**BEFORE THE ARIZONA CORPORATION COMMISSION**

# Surrebuttal Testimony of David A. Schlissel

**In Docket No. E-01345A-19-0236**

**On Behalf Of**

**Tó Nizhoní Áni, San Juan Citizens Alliance, and Diné CARE ("Citizen Groups")**

**December 4, 2020**

## TABLE OF EXHIBITS

**Q. Please state your name and business address.**

A. My name is David A. Schlissel. I am the President of Schlissel Technical Consulting, Inc. and the Director of Resource Planning Analysis for the Institute for Energy Economics and Financial Analysis. My business address is 45 Horace Road, Belmont, MA 02478.

**Q. Have you previously filed testimony in this proceeding?**

A. Yes. I filed Direct Testimony on October 2, 2020 on behalf of Tó Nizhoní Áni, San Juan Citizens Alliance, and Diné CARE ("Citizen Groups").

**Q. What is the purpose of this surrebuttal testimony?**

A. I am responding to comments made in the Rebuttal Testimony of Brad J. Albert on Behalf of APS.

**Q. Are you addressing APS's response to Chairman Burns' Request in this testimony?**

A. No. I will be addressing issues related to APS's response to the Chairman's request by the December 31, 2020 deadline.

**Q. Do you have any comments on Mr. Albert's discussion of the lessons to be learned from the rolling blackouts in California on August 14th and 15th?**

A. Yes. Mr. Albert accurately quotes from the California Independent System Operator ("CAISO"), California Public Utilities Commission ("CPUC"), and California Energy Commission's ("CEC") October 6, 2020 Preliminary Root Cause Analysis.[1] However, there are a number of key points concerning the outages that he fails to discuss.

[1] Rebuttal Testimony of Brad J. Albert at pages 9-10 (Nov. 6, 2020) (hereafter "Albert Surrebuttal"), *available at* https://docket.images.azcc.gov/E000009981.pdf (quoting CAISO, CPUC, and CEC, *Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm* (Oct. 6, 2020) (hereafter "*Preliminary Root Cause Analysis*"), *available at* http://www.caiso.com/Documents/Preliminary-Root-Cause-Analysis-Rotating-Outages-August-2020.pdf).

First, these three organizations—who are responsible for the reliability of the grid—did not conclude that California had moved too fast in transitioning to renewable resources. In fact, one of the immediate actions recommended in the October 6th Preliminary Root Cause Analysis was that the regulatory and resource procurement processes be expedited to develop additional resources that can be online by 2021.[2] In other words, in hindsight, California realized it should have moved *faster* in securing transition resources, not that it was moving too fast.

Second, one of the contributory factors of the August 14th outages was that "[t]he **natural gas fleet** collectively experienced 1,400 MW to 2,000 MW of forced outages (*i.e.*, derating or lowering the resource's available capacity) largely attributed to the extreme heat, and day-of outages".[3] [Emphasis in original] For example, a 494 MW gas-fired unit in Riverside County, CA, had experienced a forced outage at 2:57 pm on that day due to plant trouble.[4]

Finally, the outages on both days were caused by a region-wide extreme heat storm, identified as a one-in-35-year event by the Chairman of the CPUC.[5]

In short, it appears that California is trying to learn what it can from the August events on how to prevent similar outages in the future. That is prudent. However, it is not backtracking from its commitments to clean energy, nor is it clinging to fossil-fired generation despite the decreasing economic viability of this power resource.

**Q. Is it appropriate for APS also to apply the lessons learned from the August events to improve the reliability of its grid?**

A. Absolutely.

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[2] *Preliminary Root Cause Analysis* at page 65, http://www.caiso.com/Documents/Preliminary-Root-Cause-Analysis-Rotating-Outages-August-2020.pdf).
[3] *Id.* at page 8.
[4] *Id.* at page 34.
[5] California ISO October 6, 2020 Press Release, "CAISO, CPUC, and CEC Issue Preliminary Report on Causes of August Rotating Outages" at page 2, *available at* http://www.caiso.com/Documents/CAISO-CPUC-CEC-Issue-Preliminary-Report-Causes-August-Rotating-Outages.pdf.

**Q. Is there any reason to expect that APS should not be able to fully plan for the transition from Four Corners to a more sustainable energy grid over the next five or six years?**

A. No.

**Q. Figure 2 in Mr. Albert's rebuttal testimony compares the amount of battery storage that APS says would have to be installed to replace Four Corners with the total amount of U.S. battery storage installed in 2012 to 2019. Is this the appropriate comparison?**

A. No. I am not suggesting that APS retire Four Corners today, tomorrow or at anytime in the next couple of years, although I would note that Public Service Company of New Mexico is currently working to obtain enough renewable capacity to be capable of replacing its share of San Juan Units 1 and 4 when those units are retired in mid-2022.[6] Other utilities around the nation are similarly planning to replace retired coal plants entirely, or primarily, with portfolios consisting of renewable resources.[7]

Mr. Albert discusses the potential retirement of Four Corners in 2026, six years from now. In that time, far more battery storage capacity will be installed in the U.S. and important lessons will be learned in the construction, integration and operation of that capacity. This will significantly decrease the "risk of reliance" on battery storage technology cited by Mr. Albert.[8]

Therefore, a more appropriate comparison would be between how much battery storage APS now assumes will be needed to replace Four Corners if it was retired

[6] New Mexico Public Regulation Commission Case No. 19-00195-UT, July 29, 2020. Available at https://www.pnmresources.com/~/media/Files/P/PNM-Resources/rates-and-filings/San%20Juan%20Abandonment/19-00195-UT%20Order%20on%20Recommended%20Decision%20on%20Replacement%20Resources%20%20Part%20II.pdf.

[7] For example, see NIPSCO 2018 Integrated Resource Plan, at pages 6 and 7, available at https://www.in.gov/iurc/files/2018%20NIPSCO%20IRP.pdf and Great River Energy plans to replace coal with low cost renewables and market energy purchases. May 7, 2020, available at https://greatriverenergy.com/major-power-supply-changes-to-reduce-costs-to-member-owner-cooperatives/

[8] Albert Surrebuttal at pages 16 & 17, https://docket.images.azcc.gov/E000009981.pdf.

in 2026 with how much new storage capacity is expected to be added to the grid over the the next five or six years. For example, the consulting firm Wood Mackenzie has projected that the annual deployment of new battery storage will grow from 1.2 gigawatts (GW) in 2021 to 7.5 GW in 2025, totalling more than 20 GW of new battery storage being deployed in just the five year period.[9] Clearly, this will be far more battery storage than APS would have to install to replace Four Corners.

**Q. Is it reasonable to focus only on Four Corners' EAF in the summer as Mr. Albert has done in his rebuttal testimony?**

A. No. Although it is important that the units are reliable in the summer, their reliability in non-summer months also is important as it affects the rates paid by APS's customers and the economics of continuing to operate the units.

**Q. Does Mr. Albert address the Four Corners Equivalent Forced Outage Rate (EFOR) data in your Direct Testimony?**

A. No. He has ignored it entirely.

**Q. Is this reasonable?**

A. No. EFOR is an key indicator of a unit's reliability as it represents the probability that a generating unit will not be available due to forced outages or forced deratings.

**Q. Does Mr. Albert agree that a unit's EFOR rate is a key indicator of its reliability?**

A. Yes.[10]

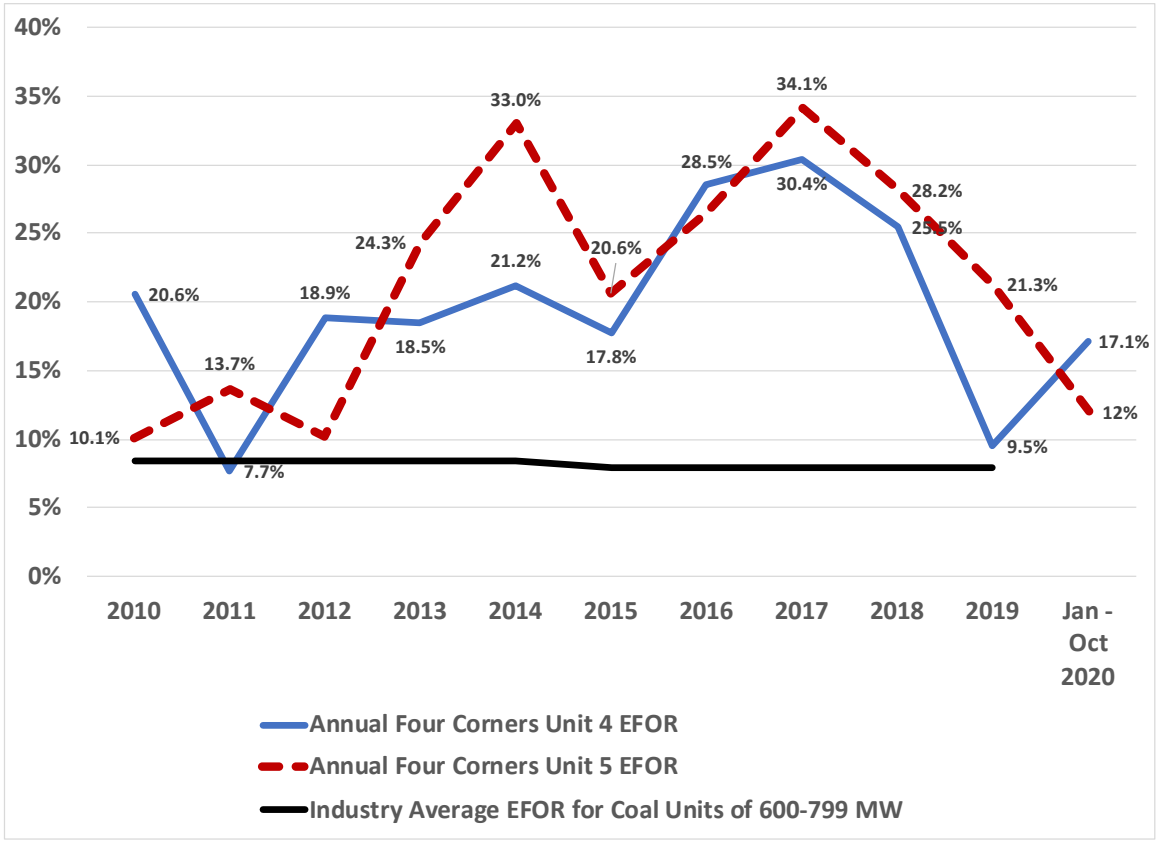
[9] Wood Mackenzie *U.S. Energy Storage Monitor, Q4 2020*, available at https://www.woodmac.com/reports/power-markets-us-energy-storage-monitor-q4-2020-454455

[10] APS response to Citizen Groups' Data Request 3.9, attached as Exhibit DAS-15.

**Q. Have you updated Figure 6 from your Direct Testimony to include EFOR data from 2019 and 2020?**

A. Yes. The updated data is presented in Figure R1 below.

**Figure R1: Four Corners Annual Equivalent Forced Outage (EFOR) Rates[11]**




As Figure R1 shows, the annual reliability of both Four Corners units has been substantially worse than the approximately 8% EFOR experienced by comparably sized coal units since 2010.

[11] Note that APS agrees that the EFOR data in Figure R1 is not confidential or highly confidential.

**Q. What is your overall conclusion?**

A. The testimony in this case demonstrates it is reasonably likely that Four Corners Units 4 and 5 will be retired earlier, and perhaps significantly earlier, than the currently planned 2031 shut-down date. This is because increasing amounts of low-cost, reliable renewable resources and battery storage have been added to the Western grid in recent years, and much more will be online in the coming years. In the meantime, Four Corners has become an unreliable and expensive generator and is likely to become increasingly unreliable and expensive if it continues to operate through 2031. The historic fires experienced in California were not caused by an aggressive transition to renewable resources—on the contrary, CAISO, CPUC, and CEC concluded that California should have procured such resources more quickly. For the reasons stated above and in my Direct Testimony, the Commission should approve the Just and Equitable Transition package offered by APS in its surrebuttal testimony,[12] along with the Advanced Energy Mechanism APS has proposed to fund this package.

**Q. Does this complete your testimony?**

A. Yes.

[12] *See* Surrebuttal Testimony of Barbara D. Lockwood at pages 19-23 (Nov. 6, 2020), *available at* https://docket.images.azcc.gov/E000009981.pdf.