



# Policy Principles for Addressing Large Industrial Electricity Loads in the Western Interconnection

## Staff Recommendations

### Executive Summary

This document represents policy principles developed by WIEB staff, drawing on a four-part webinar series convened by the Western Interstate Energy Board under its Reserve Expenditure Plan (*see figure below*). The series examined the challenges and opportunities presented by new large industrial electricity loads across the Western Interconnection, bringing together perspectives from the Western Electricity Coordinating Council (WECC), the National Laboratory of the Rockies (NLR), Lawrence Berkeley National Laboratory (LBNL), Energy and Environmental Economics (E3), the California Independent System Operator (CAISO), the Alberta Electric System Operator (AESO), Southwest Power Pool (SPP), and utilities and policymakers from across the region.

Webinar & Date	Topic and Brief Description	Speakers
<b>Session #1</b> July 31, 2025	System-Level Overview of Large Loads	Matt Zapotocky (WECC); Dr. Clayton Barrows (NREL)
<b>Session #2</b> September 12, 2025	Economic Considerations of Large Loads	Natalie Frick (LBNL); Shana Ramirez (E3)
<b>Session #3</b> Fall 2025 Joint CREPC-WIRAB Meeting, October 2025	Case Studies & Real-World Applications	Moderator: Janine Benner (Oregon DOE); Marie-France Samaroden (AESO); Neil Millar (CAISO); Natasha Henderson (SPP)
<b>Session #4</b> March 16, 2026	Large Load Prioritization and System Pressures	Katie Rogers (WECC); Zackary Merilovich (British Columbia)

Recordings, slide decks, and summaries from the webinar series are available on WIEB's [website](#).

The following principles are intended to support state and provincial energy offices and regulatory commissions as they navigate the policy decisions associated with large load growth. These principles are offered for members to consider as they develop their own approaches to meet the unique needs of their respective state or province.

## **Background and Context**

The Western Interconnection is experiencing a rapid acceleration in demand from large industrial electricity loads. As discussed throughout the webinar series, data centers, semiconductor manufacturing, hydrogen electrolysis, and other large-scale consumers are reshaping the planning landscape across the region.<sup>1</sup> According to WECC, large load demand in the West could grow from roughly 7 GW in 2022 to between 24 and 34 GW by 2035, with data centers comprising the majority of that growth.<sup>2</sup> For large loads specifically, the interconnection queue already exceeds 45 GW—far more than what the system can accommodate near-term.<sup>3</sup> These developments raise significant questions about grid reliability, resource adequacy, cost allocation, and equitable treatment of existing ratepayers, while also presenting economic development opportunities that states and provinces across the West are working to capture.

## **Policy Principles**

### **1. Load Forecasting and Data Transparency**

Load forecasting for large industrial customers emerged as one of the most discussed topics across the webinar series. Presenters described it as among the most consequential and least standardized areas of grid planning today. Utilities use widely varying methods to derate interconnection requests, from flat percentage discounts to matrix scoring systems. As presented by LBNL, no utility surveyed by the Electric Power Research Institute (EPRI) provided a standardized formula for derating data center loads in their forecasts, a process by which utilities adjust requested capacity to reflect what is likely to materialize.<sup>4</sup> Presenters noted that the gap between requested and materialized load remains substantial, and that the consequences of getting forecasts wrong cut both directions: under-forecasting risks resource adequacy shortfalls, while over-forecasting risks infrastructure overbuilds financed by

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<sup>1</sup> WIEB Large Loads Webinar Series, Session 1, July 31, 2025. Presentation by M. Zapotocky (WECC), “Large Loads in the West.”

<sup>2</sup> M. Zapotocky, WECC, Session 1.

<sup>3</sup> Ibid.

<sup>4</sup> WIEB Large Loads Webinar Series, Session 2, September 12, 2025. Presentation by N. Mims Frick (LBNL), “Large loads: Forecasting and Tariff Designs,” referencing EPRI, “Powering Intelligence: Analyzing Artificial Intelligence and Data Center Energy Consumption,” 2024.

ratepayers. Drawing on these discussions, the following recommendations address forecasting and data transparency.

- i. Encourage utilities to develop and disclose transparent, repeatable methodologies for incorporating large load demand into their forecasts, including the criteria used to derate interconnection requests. These assumptions should be subject to regulatory review, particularly within the integrated resource planning process. Improved data transparency from large load customers is also essential for accurate planning and interconnection studies.<sup>5</sup>
- ii. Support scenario-based forecasting that accounts for a range of large load materialization outcomes rather than single-point estimates. High, moderate, and low scenarios reflecting different assumptions about materialization rates, ramp timing, and technology trends better equip planners to manage uncertainty.<sup>6</sup>

## 2. Interconnection and Prioritization

When near-term system capability is constrained, how should large load requests be sequenced and prioritized? Across the West, presenters described a range of approaches. Alberta's AESO implemented a reliability-based cumulative limit of 1.2 GW for large loads, assigning capacity based on readiness and commitment.<sup>7</sup> CAISO's proposed Interconnection Process Enhancements introduce stricter site control and readiness requirements to improve queue discipline.<sup>8</sup> British Columbia is developing prioritization frameworks for situations where not every request can be accommodated at once.<sup>9</sup>

These approaches differ in structure but share a common objective: distinguishing projects that are ready to move forward from those that are not. As presented by LBNL, Virginia's State Corporation Commission staff recommended removing \$853 million in data center capital expenditures from Dominion Energy's rate case where projects had not yet progressed beyond

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<sup>5</sup>WIEB Large Loads Webinar Series, Session 1, 2, and 4. Presentation by M. Zapotocky and K. Rogers (WECC), N. Mims Frick (LBNL), and C. Barrows (NLR).

<sup>6</sup> WIEB Large Loads Webinar Series, Session 2, September 12, 2025. Presentation by N. Mims Frick (LBNL) and S. Ramirez (E3), "Large Load Growth: Tariff Structures, Rate Impacts and Risk Mitigation Tools".

<sup>7</sup> WIEB Large Loads Webinar Series, Session 3. October 2025. Remarks by M.-F. Samaroden (AESO), Fall 2025 Joint CREPC-WIRAB Meeting

<sup>8</sup> WIEB Large Loads Webinar Series, Session 3. October 2025. Remarks by N. Millar (CAISO), Fall 2025 Joint CREPC-WIRAB Meeting

<sup>9</sup> WIEB Large Loads Webinar Series, Session 4, March 16, 2026. Presentation by Z. Merilovich (Government of British Columbia, Ministry of Energy and Climate Solutions).

the engineering authorization stage.<sup>10</sup> Based on these approaches described by presenters, the following recommendations emerge addressing interconnection and prioritization:

- iii. Support the development of standardized, publicly available interconnection processes for large loads that incorporate readiness-based criteria, such as site control, permitting progress, construction milestones, and financial commitments, to help differentiate requests by development stage. As noted by LBNL, many jurisdictions currently lack a clearly documented process.<sup>11</sup>
- iv. Where system capability is constrained, support the development of clear prioritization frameworks that account for reliability impacts, economic development considerations, and the ability of the system to continue serving existing customers. Prioritization criteria should be developed through inclusive stakeholder processes and applied consistently.

### **3. Cost Allocation, Rate Design, and Ratepayer Protection**

How the costs of serving large loads are allocated is among the most significant decisions regulators face. E3 presented a review of approaches in use across the country, describing a wide spectrum: from fully embedded cost allocation, where large loads share rate classes with other industrial customers, to direct assignment of all interconnection, generation, and delivery costs to individual large load customers.<sup>12</sup> E3's analysis of Virginia's data center-serving utilities found that residential rate impacts from incremental data center load could range from 1 to 3 cents per kWh by 2040, depending on growth assumptions and the frequency of cost allocation adjustments. Under these scenarios, data centers themselves face even larger per-kWh increases, with total incremental cost contributions projected at three to seven times those of residential customers by 2050.<sup>13</sup> E3 and LBNL each identified a range of rate design tools that regulators can use to manage cost allocation and protect existing ratepayers. Drawing on those presentations, the following principles emerged:

- v. Ensure that rate design for large loads reflects the principle that new large customers should bear the costs they impose on the system. Regulators should evaluate the full spectrum of tools identified by presenters from embedded cost allocation and cost allocation adjustments to additional charges, service commitments, waitlists, self-supply

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<sup>10</sup> N. Mims Frick, LBNL, Session 2, citing Virginia State Corporation Commission Staff testimony.

<sup>11</sup> WIEB Large Loads Webinar Series, Session 2 and 3. Presentations by N. Mims Frick (LBNL), N. Millar (CAISO), N. Henderson (SPP).

<sup>12</sup> S. Ramirez, E3, Session 2.

<sup>13</sup> Ibid.

requirements, and direct assignment of costs, with attention to the tradeoffs each approach presents for promoting economic development, protecting existing customers, and ease of implementation.<sup>14</sup>

- vi. Where large load growth is expected to be significant, consider whether dedicated rate classes or tariffs may be needed to address the distinct cost profiles and service requirements of large industrial customers. E3 highlighted innovative tariff structures such as NV Energy's Clean Transition Tariff and PG&E's proposed Rule 30 as potential models for the region.<sup>15</sup>

#### **4. Risk Management**

Utilities face a unique range of financial and operational risks from large load growth, including nonpayment risk, stranded asset risk from infrastructure built for loads that do not materialize as expected, and credit risk from the significant upfront capital required to serve these customers. E3 presented a framework in which risk management evolves alongside a project's development lifecycle: minimal controls at the concept stage, more substantial protections as the utility commits resources, and relaxed collateral requirements once a customer demonstrates reliable operations.<sup>16</sup> E3 also identified a range of risk mitigation tools that utilities are using or considering. Drawing on that presentation:

- vii. Encourage phased, milestone-based risk mitigation that aligns financial security requirements with actual risk exposure at each stage of project development. As described by E3, the available toolkit includes upfront payments, minimum contract lengths with exit fees, take-or-pay provisions, credit and collateral requirements, and load flexibility arrangements. No single tool is sufficient; the appropriate combination will depend on utility circumstances and the scale of anticipated growth.<sup>17</sup>
- viii. Ensure that risk management frameworks are transparent, standardized, and scalable, with clear credit evaluation criteria and consistent application of security requirements across customers.<sup>18</sup>

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<sup>14</sup> N. Mims Frick, LBNL and S. Ramirez, E3, Session 2.

<sup>15</sup> S. Ramirez, E3, Session 2.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> N. Mims Frick, LBNL and S. Ramirez, E3, Session 2.

## 5. Regional Coordination and Reliability

Large loads do not respect jurisdictional boundaries, and their aggregate impact on the Western Interconnection extends well beyond any single utility or state. WECC presenters identified reliability concerns that go beyond resource adequacy: rapid demand changes from AI-focused data centers can cause inter-area oscillations, voltage swings, and equipment degradation, while ride-through performance issues during system faults present cascading risk.<sup>19</sup> WECC also reported that only 4 percent of large load demand in the Western Interconnection is currently available for demand response.<sup>20</sup> Across the webinar series, presenters pointed to several areas where regional coordination could help address these challenges:

- ix. Support regional information-sharing mechanisms that enable utilities, system operators, and state and provincial agencies to share data on large load interconnection activity, forecasting approaches, and emerging reliability concerns. Large load growth scenarios should also be incorporated into regional transmission planning and resource adequacy assessments, so that the location, timing, and operational characteristics of these loads are reflected in coordinated planning processes. WECC's Large Loads Risk Assessment and NERC's Large Loads Working Group are important foundations.<sup>21</sup>
- x. Promote the development of standards and expectations for large load operational performance, including ride-through requirements, demand response capability, and data transparency obligations. As large loads become a larger share of system demand, their operational behavior carries increasingly significant implications for reliability across the interconnection.<sup>22</sup>

### Conclusion

Large load growth in the Western Interconnection is not a short-term trend. The drivers behind it, including artificial intelligence, advanced manufacturing, electrification, and data-intensive services, are likely to continue shaping demand across the region for years to come. Proactive understanding and action by states and provinces to ensure their jurisdictions are positioned to manage these new demands is essential to ensuring a well-functioning electric system for the West.

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<sup>19</sup> WIEB Large Loads Webinar Series, Sessions 1 and 4. Presentations by M. Zapotocky and K. Rogers (WECC).

<sup>20</sup> M. Zapotocky, WECC, Session 1.

<sup>21</sup> WIEB Large Loads Webinar Series, Sessions 1 and 4. Presentations by M. Zapotocky and K. Rogers (WECC), C. Barrows (NLR)

<sup>22</sup> WIEB Large Loads Webinar Series, Sessions 1 and 4. Presentations by M. Zapotocky and K. Rogers (WECC).