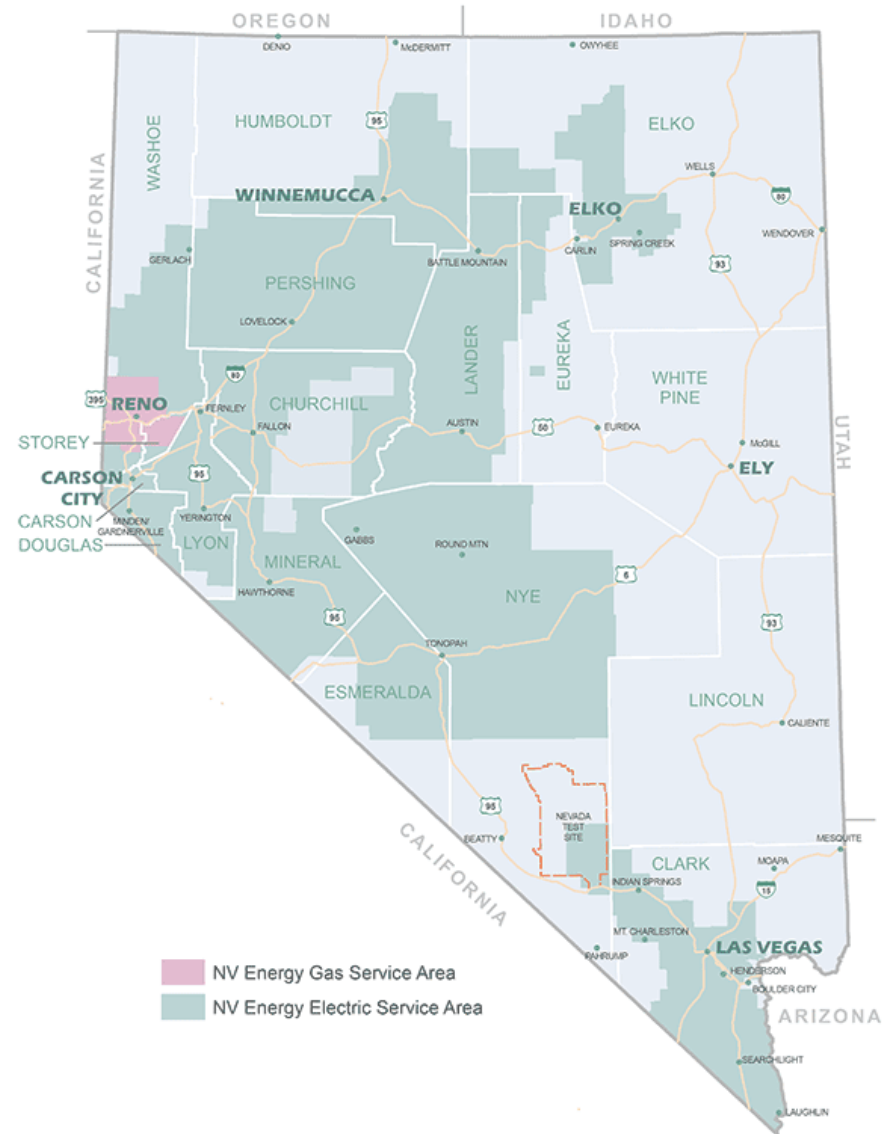
Carolyn Barbash

Vice President, Transmission Development & Policy

Your Energy Partner



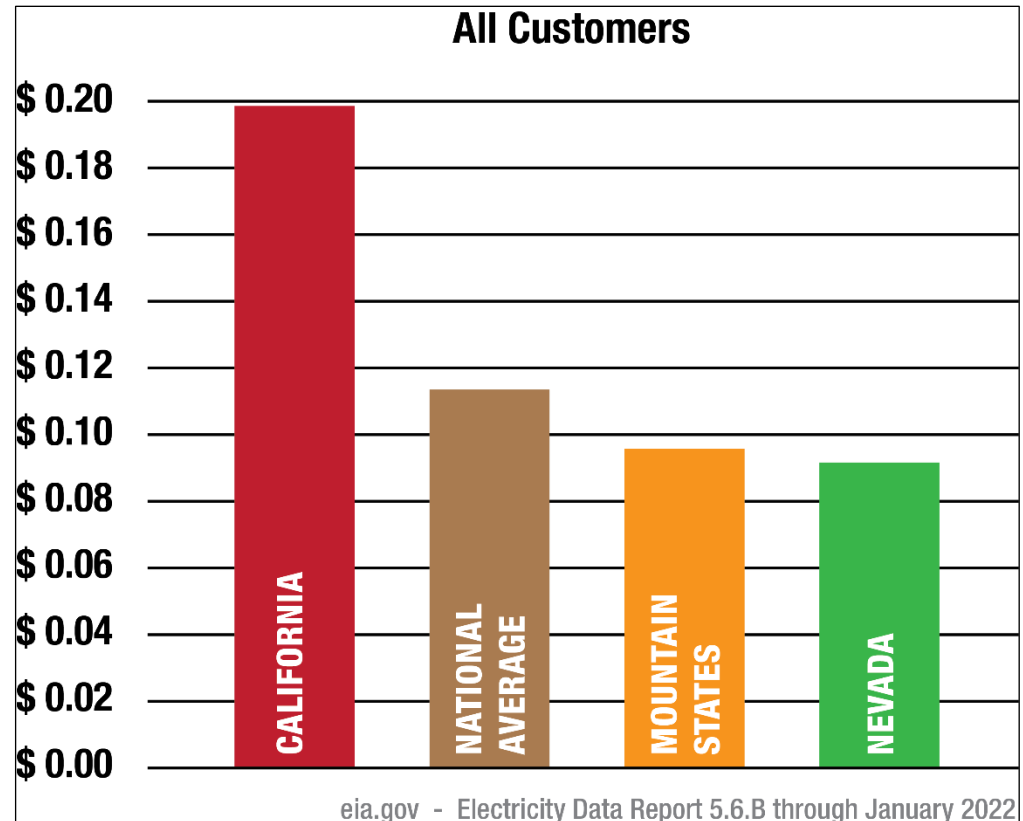
- More than a century meeting the needs of Nevadans
- 1.5 million customers across nearly 46,000 square miles
- Highly-skilled team of more than 2,300 Nevadans
- Provide economic activity, jobs and additional tax base through large purchases from vendors and contractors throughout the state
 - Total payroll in 2021: \$308 million
 - Total paid in taxes in 2021: \$228 million



Price & Value



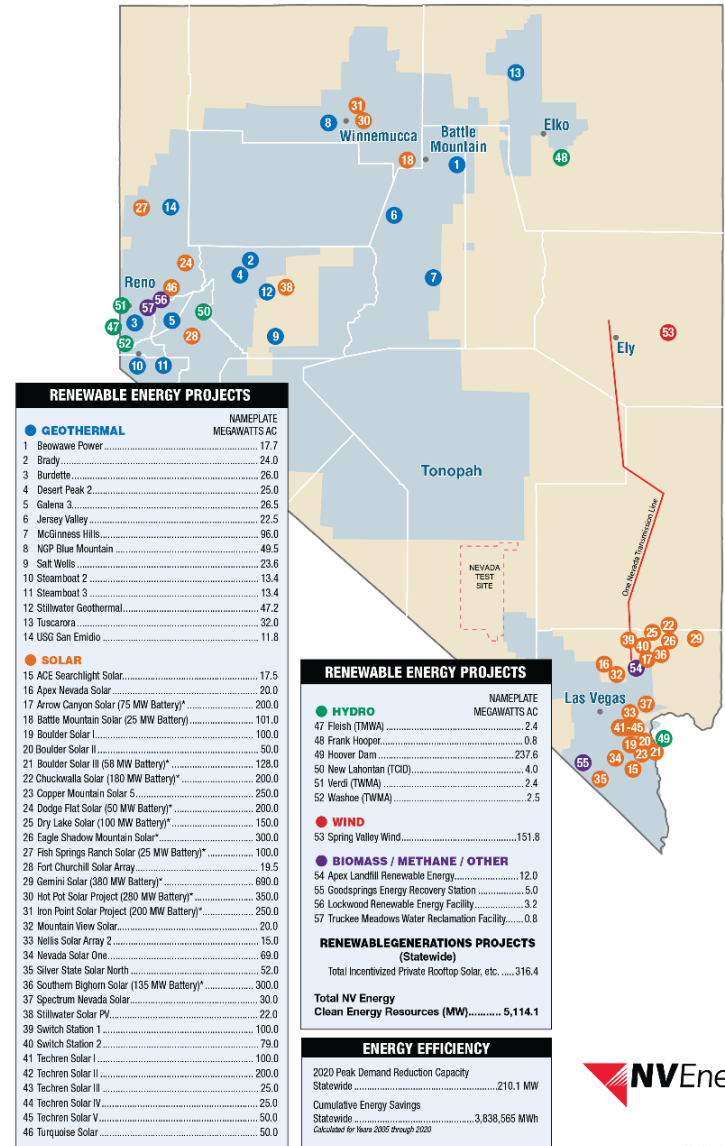
- Nevada's average retail price for all customers was 54% lower than California, 4.4% lower than other mountain states and 19.2% lower than the national average through October 2021
- Always working to procure the lowest cost and cleanest energy for the benefit of our customers and environment
- Flexible and convenient account management and payment options



Renewable Energy Overview



- Our company has long understood the benefits of renewable energy and signed its first geothermal contract in 1987 – a decade before our state’s renewable portfolio standard (RPS) was established.
- Senate Bill 358 increased the RPS to 50% by 2030 and NV Energy is positioned to comply with the RPS ahead of 2030.
- In 2021, NV Energy achieved a 30.7% RPS, surpassing the 24% requirement
- Our current portfolio consists of 57 large-scale geothermal, solar, solar plus storage, hydro, wind, biomass and supported rooftop solar projects both in service and under development.



* In development or under construction.

Long-Term Storage Solutions

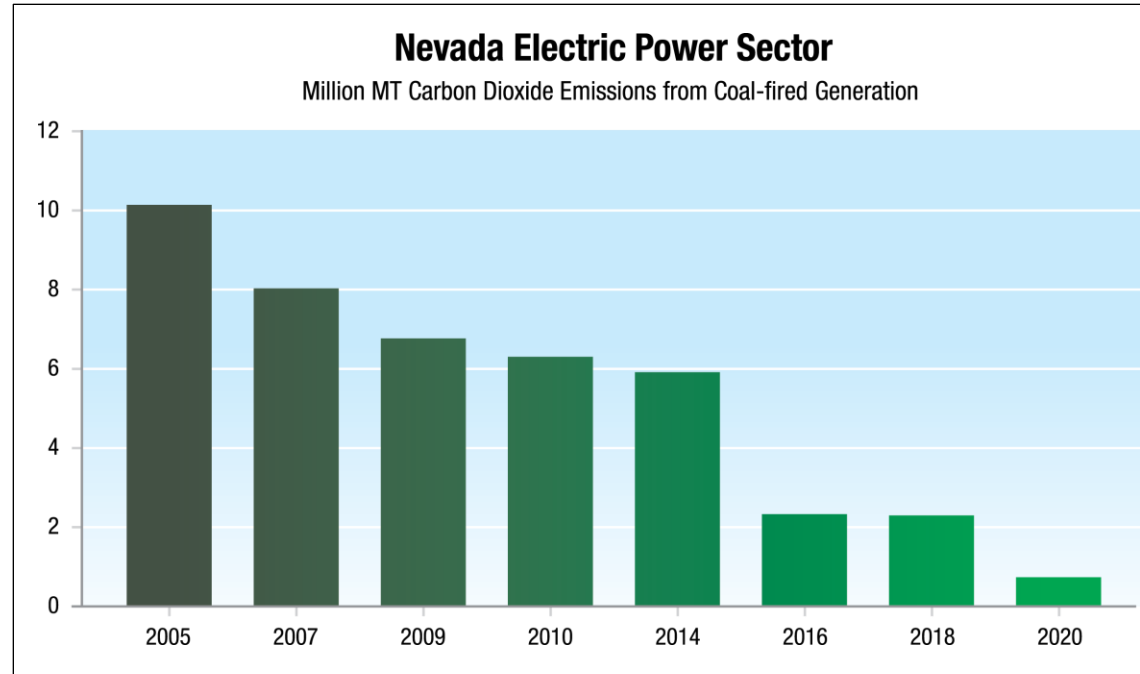


- NV Energy has 1,533 megawatts of utility-scale battery storage currently in development
- This includes both stand-alone energy storage as well as battery capacity tied to more than 2,400 megawatts of new solar resources
- By using the new battery systems, NV Energy can store low-cost solar energy during the day then deliver it to its customers during the evening.
- We are including additional energy storage options in upcoming integrated resource plans
- Energy storage incentives are available for homes and businesses

Emissions Reduction



- Reduced carbon intensity by more than 50% since 2005
- No NV Energy-owned coal generation serving southern Nevada
- Newly approved solar plus storage projects will replace the coal fired North Valmy Generating Station by 2025



- Iron Point Solar Project: 250-megawatt solar photovoltaic system with 200 megawatts of battery storage
- Hot Pot Solar Project: 350-megawatt solar photovoltaic system with 280 megawatts of battery storage
- Will generate enough electricity to power 127,000 homes



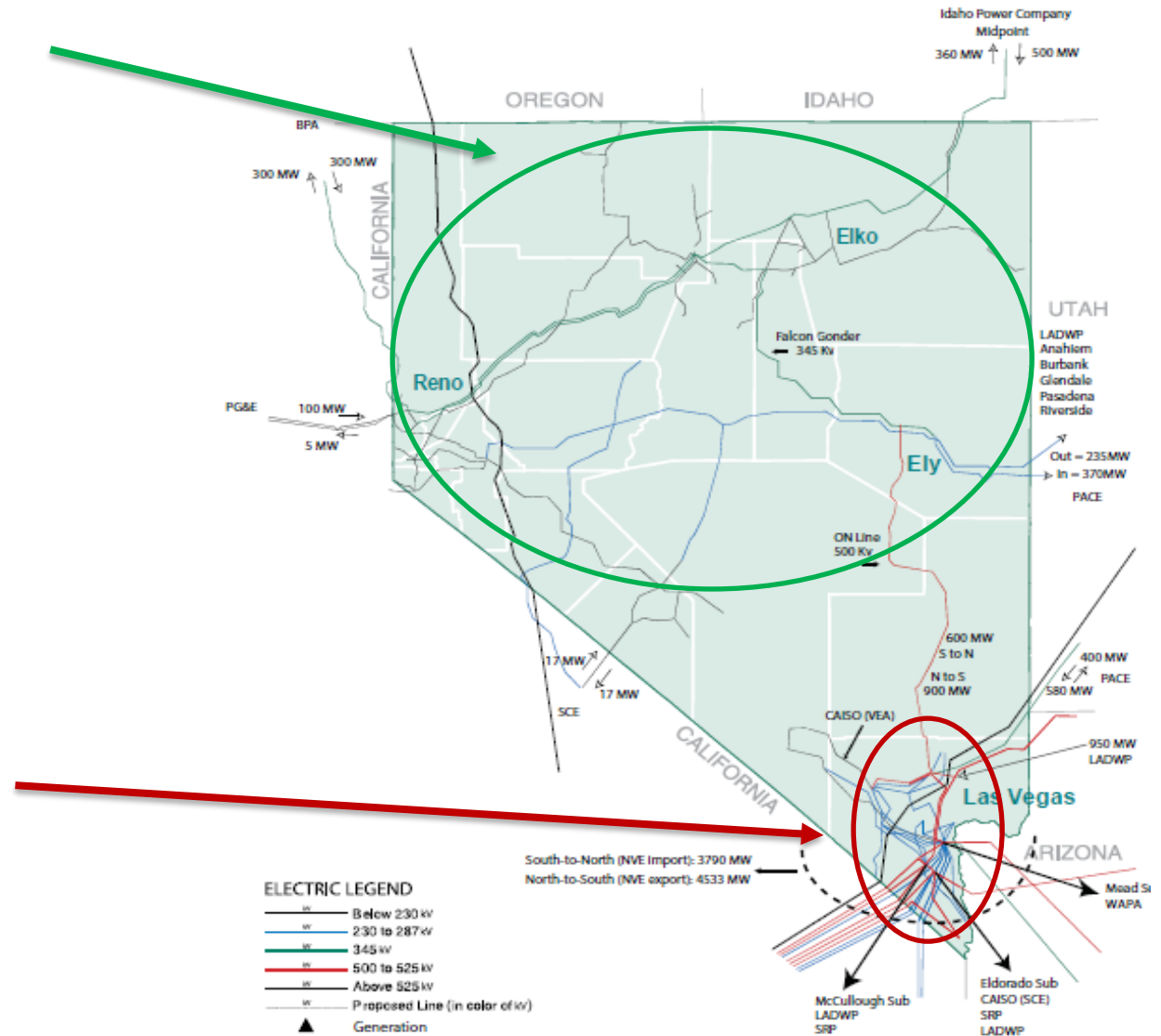
NV Energy Transmission

NV Energy's Existing Bulk Electric System



**Northern Nevada
Simultaneous Import Limit
1,275 Megawatts**

**Southern Nevada
Simultaneous Import Limit
5,200 Megawatts**



NV Energy's Greenlink Nevada Transmission Project



Transmission Infrastructure Plan covering 700 + miles within Nevada

- **Greenlink West – In Service December 2026/28**
 - Fort Churchill substation to Northwest substation 525 kV
 - Northwest substation to Harry Allen substation 525 kV
- **Greenlink North – In service December 2028**
 - Fort Churchill substation to Robinson Summit substation 525 kV
- **Common Ties – In Service December 2026**
 - Fort Churchill 525, 345, 230 and 120 kV substation expansion
 - Fort Churchill substation to Mira Loma substation 345 kV
 - Fort Churchill substation to Comstock Meadows substation 345 kV



Overview



Greenlink Nevada is a new renewable energy and electrical infrastructure initiative that will make Nevada a leader in the clean energy economy.

- Move Nevada closer to a future powered by 100% renewable energy and reduce Nevada's carbon footprint
- Generate \$690 million in economic activity and create nearly 4,000 good-paying jobs
- Improve system reliability and transfer capacity within the state and to other states
- Lower energy costs are expected to offset the cost of construction



State Regulatory and Legislative Project Status



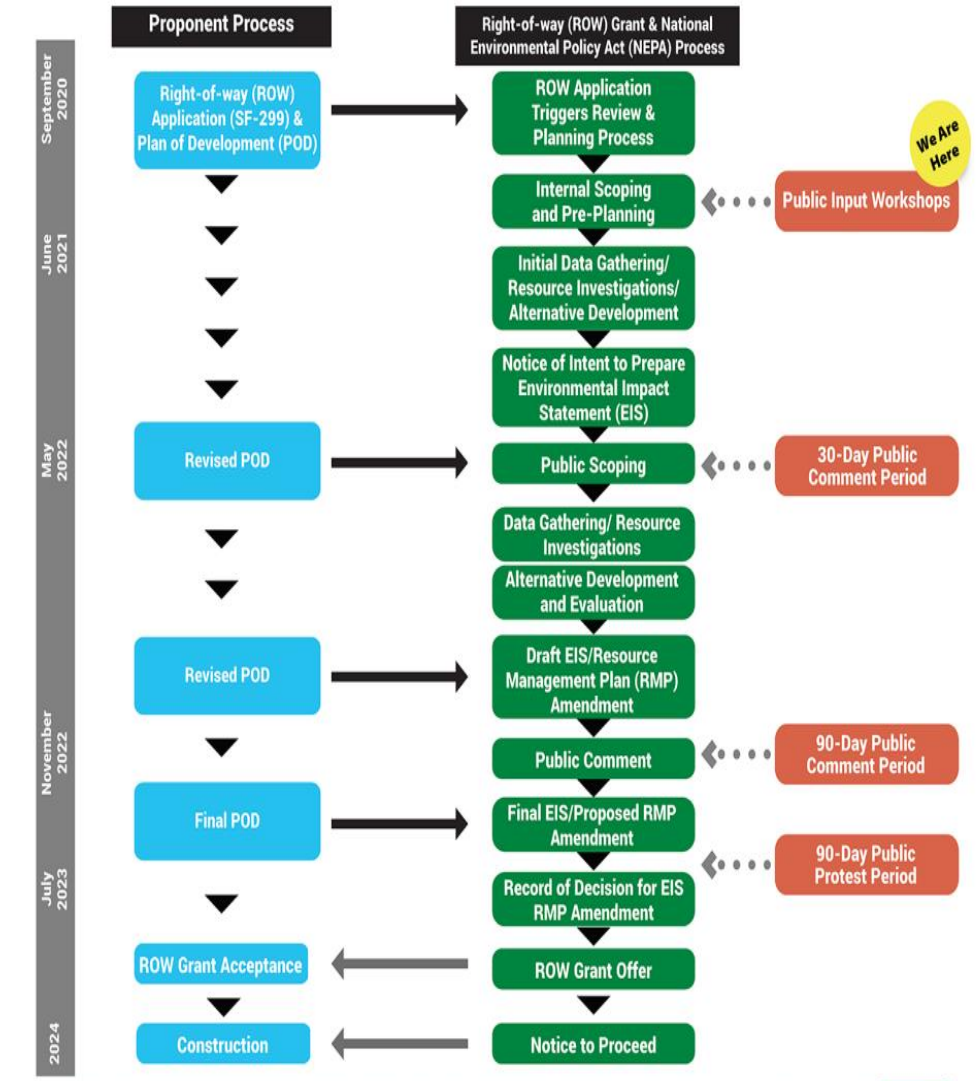
- July 2020
 - NV Energy filed an integrated resource plan amendment with the Public Utilities Commission of Nevada requesting approvals for the Greenlink Nevada Transmission Project
 - NV Energy submitted Standard Forms 299 and Plans of Development with the Bureau of Land Management for Greenlink West and Greenlink North
- March 2021
 - Public Utilities Commission of Nevada approved full-project development and construction of most of Greenlink West and 345-kV transmission lines into the Reno area by December 31, 2026, and permitting for Greenlink North and final section of Greenlink West
- July 2021
 - Nevada Governor signed an omnibus energy bill, Senate Bill 448, into law which requires NV Energy to file an infrastructure plan with our public utilities commission by September 1, 2021, to complete Greenlink North and the final section of Greenlink West by December 31, 2028
- September 2021
 - NV Energy filed an amendment to our integrated resource plan requesting approval to construct Greenlink North and Greenlink West from Harry Allen to Northwest by December 31, 2028
- January 2022
 - Public Utilities Commission of Nevada approved completing construction of Greenlink North and Greenlink West from Harry Allen to Northwest by December 31, 2028

Planning Process and Schedule for Greenlink West



- Bureau of Land Management is the lead federal agency for NV Energy's Right of Way application
 - Prepare EIS in compliance with the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA)
 - Complete Government-to-Government Consultation
 - Issue applicable Right of Ways
- Greenlink West planning, data gathering, route development and public input in process. Record of Decision by July 2023
- Greenlink North has an independent schedule: internal scoping and pre-planning starting November 2021
- For more information

<https://www.blm.gov/nv-greenlink-west-project-2021>



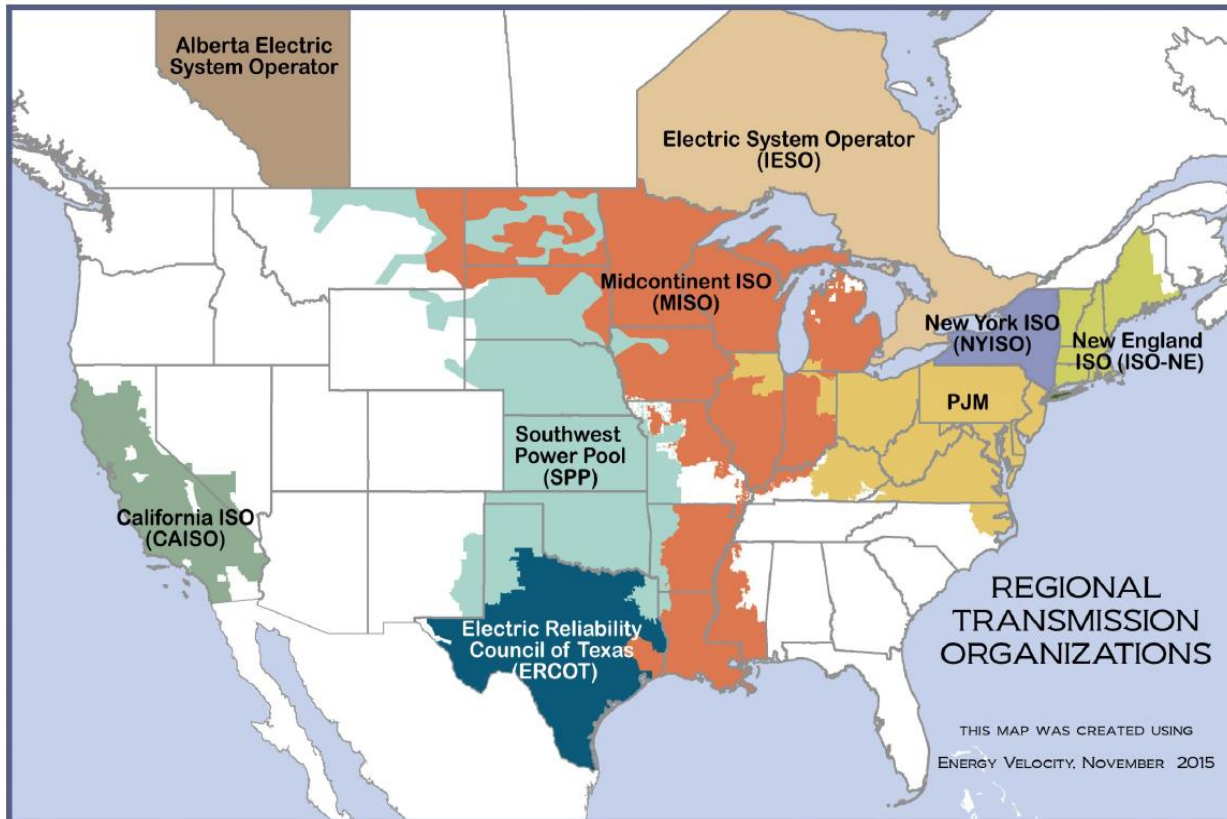


Western Energy Market Initiatives

Types of Wholesale Energy Markets



- **“Bilateral market”** - individual utilities in a Balancing Authority Area are responsible for keeping supply and demand balanced; power is procured in separate transactions with transmission service arranged under a federally regulated open-access transmission tariff;



- **“Organized markets”** -- a regional transmission organization (RTO) or independent system operator (ISO) is the regional Balancing Authority Area; operates the transmission systems of participating utilities; and conducts bid-based markets

Organized Market Attributes



- Bid-based markets (day-ahead energy, real-time energy, ancillary services)
- Minimize the cost of generating enough electricity to meet load by using the least cost set of available generators possible given limitations of the transmission system -- known as “least-cost, security-constrained dispatch”
- All RTOs and ISOs use a form of pricing called locational marginal pricing (LMP)
 - the LMP is the cost of providing one more megawatt of power at a specific location on the grid
 - the LMPs serves as a dispatch signal -- if the LMP is at or above a generator’s offer price, the offer is taken and the generator is paid at the LMP; if the LMP is below the offer, the offer is not accepted and the generator is not used
- RTOs approved by the Federal Energy Regulatory Commission include consolidated balancing area operations, regional transmission planning, and a resource adequacy program

Western Energy Imbalance Market



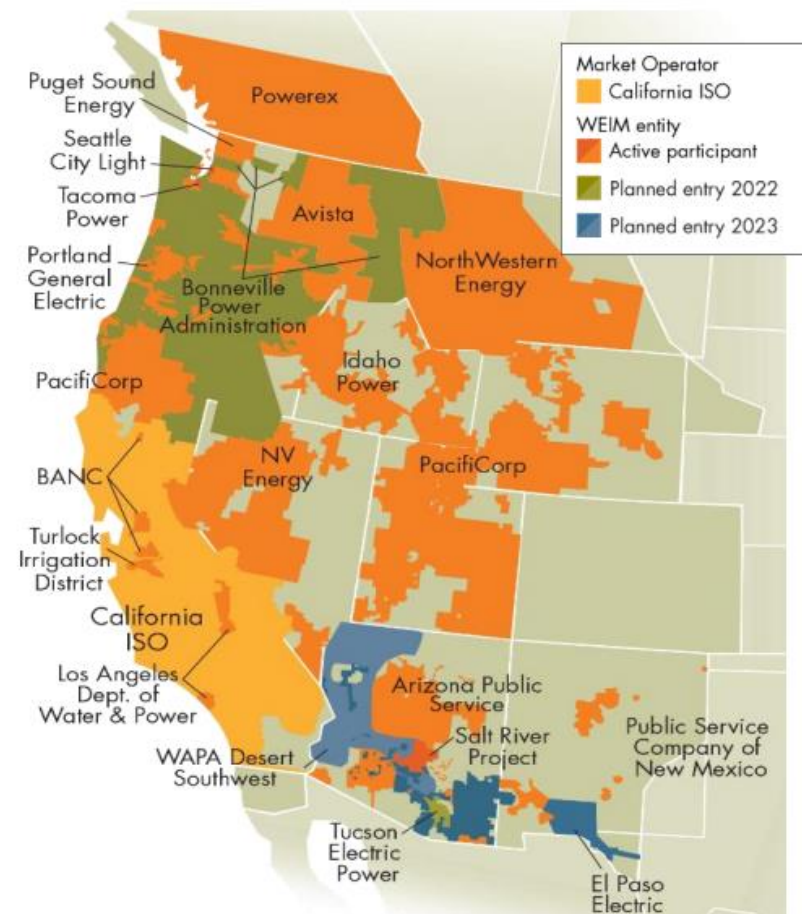
CUMMULATIVE BENEFITS TO DATE

- NV Energy benefits to date: **\$164.25 million**
- Regional benefits to date: **\$2.1 billion**
- Benefits: Reduced costs to customers, situational awareness, renewable integration, utilization of existing transmission system

	2016	2017	2018	2019	2020	2021	2022
January	0.34	1.07	0.87	1.09	1.10	1.36	1.36
February	0.75	1.31	2.07	2.20	1.80	10.99	1.61
March	0.62	1.12	1.23	2.42	2.46	1.79	1.44
Q1 Total	1.70	3.50	4.17	5.71	5.36	14.14	4.41
April	1.09	2.37	2.55	1.23	2.34	1.52	
May	1.34	2.25	1.98	1.33	1.51	1.88	
June	2.77	1.08	0.81	2.06	0.88	2.80	
Q2 Total	5.20	5.70	5.34	4.62	4.73	6.20	
July	1.88	2.28	4.07	1.47	1.89	7.44	
August	2.16	3.41	4.96	1.52	4.18	3.08	
September	1.55	2.86	2.06	2.93	2.74	7.52	
Q3 Total	5.60	8.55	11.09	5.92	8.81	18.04	
October	1.00	2.63	1.73	2.47	3.73	2.87	
November	1.47	2.96	1.51	2.63	1.60	3.37	
December	0.60	0.86	1.71	1.52	0.39	3.14	
Q4 Total	3.07	6.45	4.95	6.62	5.72	9.38	
Annual Total	14.94	24.10	25.55	22.87	24.62	47.76	4.41

CONTINUED EXPANSION:

- 22 active participants by 2023 exceeding 80% of the demand in the Western Electric Coordinating Council



Extended Day-Ahead Market (EDAM)

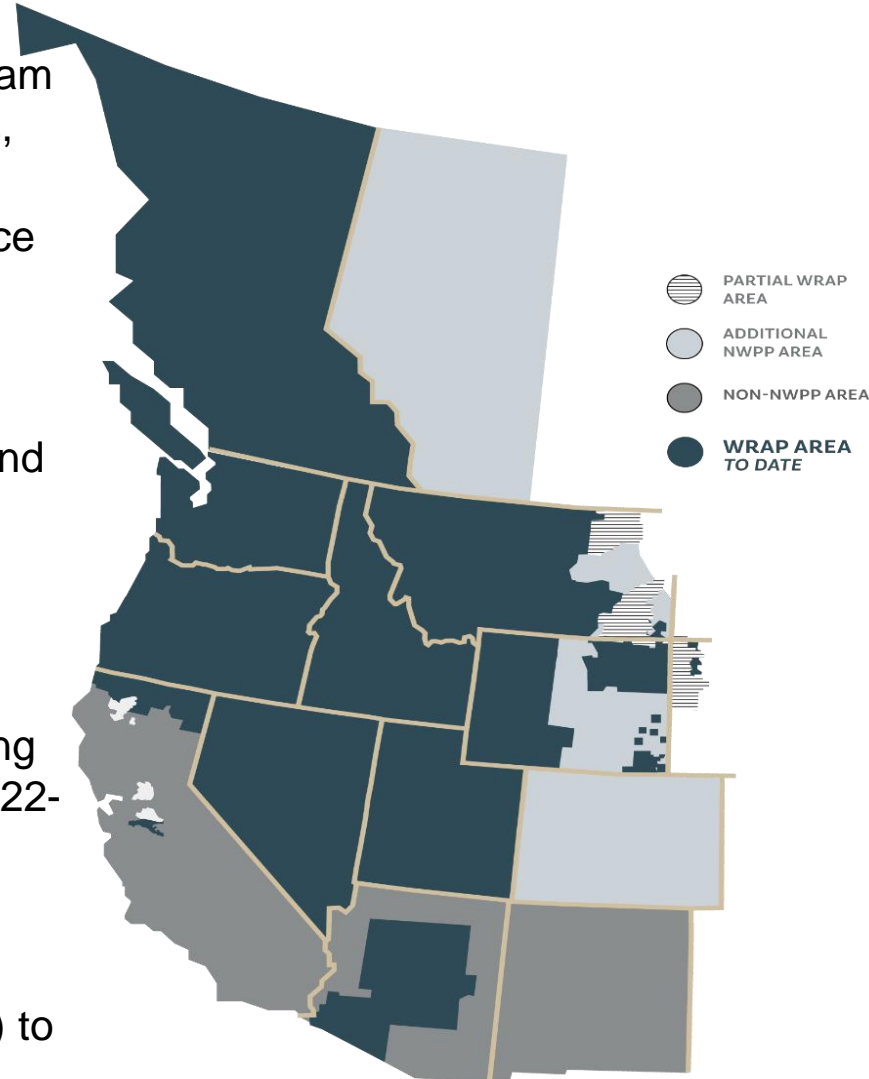


- The EDAM would extend the CAISO's day-ahead market to EIM Entities who choose to participate, leveraging existing systems
- Participation in CAISO day-ahead market **could** allow for:
 - Additional fuel and purchase power cost savings
 - Additional renewables integration
 - Opportunity to more effectively and efficiently manage flex reserves
- EDAM is not equivalent to becoming a full member of CAISO (or any other RTO)
 - Transmission control, planning and cost allocation remains with NV Energy
 - Resource Adequacy and Resource Planning will continue to remain with member utilities and their respective regulating authorities
- EDAM is not intended to result in any changes to state regulatory authority
- Proposed Schedule
 - CAISO publish an initial strawman proposal end of April 2022 for comment
 - Commitments and implementation during 2023
 - Go Live during 2024
- No determination as to whether NV Energy will participate: (1) review market details, (2) engage in customer specific cost benefit study, (3) PUCN approval

Western Resource Adequacy Program



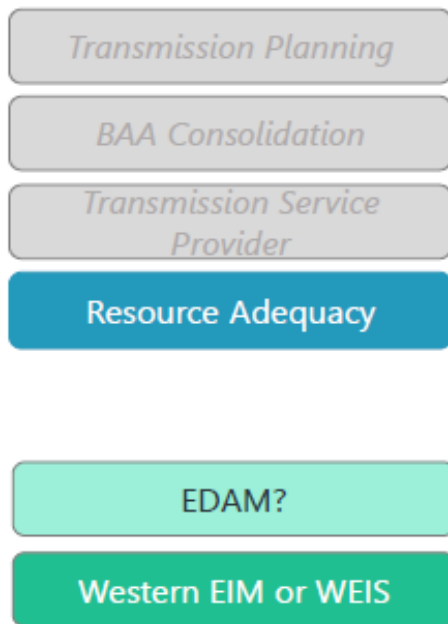
- Beginning in early 2019, a broad coalition began developing the Western Resource Adequacy Program (WRAP) in address resource adequacy challenges, establishing
 - Common measures for peak load and resource contribution to resource adequacy;
 - An approach for the allocation of the regional adequacy requirement;
 - Methods for accessing the regional diversity and unlocking investment savings;
- Status
 - SPP retained as program operator
 - Preparing a non-binding test of forward showing requirements for Summer 2022 and Winter 2022-23
 - Anticipate being fully functional by 2024
- NV Energy is participating in the current phase (3A) to determine long term feasibility and benefits



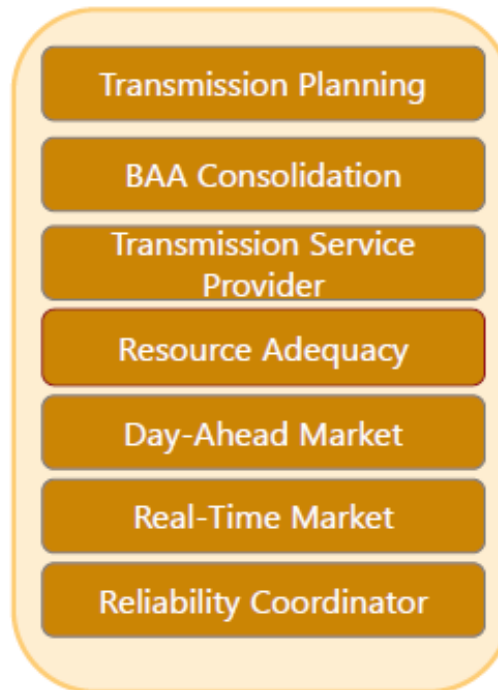


OPTIONS FOR EVOLVING WESTERN MARKETS

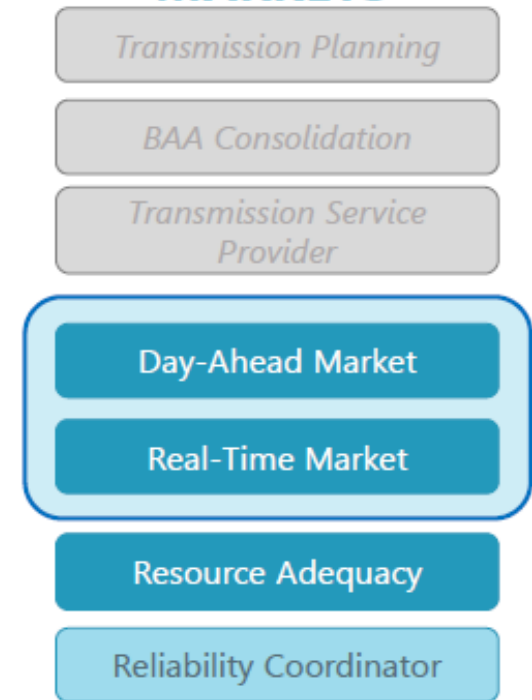
Current path?



RTO?



A new option: **MARKETS+**



Western Markets Exploratory Group



- Announced on October 5, 2021 – Fourteen utilities exploring a staged approach to new market services and solutions to achieve carbon reduction goals while supporting reliable, affordable service for customers
- Focused on developing long-term solutions to improve market efficiencies in the West and incorporating lessons learned from existing regional markets as well as other efforts across the West

- Western Markets Exploratory Group Members

- NV Energy (Nevada)
- PacifiCorp (Utah, Wyoming, Idaho, Oregon, Washington, California)
- Idaho Power (Idaho, Oregon)
- Public Service Colorado (Colorado)
- Black Hills Energy (Colorado)
- Plate River (Colorado)
- Public Service New Mexico (New Mexico)
- Arizona Public Service (Arizona)
- Salt River Project (Arizona)
- Tucson Electric Power (Arizona)
- Portland General Electric (Oregon)
- Puget Sound Energy (Washington)
- Seattle City Light (Washington)
- Los Angeles Department of Water and Power (California)

