

Growth Pays for Growth

An Assessment of Extra-Large Load Generation Costs and Revenues on the APS System, 2022–2025

Executive Summary

APS's evaluation of generation costs and revenues from 2022 through 2025 shows that residential customers did not subsidize extra-large load customer growth. In fact, extra-large load customers paid more through base fuel and Power Supply Adjustor (PSA) charges than the estimated generation costs associated with their growth. This evaluation demonstrates that the third-party analysis cited in recent media reports reaches false conclusions by using methodology that is fundamentally flawed and misleading.

- **APS's cost and revenue analysis shows that extra-large load customers paid more than the estimated generation costs attributable to their growth.** Their base fuel and PSA cost recovery exceeded the estimated incremental capacity and energy costs, helping reduce the historic PSA balance for the benefit of all customers.
- **The third-party analysis does not reflect the full cost picture.** It fails to distinguish between systemwide power purchases and resources acquired specifically for extra-large load growth. It also overlooks historic fuel and purchased power under-collections, which reflect costs incurred in prior periods that extra-large load customers helped recover, and treats APS's proposed future rate changes as evidence of historical subsidies.
- **The third-party analysis relies solely on retail sales growth.** APS's analysis details how extra-large load customers accounted for less than half (~42%) of measured peak-demand growth during the period, while the third-party analysis falsely attributes almost all of the incremental purchased power costs to them. Residential customers produced the largest increase in peak demand (~546 MW) compared with extra-large load customers (~509 MW) and other general service customers (~152 MW).
- **APS is taking steps to ensure future growth pays for growth.** While extra-large load customer revenues have exceeded the estimated incremental generation costs attributable to their growth, that margin has narrowed as capacity costs have increased. APS has proposed prospective measures in its pending 2025 rate case intended to ensure growth continues to pay for growth into the future. These include a substantial rate increase for extra-large energy users and annual cost-of-service updates to better allocate future growth-related costs. As of the date of this whitepaper, the Arizona Corporation Commission (Commission or ACC) had not yet issued its final decision on these proposals.
- **Examining a single cost element, allocation factor, or billing determinant in isolation gives an incomplete and misleading picture.** APS's annual unadjusted Cost of Service Study (COSS) results from 2022 through 2025 show decreasing overall cost recovery, not a cost shift to Residential customers. Because Residential customers did not recover their own full cost of service, they could not have subsidized extra-large load customers.

The facts are clear: **From 2022–2025, residential customers did not subsidize the generation costs associated with extra-large load growth. Instead, extra-large load customers paid fuel and purchased power revenues exceeding the estimated incremental generation costs attributable to their growth.**

1. Purpose and Scope

The purpose of this whitepaper is to evaluate whether extra-large load customers paid the generation-related costs associated with their growth between 2022 and 2025. This whitepaper is a factual analysis that responds to a recent claim that APS residential and small business customers allegedly subsidized hundreds of millions of dollars in costs purportedly caused by data centers and other extra-large load customers.¹ However, the third-party analysis assumes the majority of the increase in purchased power expenses is related to extra-large load customers growth, which is untrue.

That third-party analysis was fundamentally flawed.

- First, it does not adequately distinguish between purchased power acquired for systemwide purposes or other rate classes and resources acquired to meet extra-large load growth.
- Second, it incorrectly assumes annual MWh growth alone as an appropriate proxy for the need for new purchased power costs.
- Third, it incorrectly implies that since APS identified the need to implement a direct assignment approach for ratemaking in the future, there is evidence that customers have been subsidizing extra-large loads historically.
- Finally, it does not acknowledge the historic fuel and purchased power under-collections.

This whitepaper presents two analyses. The first is a review of APS's 2022 through 2025 COSSs, which assess each customer class's contributions toward their cost to serve. The second focuses exclusively on fuel and purchased power expenses — the basis of the third-party analysis's claim (Fuel & Purchased Power Study).

The Fuel & Purchased Power Study is an analysis of purchased power costs and extra-large load impacts that examines:

- 1 Actual fuel and purchased power costs from 2022 through 2025;
- 2 Long-term PPAs placed in service since 2022;
- 3 The reliable capacity and energy value associated with those resources;
- 4 Peak-load growth by customer class;
- 5 The estimated incremental capacity and energy costs attributable to extra-large load growth; and
- 6 Fuel and purchased power costs recovered by extra-large load customers through base fuel and PSA-related charges.

Importantly, the Fuel & Purchased Power Study excludes generation capacity revenues paid by extra-large load customers, which support generation-related costs for APS-owned resources but do not offset fuel and purchased power costs. Excluding generation capacity revenues understates the total generation contribution made by extra-large load customers and therefore establishes a conservative test of whether their fuel and purchased power expenses were recovered in excess of the incremental costs examined here.

2. Cost of Service Over/(Under) Collection

Evaluating whether a cost shift exists requires looking at the cost of service for each customer class in totality, not exclusively evaluating a single component — such as expenses for fuel and purchased power — on its own. Every year, APS performs an annual embedded COSS to perform this analysis. In the COSS, costs are

¹ See Arizona Corporation Commission Docket No. E-00000A-25-0069 (In the Matter of the Commission's Inquiry and Review of the Existing Rate Classifications and Other Potential Issues Relating to Data Centers), Public Comment of Abhay Padgaonkar (filed Oct. 2, 2026).

functionalized, classified, and allocated using a set of methods that work together, and the reasonableness of the result depends on how those pieces interact. Evaluating one cost element, one allocation factor, or one billing determinant in isolation is misleading and results in an inaccurate conclusion. A customer class may appear to be under-recovering with regard to a particular area while over-recovering in another. However, those differences often offset when assessing the results for that customer class with respect to the full revenue requirement.

The same is true for rate design. Customer, demand, and energy charges, along with any customer class-specific charges or credits, are designed to recover each class's revenue requirement as a total. Revenue that falls short in one component is often made up in another. Treating a revenue deficiency in one rate element as proof of a subsidy ignores the remaining components that make up the class's total contribution to its revenue requirement. A credible cost-shift claim must show that a class's total revenue materially falls short of its total allocated cost of service. Any assessment of interclass equity should rest on the full cost-of-service results, considered as a whole and over multiple periods. As shown in *Figure 1*, the Residential class did not achieve their cost of service between 2022 through 2025 and therefore cannot be subsidizing extra-large load customers.

This section evaluates customer class cost recovery for the 2022 through 2025 unadjusted COSSs performed over those periods. The customer class analysis uses three groups: Residential; General Service XS-L, including E-221, Dusk-to-Dawn, and Streetlight but excluding extra-large customers (XL); and XL, consisting of E-34, E-35, and XHLF. Costs recovered through the PSA are not included in the COSS and were analyzed separately as discussed later in this document.

As demonstrated in *Figure 2*, APS's under recovery of costs grew in each successive study year: \$67.2 million in 2022, \$181.4 million in 2023, \$226.3 million in 2024, and \$302.5 million in 2025 which highlights that a portion of growth is APS-funded and represents a revenue deficiency rather than a cost shift. Residential customers remained materially below their cost of service by approximately 15%-20% every year (*Figure 1*). General Service XS-L remained above their allocated cost to serve every year. XL met or was near their cost-of-service result over that same period. As shown in *Figure 1*, the Residential class did not achieve their cost of service between 2022 through 2025 and therefore cannot be subsidizing extra-large load customers.

Over all four years, APS's overall recovery continued to decline relative to its costs (*Figures 1 and 2*). These results demonstrate that APS was consistently under-recovering during the period, which was predominantly driven by the Residential class, and reflect a greater alignment between cost allocation and recovery in the XL classes.

Figure 1. Achieved % Cost of Service

Customer Class	2022	2023	2024	2025
Residential	86.3%	83.1%	80.9%	78.7%
General Service XS-L	120.4%	116.8%	125.8%	124.7%
XL	95.6%	100.9%	92.3%	91.6%
APS Base Retail	98.1%	95.1%	94.8%	93.3%

Figure 2. Over/(Under) Collection, \$ millions

Group ²	2022	2023	2024	2025	Total
Residential	(293.9)	(384.1)	(520.1)	(581.8)	(1,780.0)
General Service XS-L	236.0	200.6	324.7	321.7	1,083.0
XL	(9.2)	2.1	(31.0)	(42.4)	(80.5)
APS Base Retail	(67.2)	(181.4)	(226.3)	(302.5)	(777.5)

3. How APS Acquires and Recovers Generation Costs

3.1 APS acquires resources for the entire system

APS plans and operates an integrated electric system. It does not acquire each generating resource for one customer or one customer class in isolation. Resource need is shaped by multiple factors, including:

- Residential, commercial, industrial, and extra-large load growth;
- Expiration of existing PPAs and wholesale supply contracts;
- Retirement or reduced availability of existing generating facilities;
- Planning-reserve and reliability requirements;
- Extreme summer temperatures and changing weather patterns; and
- The operating characteristics of renewable and intermittent resources.

APS procures resources through its All-Source Request for Proposals (ASRFP) process which expressly identifies continued customer growth, coal retirements, expiring wholesale contracts, and system reliability as drivers of the resource need.

The ASRFP process is technology-neutral and allows APS to compare different resource types and transaction structures. The competitive process covering multiple technologies and transaction structures can allow for hundreds of options to evaluate the least costly, and best fit resource option to meet the growing needs of residential and business customers.

The fact that a resource is placed in service during a given period does not establish that the resource was acquired solely for growth during that period. Rather, resource additions must be evaluated against the full set of system needs existing at the time of procurement.

4. Understanding the Power Supply Adjustor

The PSA is an annual adjustment that accounts for APS's actual expenditures for fuel and purchased power. APS does not earn a profit or rate of return on these costs. The PSA is a true-up mechanism, not a real-time measure of the cost caused by a particular customer class.

When actual fuel and purchased power expenses exceed the amounts collected through then-current rates, the difference becomes an under-collected balance. That balance carries forward for later recovery. Conversely, over collections reduce future collections through the PSA.

This timing feature matters. A higher PSA rate in a particular year may reflect fuel or purchased power costs incurred in previous period. In December 2022, the under collected fuel balance was approximately \$470

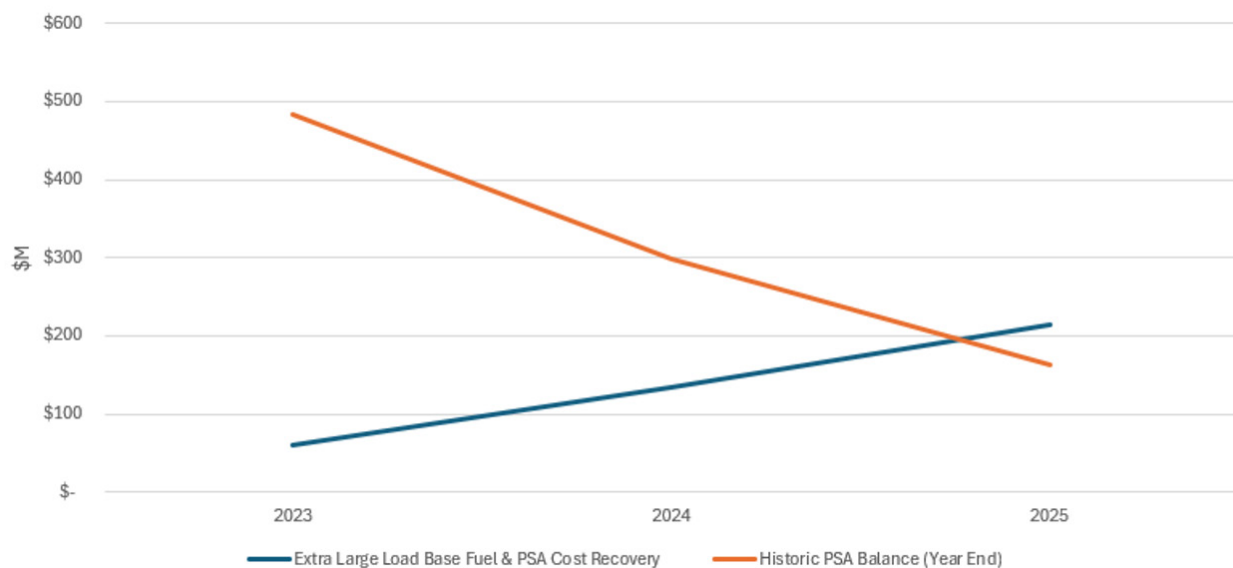
² Based on APS's annual unadjusted COSSs for years 2022–2025, values may not tie due to rounding.

million. The balance was for fuel and purchased power APS had already paid for to serve existing customers through PPAs.

That historical balance is particularly relevant to incorrect claims that increased PSA collections during the study period provided an extra-large load customer subsidy. The increased PSA collections related to the historical balance reflect costs already incurred, but not yet recovered by APS.

New customers pay the applicable PSA rate when they begin taking service and therefore contribute to the recovery of any existing PSA balance, including balances created before those customers reached their current load levels. The significant growth in extra-large load energy sales has expanded the MWh base over which PSA costs are recovered, resulting in increased extra-large load contributions toward both current fuel and purchase power costs and the recovery of historical under collections. As illustrated in *Figure 3*, extra-large load base fuel and PSA revenues increased while the historical balance declined. Although several factors affect the PSA balance, these trends demonstrate that the PSA balance was declining while extra-large load sales grew. The extra-large load customers are contributing to, rather than impeding, recovery of the existing under collection.

Figure 3. Extra-Large Load Revenues and Historic PSA Balance



Load factor strengthens the recovery of fuel and purchased power expense.³ Extra-large load customers purchase more energy for each megawatt of peak demand than customer classes with more weather-sensitive or short-duration peaks. Because base fuel and PSA charges are collected on a per-kWh basis, higher load-factor customers recover more fuel and purchased power expense per megawatt of system peak contribution. A portion of that additional recovery supports current fuel and PPA costs, and a portion contributes to recovery of any historical PSA under collection embedded in the applicable rate.

³ Load factor is the ratio of the average electrical load to the maximum load over a specific period, indicating how efficiently electrical capacity is used.

5. System Growth Was Not Limited to Extra-Large Loads

Growth in electricity demand has two distinct dimensions: energy growth and peak-load growth. Energy growth refers to an increase in the total megawatt-hours customers consume over time, while peak-load growth refers to an increase in the maximum amount of electricity APS must be prepared to deliver at a particular moment.

The distinction is important because growth in energy consumption does not necessarily require APS to procure a proportionate amount of new capacity. Additional energy needs can often be served by existing resources during hours when those resources are not fully utilized. This more efficient use of existing resources increases the volume of sales and the number of customers contributing toward their fixed costs, which can reduce the average cost borne by all customers. Long-term power purchases, by contrast, are driven primarily by the need to secure sufficient dependable capacity to meet peak demand, maintain required reliability reserves, and address other portfolio needs, such as replacing retiring resources or expiring contracts.

Accordingly, an assessment of whether extra-large load growth caused additional purchased power costs should consider each customer class's contribution to peak-load growth, rather than relying only on changes in annual energy consumption. An extra-large load customer may consume substantial energy throughout the year without creating an equivalent need for new capacity if much of that consumption occurs when APS has available system capability. To the extent that new load can be served from existing resources, the additional revenue helps support resources already in the portfolio and spreads their fixed costs across a broader customer base. Conversely, load added during APS's peak has a more direct effect on the amount of reliable capacity APS must maintain or procure.

Customer load factor connects these two measures. Extra-large load customers typically maintain comparatively steady usage across more hours of the year, producing more annual MWhs for each MW they contribute to the system peak. Smaller customer classes, particularly weather-sensitive customers, may create relatively high peak demand while purchasing fewer annual MWhs per peak MW. As a result, extra-large loads can generate more fuel and purchased power revenue per MW of capacity requirement than lower-load-factor classes. That revenue relationship must be included when evaluating whether a customer class covers the generation costs associated with its growth.

This distinction directly addresses the assertion that extra-large load customers caused almost all of APS retail-sales growth. However, retail-sales growth measures annual MWh growth, not growth in the dependable capacity APS must carry to serve the system peak. The peak-load data show that extra-large loads accounted for approximately 42% of measured growth during APS's annual peak, while residential customers contributed a larger absolute increase (45% of the measured growth). Annual energy growth therefore cannot reasonably be used as a one-for-one allocator of new purchased power costs.

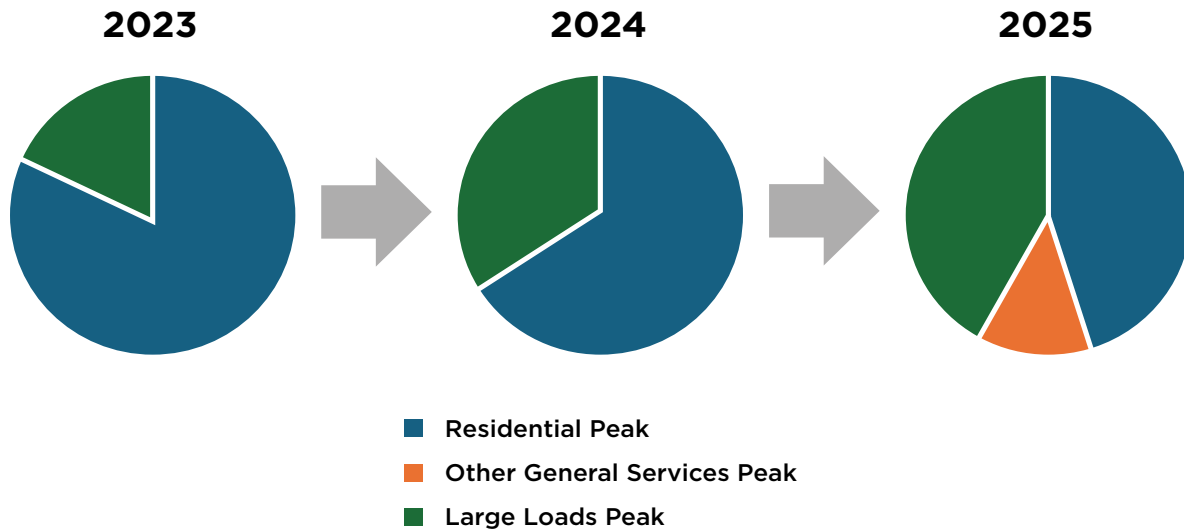
As shown in *Figure 4*, measured on the basis of peak demand, APS's peak-load growth from 2022 through 2025 was attributable to multiple customer classes, not extra-large load customers alone. Based on loss-adjusted customer-class demand at the APS system peak:

- **Residential load** increased from approximately **4,850 MW** at the summer 2022 peak to a maximum of approximately **5,396 MW**, an increase of **546 MW**.
- **Other General Service load** increased by approximately **152 MW**.
- **Extra-Large load demand** increased by approximately **509 MW**.

- **Extra-large load customers** therefore accounted for approximately **42% of the combined peak-load growth** across the evaluated customer classes.

These results demonstrate that extra-large loads were a significant contributor to APS's increasing capacity requirements, but they were not the sole or even the largest contributor to peak-load growth during the period. Residential customers produced the largest absolute increase in loss-adjusted peak demand. Therefore, attributing the majority of increase in long-term purchased power costs to extra-large load customers would disregard the substantial additional capacity needed to serve growth in residential and other general service demand.

Figure 4. APS Peak Load Growth by Rate Class



This is particularly important because resource adequacy is driven substantially by demand during system-constrained periods. APS must maintain sufficient reliable capacity, operating reserves, and deliverable supply to serve the coincident system peak. The assumption that the majority of incremental PPA expense from 2022 through 2025 should be assigned to extra-large loads is inaccurate. An allocation analysis should assign to extra-large loads a reasonable share of incremental resource costs based on their contribution to system need, while recognizing that the same portfolio also served residential and other general service growth and addressed replacement and reliability needs.

6. How Growth Can Benefit Existing Customers

Electric systems contain both fixed and variable costs. Existing infrastructure is often built with planning reserves, operating margins, and discrete equipment sizes necessary to provide reliable service. New load can permit that infrastructure to be used more fully.

For example, incremental growth may (1) spread existing fixed generation costs over more kilowatt-hours and billing demand and (2) increase contributions toward historic under-collected PSA balances.

Growth therefore does not automatically impose a cost shift. The relevant question is whether the incremental cost recovery produced by the growth is sufficient to cover the incremental costs reasonably attributable to it.

7. Evaluation Methodology

7.1 Identification of incremental PPA resources

The Fuel & Purchased Power Study identifies PPAs brought into service between 2023 and 2025 that were available to support new customer requirements. PPAs were specifically identified as they make up the purchased power increases identified in the third-party analysis. For each resource, the analysis evaluates:

- Total annual expected PPA cost;⁴
- Accredited reliable capacity contribution; and
- Expected energy production;⁵

The use of reliable capacity rather than nameplate capacity is important. A megawatt of nameplate solar, wind, or storage capacity does not necessarily provide one megawatt of dependable capacity meeting APS customer needs across the system peak periods. The analysis therefore uses the reliable megawatt contribution of each resource when calculating the cost of incremental capacity which more closely relates to megawatts of customer growth that the resource enables.

7.2 Assignment of PPA costs attributable to extra-large load growth

The total cost of the identified PPA portfolio is divided by the dependable or reliable capacity contribution of that portfolio to develop a cost per reliable megawatt.

That cost is then applied to the loss-adjusted increase in extra-large load demand measured during the APS peak and increased by an assumed planning reserve margin. This assigns extra-large load customers a proportionate share of the incremental portfolio cost based on the amount of reliable capacity needed to serve their growth.

$$\text{Assigned PPA Cost} = \left(\frac{\text{Total PPA Cost}}{A} \right) G \times (1 + R)$$

where:

- A = Total Accredited Reliable MWs
- G = Loss Adjusted Growth for Extra-Large Loads; and
- R = Planning Reserve Margin Percentage.

7.3 Calculation of energy costs attributable to extra-large load growth

Many renewable and hybrid PPAs include energy within a fixed or largely fixed payment. Because part of that payment includes energy APS would otherwise need to generate or purchase, the energy from the PPAs offsets the incremental energy for extra-large load customers being served from APS's remaining portfolio of resources. The analysis estimates the expected energy associated with wind and solar resources by taking an average annual MWh per dependable or reliable capacity contribution of the portfolio of new PPAs.⁶ The extra-large load customers' incremental energy is then reduced by the expected energy provided from the PPA portfolio associated with extra-large load customers' growth.⁷ This assigns extra-large-load customers

⁴ To ensure a durable analysis beyond 2025, APS applied a full year expected cost for resources including for resources with an in-service date later in the year. This approach creates a conservative result as only costs were expanded to be annualized while revenues were not annualized.

⁵ Based on typical meteorological year for wind and solar. Thermal resources are not captured to avoid double counting with fuel costs. Storage resources are assumed to be used to create arbitrage from generation production to average energy costs.

⁶ Applying the same methodology described in footnote 6, the MWhs are annualized to ensure a durable analysis.

⁷ The maximum energy offset from the PPA portfolio is equal to the extra-large load customers' incremental energy.

a proportionate share of the incremental PPA portfolio's expected energy using the same reliable-capacity allocation applied to PPA costs in Section 7.2.

The remaining incremental energy associated with the increased MWh consumed by extra-large load customers is priced using APS's average natural-gas generation cost for the relevant year.⁸ This method ensures that the cost associated with serving all MWh is adequately reflected from APS's portfolio of resources. Natural-gas generation provides a reasonable proxy for the cost of serving the remaining incremental energy because flexible gas resources are commonly dispatched to respond to changes in system load and thus reflect the marginal fuel cost for serving incremental load. In conceptual form:

$$\text{Extra Large Load Energy Cost} = \text{Max} \left(0, \left(I - \left(\frac{\text{Total PPA MWh}}{A} \right) G \times (1 + R) \right) \right) \times F$$

where:

- A = Total Accredited Reliable MWs;
- G = Loss Adjusted Growth for Extra-Large Loads;
- I = Incremental Extra-Large Load MWh;
- R = Planning Reserve Margin Percentage; and
- F = Average Fuel Cost for Natural Gas Resources.

7.4 Calculation of total fuel and purchased power cost attributable to extra-large load growth

The Assigned PPA Cost and Extra-Large Load Energy Cost are combined to estimate the total incremental generation cost attributable to extra-large load growth. By accounting for both capacity requirements and annual energy consumption, the calculation provides a comprehensive benchmark for determining whether extra-large load customers recovered the fuel and purchased power costs associated with their growth:

$$\text{Total Incremental Generation Cost} = C + E$$

where:

- C = Assigned PPA Cost; and
- E = Extra-Large Load Energy Cost.

7.5 Comparison with extra-large load fuel and purchased power cost recovery

The resulting incremental generation cost is compared with the fuel and purchased power cost recovery from extra-large load customers during the study period:

$$\text{Net Fuel and Purchased Power Contribution} = B - T$$

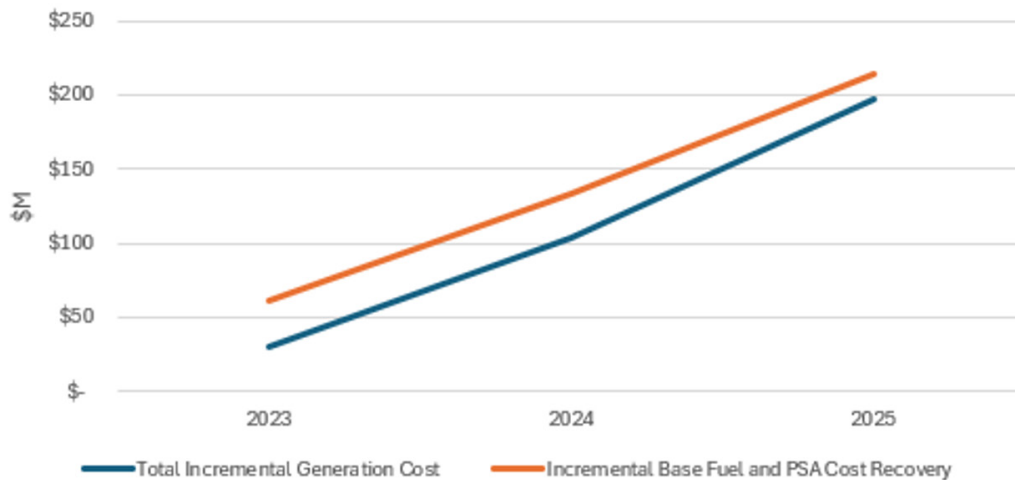
where:

- B = Incremental Base Fuel and PSA Cost Recovery; and
- T = Total Incremental Generation Cost.

The analysis finds that extra-large load fuel and purchased power revenue exceeded the combined incremental capacity and energy costs attributed to extra-large load growth from 2022 through 2025 (*Figure 5*).

⁸ As noted in Section 1 of this whitepaper, extra-large load customers are also paying a fixed price associated with APS's owned generation portfolio of resources which are not included in this analysis.

Figure 5. Extra-Large Load Base Fuel and PSA Expense Recovery Compared to Assigned PPA Generation Cost



Again, this comparison excludes generation capacity revenue. The result therefore should not be interpreted as a complete calculation of the total contributions associated with extra-large load customers. It is a narrower and more conservative test: whether the fuel and purchased power cost recovery evaluated were sufficient to cover the estimated incremental generation costs assigned to the extra-large load growth.

This whitepaper analysis finds no evidence that residential subsidized extra-large load growth.

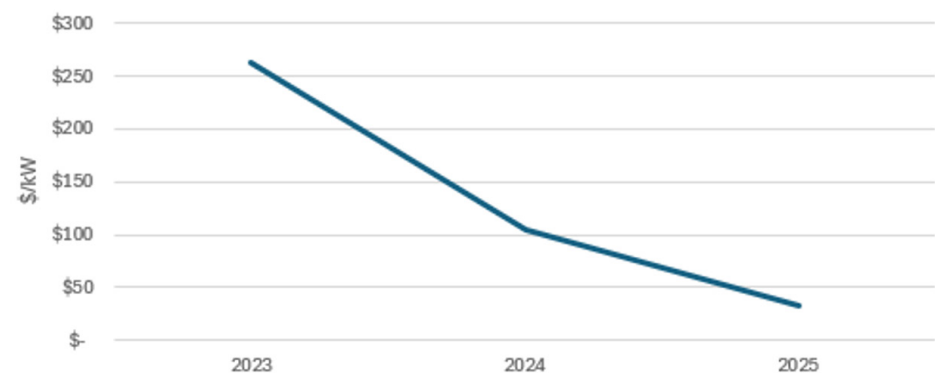
7.6 Declining Margins and the Need for Prospective Rate Reform

This analysis finds that extra-large load cost recovery exceeded the incremental generation costs attributed to their growth from 2022 through 2025, but that margin narrowed as PPA costs increased. This result is consistent with growth initially creating value by using existing infrastructure more fully and spreading its fixed costs across a broader customer base. As that available capability becomes fully utilized, however, additional extra-large load growth will increasingly require new generation and other infrastructure at higher incremental costs.

The narrowing margin does not demonstrate a historical subsidy, but it does point to a future inflection point at which existing rates may no longer recover the cost of serving new growth. Prospective rate reform is therefore needed to ensure that future extra-large load customers pay for the new infrastructure required to serve them and that growth continues to benefit, rather than shift costs to, existing customers.

Accordingly, the APS proposed prospective reforms in its pending rate case should be understood as a response to narrowing margins, higher future infrastructure needs, and changing system conditions, not as identifying that a historical subsidy occurred.

Figure 6. Extra-Large Load Net Fuel and Purchased Power Expense Recovery Contribution per kW



8. Conclusion

The claim that residential customers subsidized extra-large load generation costs between 2022 and 2025 is false and rests on an incomplete and inaccurate comparison that leads to misleading conclusions. It largely associates the increase in purchased power expense with extra-large load growth while failing to account fully for systemwide load growth, replacement and reliability needs, the different recovery treatment of PPAs and owned generating resources, historic PSA balances, and the generation-related revenues paid by extra-large load customers outside the PSA.

The comprehensive data is clear: from 2022-2025, residential customers did not subsidize extra-large load customers, and the analysis to the contrary is wrong and misleading.

The declining net contribution per megawatt nevertheless provides a useful metric for understanding the Company's rate case proposal. Historic results do not guarantee that existing rate designs will remain adequate indefinitely. APS's proposed extra-large load rate increase, updated cost allocation, and annual formula-based review are prospective measures intended to ensure that future growth continues to pay for the costs it creates. Those proposals remain subject to review and final action by the ACC.