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APPLICATION OF EL PASO ELECTRIC COMPANY TO CHANGE RATES	**§ § §**	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

WORKPAPERS TO

CROSS REBUTTAL TESTIMONY

OF

CLARENCE L. JOHNSON

ON BEHALF OF

CITY OF EL PASO

NOVEMBER 22, 2021

1

WECC

The Western Assessment of Resource Adequacy Report

December 18, 2020

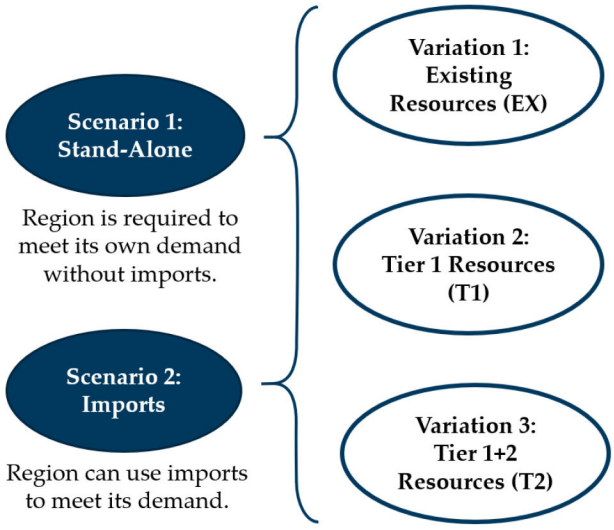
Executive Summary

Resource Adequacy is one component of Bulk Power System (BPS) reliability, and the subject of the Western Assessment. It is evident, based on the findings of the Western Assessment, that traditional methods of resource planning will not be adequate in the future due to the increasing variability on the system. If high levels of resource adequacy are to be preserved, resource planning methods and practices must adapt.

The Western Assessment is a probabilistic analysis of resource adequacy across the entire Western Interconnection at an hourly level for the next 10 years. WECC developed the assessment based on data collected from Balancing Authorities (BA) describing their demand and resource projections for that period. The Western Assessment evaluates two scenarios for each of five subregions in the West (See Figure 1). Each scenario comprises three variations (See Figure 2). These scenarios highlight a broad range of future resource possibilities, including known and expected resource retirements.

Figure 1: Western Assessment Subregions

Figure 2: Western Assessment Scenarios



Key Findings

Finding 1: Under Scenario 1, which requires each subregion to meet its own demand without imports, all subregions show some risk of unserved demand, regardless of the addition of Tier 1 and Tier 2 resources.

Under all variations studied in Scenario 1, there are hours with insufficient resources to supply demand and maintain planning reserve margins.

Finding 2: When subregions can import energy (Scenario 2) most hours of potential unserved demand can be resolved.

Under the most optimistic assumptions about future loads, resources, and imports, there are still hours in which the interconnection does not meet the ODITY threshold for all 10 years studied. The Desert Southwest (DSW) and Northwest Power Pool-Central (NWPP-C) subregions, and the southern California portion of the California and Mexico (CAMX) subregion are most at risk of experiencing unserved load.

ODITY

The One-Day-in-Ten-Years (ODITY) threshold represents a tolerance level of experiencing a loss of load event once every 10 years. The ODITY threshold translates to a 99.97% probability of being resource adequate over a 10-year period.

- The analysis indicates that in 2021, under Scenario 2 Variation 3, which includes the most optimistic generation availability assumptions, there could be one to eight hours in which subregions will not be able to meet the planning reserve margin required to maintain the ODITY threshold.
- The results worsen as the assumptions about resource construction and reliance on imports span to the more realistic, less optimistic end of the spectrum.

Finding 3: Increasing levels of variable resources drive the resource adequacy issues observed in this analysis.

While load variability affects resource adequacy, increasing levels of variable resources, like wind and solar, primarily drive the results of this analysis. The resource mix will continue to change rapidly, and variable resources will continue to grow as consumers demand and states push toward clean energy sources.

- Variable resources provide less certainty and fluctuate more than traditional baseload resources such as coal, natural gas, nuclear, and some hydro. Increasing levels of variable resources have led to inconsistent availability. As a consequence, resource planning becomes more challenging because a greater number of resources are not consistently available to meet load.
- Load variability continues to escalate due to factors such as the changing climate, increases in distributed energy resources, and electrification of the transportation sector. Behind-the-meter

resources, such as rooftop solar, also increase demand variability. Load growth is projected to stay relatively flat in the future due to the expected increase of behind-the-meter resources.

The compounding effect of retiring baseload resources and increasing variable resources contributes to the increased resource adequacy risks described in this assessment.

Finding 4: Historical approaches to resource planning, if unchanged, will result in a significant degradation of resource adequacy.

- The typical deterministic approach to resource planning identifies the peak demand hour, applies a flat, fixed planning reserve margin, and compares this information to the expected generation capacity. This approach assumes that if the highest demand hour is resource adequate, all other periods are as well. Historically, this approach was successful because system variability was relatively low, and entities could rely on the consistency of resource availability. However, as variability increases, the certainty of generation availability for imports decreases, meaning, reliance on imports becomes more precarious.
- Reduced availability of excess generation coupled with an increase in the demand for imports can result in multiple entities relying on the availability of the same imported resource. The result is a shortfall in generation to meet load, as was the case during the Western Heatwave Event of August 2020.

Western Heatwave Event, August 14–19, 2020

What: Extreme heatwave

Temperatures: 10°–20° F above normal

Resource demand: Increased beyond forecast levels

Resource supply: Shortages

Result: August 14 and 15, California shed load resulting in multiple blackouts

Recommendations

In the interest of achieving high-levels of system reliability, WECC recommends the following adaptations for planning entities:

Recommendation 1: Planning entities and their regulatory authorities should consider moving away from a fixed planning reserve margin to a probabilistically determined margin. As variability grows, a dynamic planning reserve margin will better ensure resource adequacy for all hours.

Recommendation 2: Planning entities should consider not only how much additional capacity is needed to mitigate variability, but also the expected availability of the resource. Understanding the differences in resource type availability is crucial to performing resource adequacy studies.

Recommendation 3: Planning entities should coordinate their resource planning efforts on an interconnection-wide basis each year to help ensure they are not all relying on the same imports to

maintain resource adequacy. This coordination will help subregions make assumptions about import availability in the context of the entire interconnection.

In addition to recommendations for planning entities, WECC will continue its stakeholder engagement on resource adequacy (e.g., Resource Adequacy Forum) and expand its engagement as needed to complete specific work.

		D1	D1	D1	D1	D1	D1
Rate	Description	12 Months Sep 2016	12 Months Dec 2016	12 Months Dec 2017	12 Months Dec 2018	12 Months Dec 2019	12 Months Dec 2020
TXRT01	Residential	41.85%	41.90%	42.66%	44.87%	47.10%	54.51%
TXRT02	Small Gene	5.57%	5.63%	6.08%	5.71%	5.32%	4.72%
TXRT07	Outdoor Re	0.05%	0.05%	0.04%	0.05%	0.05%	0.03%
TXRT08	Street Lighti	0.29%	0.31%	0.29%	0.31%	0.31%	0.30%
TXRT09	Traffic Signa	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
TXRT11	Municipal P	0.16%	0.16%	0.00%	0.00%	0.00%	0.00%
TXRT11TOU	Municipal P	1.59%	1.47%	1.75%	1.66%	1.77%	1.63%
TXRT15	Electrolytic	0.57%	0.58%	0.55%	0.54%	0.50%	0.52%
TXRTWH	Off Peak Wa	0.08%	0.08%	0.07%	0.06%	0.05%	0.04%
TXRT22	Irrigation Se	0.08%	0.08%	0.04%	0.06%	0.06%	0.10%
TXRT24	General Ser	28.22%	28.32%	28.33%	27.19%	26.33%	21.12%
TXRT25	Large Powe	8.17%	8.18%	8.03%	7.83%	7.80%	6.94%
TXRT26	Petroleum R	2.94%	3.03%	2.87%	3.04%	2.94%	2.83%
TXRT28	Private Area	0.24%	0.25%	0.23%	0.23%	0.23%	0.23%
TXRT30	Electric Furn	0.36%	0.36%	0.37%	0.36%	0.34%	0.34%
TXRT31	Military Res	3.08%	3.13%	3.18%	3.39%	3.29%	3.51%
TXRT34	Cotton Gin S	0.01%	0.02%	0.02%	0.02%	0.02%	0.01%
TXRT41	City and Co	6.73%	6.44%	5.46%	4.63%	3.87%	3.15%
Total		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

		D1	D1	D1	D1	D1	D1
Rate	Description	12 Months Sep 2016	12 Months Dec 2016	12 Months Dec 2017	12 Months Dec 2018	12 Months Dec 2019	12 Months Dec 2020
NMRT01	Residential	48.56%	43.41%	43.37%	46.27%	49.03%	55.73%
NMRT03	Small Gene	8.77%	13.90%	13.89%	12.32%	11.83%	10.69%
NMRT04	General Ser	19.31%	18.81%	18.42%	18.35%	17.72%	14.00%
NMRT05	Irrigation Se	2.82%	2.95%	2.82%	2.62%	1.90%	2.46%
NMRT07	City and Co	3.96%	3.74%	4.06%	3.96%	3.54%	2.50%
NMRT08	Municipal P	1.35%	1.54%	1.68%	1.54%	1.43%	1.77%
NMRT09	Large Powe	6.07%	6.21%	6.04%	5.61%	6.65%	5.89%
NMRT10	MRDS - WS	7.36%	7.41%	7.44%	2.54%	2.83%	2.32%
NMRT10-T1	MRDS - ALA				0.62%	0.52%	0.46%
NMRT10 -T	MRDS - HAFB				3.72%	2.52%	2.00%
NMRT11	Municipal St	0.10%	0.10%	0.08%	0.03%	0.06%	0.05%
NMRT12	Private Area	0.15%	0.16%	0.15%	0.17%	0.16%	0.16%
NMRT19	Seasonal-Ag	0.18%	0.35%	0.28%	0.29%	0.39%	0.51%
NMRT25	Outdoor Re	0.02%	0.02%	0.02%	0.02%	0.03%	0.01%
NMRT26	State Univer	1.36%	1.40%	1.75%	1.94%	1.41%	1.45%
Total		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Three Year	YoY E1 12 Months Dec 2016	YoY E1 12 Months Dec 2017	YoY E1 12 Months Dec 2018	YoY E1 12 Months Dec 2019	YoY E1 12 Months Dec 2020	
44.9%	0.05%	0.76%	2.22%	2.22%	7.41%	-21.47%
5.7%	0.05%	0.45%	-0.37%	-0.39%	-0.60%	17.26%
0.0%	0.00%	0.00%	0.01%	0.00%	-0.02%	36.17%
0.3%	0.02%	-0.02%	0.02%	0.00%	0.00%	-0.42%
0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	11.44%
0.0%	0.00%	-0.16%	0.00%	0.00%	0.00%	#DIV/0!
1.7%	-0.12%	0.28%	-0.09%	0.11%	-0.15%	5.90%
0.5%	0.01%	-0.03%	-0.01%	-0.04%	0.02%	1.63%
0.1%	0.00%	-0.01%	-0.01%	-0.01%	-0.01%	25.31%
0.1%	0.00%	-0.04%	0.02%	0.00%	0.03%	-72.67%
27.3%	0.10%	0.01%	-1.13%	-0.87%	-5.20%	22.57%
7.9%	0.01%	-0.15%	-0.20%	-0.04%	-0.86%	11.99%
3.0%	0.09%	-0.16%	0.17%	-0.10%	-0.12%	4.24%
0.2%	0.01%	-0.02%	0.00%	-0.01%	0.00%	1.84%
0.4%	0.00%	0.01%	0.00%	-0.02%	0.00%	4.52%
3.3%	0.05%	0.05%	0.21%	-0.10%	0.22%	-6.64%
0.0%	0.00%	0.01%	0.00%	0.00%	-0.01%	34.08%
4.7%	-0.29%	-0.98%	-0.82%	-0.76%	-0.72%	32.40%
100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	
44.88%						88.45%

Avg. decrease of 5 non-res classes **0.1769067**

allocator diff.		
0.0720	**34%**	**GS percent decrease since 2017**
0.0136	**29%**	**SGS percent decrease since 2017**

BLS Data Tables for COVID-19

See the following web page for BLS Excel files

https://www.bls.gov/cps/effects-of-the-coronavirus-covid-19-pandemic.htm#M

WECC Report

See the following web page for WECC load and resource assessment

file:///C:/Users/cjene/AppData/Local/Temp/Western%20Assessment%20of%2(

0Resource%20Adequacy%20Report%2020201218.pdf

Residential GWH

	20-Apr	20-May	20-Jun	20-Jul	20-Aug
2020	120	154.3	213.7	278.2	286.6
2019	132.1536	179.0176	253.963	336.2794	314.8355
	120	154.3	213.7	278.2	286.6
Difference	12.2	24.7	40.3	58.1	28.2
Percent Increase	110%	116%	119%	121%	110%

115.0% 2Q
112.5% 3Q
111.5% 4Q

Average Pe

See, Claren
Workpaper

20-Sep	20-Oct	20-Nov	20-Dec
284.1	206.3	121.1	136.1
303.7584	198.978	152.6147	152.3263
284.1	206.3	121.1	136.1
19.7	-7.3	31.5	16.2
107%	96%	126%	112%

ercent Increase After July 20 **110.2%**

ce Johnson Direct Testimony
· 2019 vs 2020 Sales