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ELEMENT RESOURCES

910 Louisiana Street Ste. 5030, Houston, Texas 77002 | 8880 Rio San Diego Drive Ste. 1095, San Diego, CA 92108

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California Energy Commission
Dockets Unit, MS-4
1516 Ninth Street, Sacramento, CA 95814
Submitted via email

Re: Comments of Element Resources, Inc. on the Draft Staff Report, *"Clean and Renewable Hydrogen for the Electricity and Transportation Sectors"* (CEC-200-2026-008-SD; TN 270419) — Docket No. 22-OII-02 (Gas Decarbonization)

Dear Commissioners and Staff:

Element Resources, Inc. ("Element") appreciates the opportunity to comment on the Draft Staff Report. The report's central conclusions — that clean, renewable hydrogen's most valuable near-term role in the power sector is as **firm, dispatchable capacity for multi-day and seasonal reliability**, that delivery and storage infrastructure (dedicated pipelines and bulk geologic storage) are the principal scaling challenges, and that the federal tax-credit landscape is a decisive near-term variable — align closely with what Element is building today in the Antelope Valley. We offer the following comments and a real-world California case study in support of the report.

1. A real California green-hydrogen project: the Lancaster Clean Energy Center (LCEC)

Element's Lancaster Clean Energy Center (LCEC), in Lancaster (Los Angeles County) will produce **100% renewable, electrolytic hydrogen**. The facility has already received its conditional use permit and has begun construction of key equipment. The facility integrates four elements behind the meter: (i) a dedicated solar PV plant; (ii) BESS; (iii) PEM electrolysis; and (iv) hydrogen liquefaction and storage. The facility incorporates a **proprietary system that firms intermittent solar output to deliver reliable, round-the-clock green-hydrogen production** — i.e., fully renewable hydrogen for daily operations, not only when the sun is shining.

In addition to LCEC, Element's Antelope Valley production is designed to scale in phases — from an initial commercial facility delivered by truck, through regional pipeline distribution, to a regional hub on the order of ~215,000 tons per year of renewable hydrogen. Because firm offtake commitments lead operations by roughly three years, early commitment is the critical path to reaching mass scale. This phased, financeable ramp from first commercial production to a regional hub is the trajectory we encourage the Commission to weigh in its infrastructure and reliability planning.

Recommendation: the report's hydrogen-production inventory (Table 3) and electrolysis discussion should reflect permitted and under-construction electrolytic projects such as LCEC, so the Commission's record captures genuine in-state, behind-the-meter renewable electrolytic capacity — distinct from grid-tied or reformation pathways.

2. The report's "firm, dispatchable" finding is deployable in-basin

The report devotes substantial analysis to LADWP's power-sector hydrogen demand under LA100. Element's Antelope Valley production is positioned to supply renewable hydrogen to LADWP's existing in-basin, gas-fired generating fleet — for blending in the near term and, over time, for deeper blends and, ultimately, full conversion. This puts the report's central finding into practice with real assets: hydrogen displaces natural gas in existing, dispatchable in-basin turbines, preserving firm, weather-independent capacity behind the Los Angeles load pocket while avoiding substantial new long-distance transmission. In-basin demand grows from a near-term blending anchor to major-hub quantities as blend levels rise across the fleet and units convert toward 100% hydrogen.

3. The evolution to regional distribution (pipeline) and bulk (geologic) storage

Element's delivery strategy mirrors the report's transport-and-storage analysis and matures in three stages:

- **Phase 1 — Truck and rail delivery:** liquid hydrogen delivered by truck and by rail from LCEC to forward distribution areas near anchor plants, with no utility-infrastructure prerequisite.
- **Phase 2–3 — Regional distribution pipeline:** an in-basin connection corridor scaling to a dedicated Antelope Valley–LA Basin transmission pipeline, directly addressing the report's finding that dedicated pipelines are a key delivery challenge.
- **Phase 4 — Bulk geologic storage:** salt-cavern/subsurface storage to provide the multi-day and seasonal firming the report identifies as hydrogen's highest-value power-sector function.

On bulk storage, Element is directly responsive to the report's observation that large-scale underground hydrogen storage is not yet established at scale in the United States. Through its **Hystorage** initiative, Element is developing hydrogen storage that buffers variable renewable hydrogen production against variable demand — providing the multi-day and seasonal firming the report identifies as hydrogen's highest-value power-sector role, and offering California a scalable, in-state pathway to bulk storage that complements salt-cavern capacity. Element would welcome the opportunity to share further detail with staff under appropriate confidentiality.

Element encourages the Commission to revisit the finding in Table 8 (p. 67) and Table 11 (p. 76) that salt-cavern storage is "not possible" in California due to the absence of salt formations. That conclusion holds for diapiric salt domes — California's tectonic history did not produce Gulf Coast- or Mountain West-style domes — but California has documented, currently and historically mined bedded rock-salt deposits in its desert playa basins. USGS core logs from Bristol, Cadiz, and Danby Dry Lakes report a Bristol Dry Lake core drilled to 1,007 feet, penetrating alternating dense clay and salt, with recovered core approximately 40 percent halite and ranging from disseminated crystals to massive beds more than eight feet thick.[1] USGS work on Searles Lake documents multiple subsurface salt bodies and identifies Upper Salt and Lower Salt units with typical thicknesses of about 15 meters and 12 meters, respectively.[2] DOE/NETL materials further distinguish bedded-salt storage from domal-salt storage, noting that natural-gas storage caverns have been developed in bedded salt formations in the Michigan and Appalachian Basins.[3] DOE's SHASTA work has also expanded the technical basis for assessing underground hydrogen storage beyond salt-dome settings.[4]. Bedded salt is a recognized, if less technically mature, cavern-storage medium — DOE's National Energy Technology Laboratory documents operating bedded-salt gas-storage caverns in the Michigan and Appalachian Basins — distinct from, but not addressed by, the report's domal-salt-focused finding. Element recommends the Commission revise Tables 8/11 to reflect the potential for salt-cavern storage in California rather than salt formations in generality, and direct staff to evaluate bedded-salt cavern feasibility in the greater Mohave region, perhaps inclusive of engaging contractors for additional core and geophysical work needed to confirm contiguous salt thickness, as part of the state's bulk hydrogen storage strategy.

As an illustrative order of magnitude only, a representative cavern roughly 300 feet tall and 200 feet in diameter (~36.5 million cubic feet) could hold on the order of 24,000 metric tons of gas at 350 bar; with about 20% reserved as non-recoverable cushion gas, working capacity would be approximately 19,200 tons per cavern, at an estimated capital cost on the order of $35 million — figures that would need to be confirmed against site-specific geotechnical data before being relied upon.

We also encourage the Commission to expand its treatment of **Liquid Organic Hydrogen Carriers (LOHCs)**, which the draft sets aside. For long-duration storage and flexible regional distribution, LOHCs and other chemical carriers merit fuller analysis alongside compressed/liquid hydrogen and geologic storage; Element would welcome the opportunity to contribute data.

4. The federal tax-credit stack supports California electrolytic hydrogen — if projects start on time

The report rightly flags federal tax-credit uncertainty as a near-term variable. Element's experience is that the current stack remains **robust and decisive** for in-state renewable electrolytic projects — provided projects can meet the beginning-of-construction deadlines set by the One Big Beautiful Bill Act (BBB).

While we appreciate the attention to 45V PTCs, the Element team would also like to note that clean hydrogen production can also benefit from a range of other tax incentives. As an example, the LCEC project is modeled to capture the following federal credits across the facility:

Project element	Credit	Potential Value (with prevailing-wage & apprenticeship)
Green hydrogen (electrolysis)	**§45V PTC**	$3.00 / kg — top tier (lifecycle <0.45 kg CO_2e/kg via 45VH2-GREET), 10 years; direct-pay or transferable
Solar PV (behind-the-meter)	**§45Y PTC**	1.5¢ / kWh + 10% Energy Community bonus
Battery storage (vanadium flow)	**§48E ITC**	30% + 10% Energy Community = 40% of basis
H_2 liquefaction & storage	**§48E ITC**	30% + 10% Energy Community = 40% of basis

LCEC sits in a qualified Energy Community (the Los Angeles–Long Beach–Anaheim MSA), adding a 10% bonus to the ITC/PTC elements, and the §45V credit can be monetized via direct pay or transfer.

The binding constraint is timing: the §45V hydrogen credit requires construction to begin before January 1, 2028, and the solar/storage credits hinge on construction-start (and foreign-content) deadlines, including a July 4, 2026 45Y deadline. We therefore urge the Commission to align state permitting, interconnection, and incentive programs to help California projects hit these federal windows — the single most consequential action the state can take to convert the report's analysis into built capacity.

5. Summary of recommendations

- Reflect permitted and under-construction in-state renewable electrolytic projects (e.g., LCEC) in the report's production inventory.
- Recognize in-basin hydrogen blending and firming of existing dispatchable gas turbines as a near-term, deployable expression of the report's "firm capacity" finding.
- Prioritize dedicated regional distribution pipelines and bulk geologic/subsurface storage (e.g., Element's Hystorage initiative) in California's hydrogen infrastructure planning.
- Revisit salt cavern storage capability within California and update Tables 8/11 accordingly.
- Expand the report's analysis of LOHCs and chemical carriers for long-duration storage and flexible distribution.
- Align state programs and timelines with the federal §45V / §48E / §45Y and/or other relevant tax incentive construction-start deadlines so California projects are not stranded by the BBB windows.

6. References

[1] U.S. Geological Survey, Core logs from Bristol, Cadiz, and Danby Dry Lakes, San Bernardino County, California, Bulletin 1045-D.

[2] U.S. Geological Survey, Subsurface Stratigraphy and Geochemistry of Late Quaternary Evaporites, Searles Lake, California, Professional Paper 1043.

[3] U.S. Department of Energy, National Energy Technology Laboratory, Cavern Roof Stability for Natural Gas Storage in Bedded Salt.

[4] U.S. Department of Energy, DOE Three-Year U.S. Underground Hydrogen Storage Assessment Expands Future Opportunities in the Subsurface.

Element thanks the Commission for a thorough and timely report and would welcome the opportunity to brief staff on its Antelope Valley project and the Hystorage program. Please contact us at the address below.

Respectfully submitted,

Element Resources, Inc.

Steve Meheen
Chief Executive
SMeheen@elementresources.com
www.elementresources.com