CRA Insights

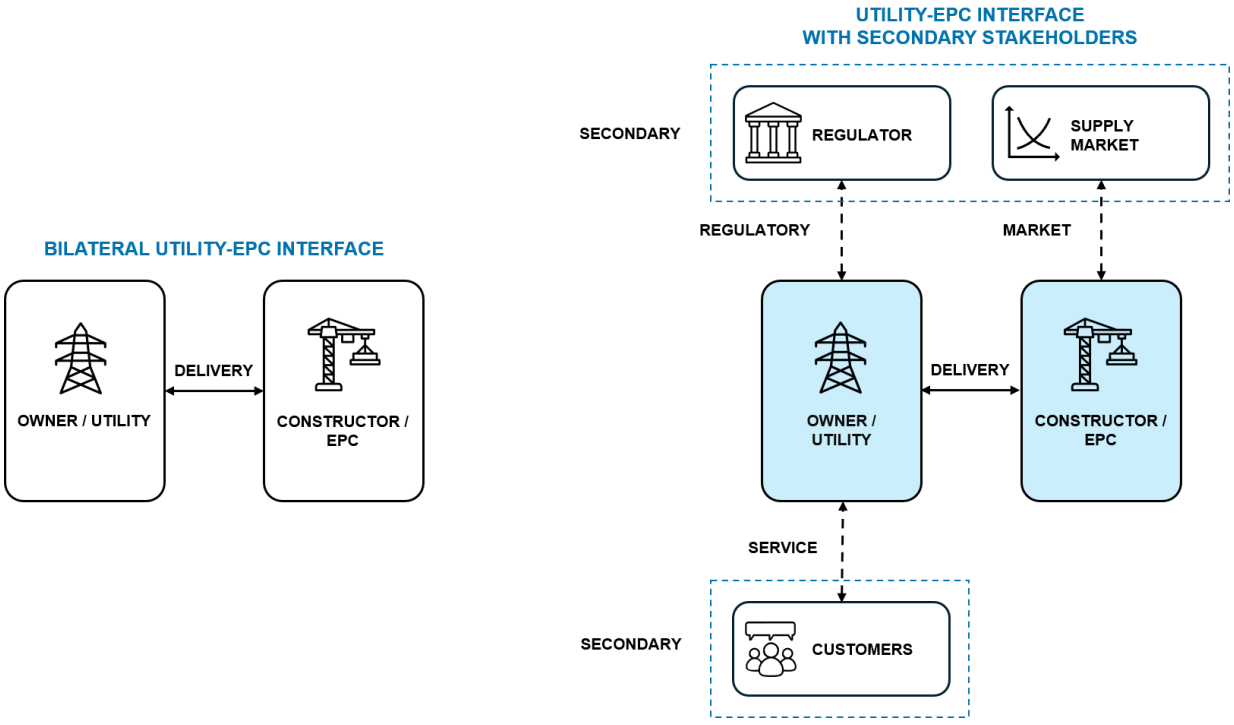
Energy

CRA Charles River Associates

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The rise of interface risk in utility capital projects

Utilities executing capital projects have always had to balance planning, procurement, construction, operations, market, regulatory, corporate, and investor risks. With the recent advent of data-center-driven growth, utilities are now having to manage additional uncertainties and new risks alongside the risks they have traditionally faced. Data centers add a new commercial party into the utility capital project ecosystem, one with different objectives, timelines, risk tolerances, and decision criteria. This creates a higher degree of interface risk: the risk that misalignment among parties, contracts, responsibilities, schedules, and incentives causes cost increases, delays, stranded asset exposure, or operational challenges.



Traditionally, utility capital projects have been structured around a bilateral relationship between the utility or project owner and the constructor or EPC provider. The utility has served as the primary coordinating party, managing project requirements and the regulatory, customer, and market considerations affecting execution, while the EPC provider has focused on delivering the agreed design, procurement, and construction scope. Although regulators, customers, and supply markets can influence project requirements and outcomes, those relationships have generally been managed through the utility and remained secondary to the core utility–EPC interface. Data-center-driven growth changes this traditional structure by introducing additional parties, dependencies, and decisions that the utility must coordinate but may not fully control.

In this environment, project success depends not only on whether each party can manage its own responsibilities, but whether the interfaces among the utility, data center customer, construction partners, regulators, and resource providers are clearly defined and actively managed.

How data centers impact the traditional utility risk landscape

Data centers differ from the ways that utilities typically approach and execute projects in several important ways:

- **Development moves faster.** Data center customers often need rapid energization and may expect utility infrastructure timelines to align with private-sector development schedules.
- **Commercial expectations are different.** Data center customers often prioritize speed to power, redundancy, scalability, carbon attributes, and flexibility.
- **Load certainty is more difficult to assess.** Utilities may be asked to plan or begin investment before the customer's long-term commitment is fully fixed.
- **Longevity is uncertain.** Utility assets may have multi-decade lives, while data center technology, business models, and location preferences may evolve more quickly.
- **Regulatory and stakeholder scrutiny is higher.** Large, concentrated loads raise questions about cost allocation, rate impacts, reliability, emissions, and whether other customers are protected.

These factors create new points of tension across the project lifecycle. Fortunately, this tension is manageable for parties who are able to identify, assess, and actively manage the new shape of risk and the more complex execution.

The central challenge: interface risk

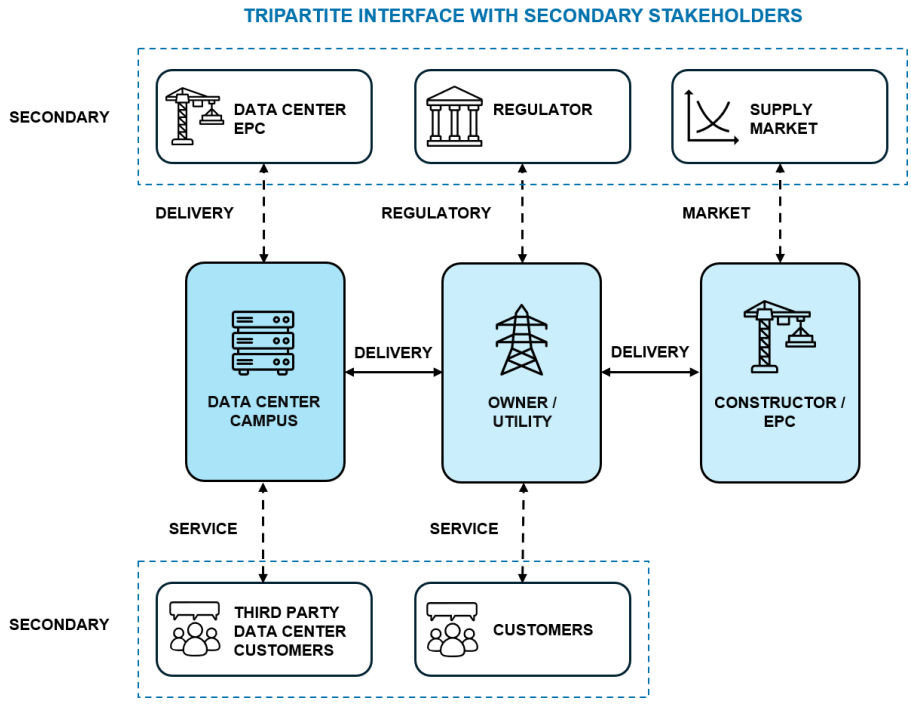
Interface risk arises when the success of one party is dependent on the actions, timing, and decisions of another party. This is not new to the utility capital project landscape: interface between the Utility and Constructor or equipment, procurement, and construction (EPC) provider has always been a key component in a traditional utility capital risk matrix. In data center-driven projects, this risk is elevated because the project typically involves multiple entities with different priorities:

- The utility is focused on reliability, prudence, cost recovery, regulatory approval, and long-term system value.

- The data center customer is focused on speed to power, commercial certainty, scalability, redundancy, and operational continuity.
- The construction and delivery partners are focused on scope certainty, schedule realism, procurement timing, labor availability, and change management.
- The regulator is focused on customer protection, cost allocation, affordability, transparency, and system reliability.

These objectives can overlap, but they are not identical. When they are not aligned early, and communicated clearly, the project can face contractual gaps, disputed responsibilities, delayed decisions, and cost recovery uncertainty.

The tripartite risk layer



In many data center-driven utility projects, the utility is not simply serving a new large customer. It may also be coordinating between a data center customer seeking fast, firm, grid-connected service and an independent power producer or resource provider developing generation to support that load. At the same time, the transaction may depend on ISO/RTO study outcomes, regulatory approvals, third-party transmission upgrades, construction partners, and broader market conditions.

This creates a tripartite risk layer where the utility's exposure depends on whether multiple parties' obligations align. The data center may control the load commitment and energization schedule. The IPP or resource provider may control generation development, financing, commercial operation dates, and long-term asset performance. The utility may control transmission delivery, interconnection coordination, customer service, regulatory filings, and cost recovery. Regulators and market operators may control approval timelines, cost allocation, interconnection requirements, and market treatment.

The result is that a risk may originate with one party and propagate across the broader project ecosystem. If a data center customer delays or cancels its commitment, utility procurement and investment may continue on the original schedule, creating underutilized assets, stranded-cost exposure, and cost-recovery risk. Conversely, a delay involving a resource provider, equipment supplier, or construction partner may delay utility energization, slow the data center's load ramp, and create downstream commercial consequences. Third-party transmission or regulatory delays can similarly affect project timing, cost allocation, or the economics of an already negotiated commercial structure. The utility therefore often becomes the connective tissue across these interfaces, even when it does not control every underlying risk.

How data centers impact the traditional risk profile



Schedule interface risk

Data centers often move on timelines that are faster than utility planning, procurement, construction, and regulatory processes. This can create pressure to advance studies, equipment orders, or construction before all approvals and commercial commitments are final.

A schedule decision by one party can affect all others. For example, if the data center accelerates its target energization date, the utility may need to compress procurement and construction. That may increase cost, safety risk, and contractor premiums. If the utility cannot meet the requested schedule, the data center may face commercial consequences.



Cost allocation risk

Data center-driven upgrades may include both customer-specific and system-benefiting components. The boundary between those categories may not always be clear. If cost responsibility is not defined early, disputes can arise over which costs should be paid by the data center, recovered from broader customers, or absorbed by shareholders. This can create regulatory risk, stakeholder pushbacks, and delays in project approval.

FERC and many state regulators are developing frameworks to address these issues, but the approaches are still evolving. At the federal level, the focus is largely on large-load interconnection, including the direct assignment of transmission and network-upgrade costs, the treatment of co-located generation, and broader wholesale-market impacts. States are addressing similar risks through tailored large-load tariffs that may include minimum-demand or take-or-pay provisions, upfront contributions, and other financial protections. Until these frameworks are more fully established and consistently applied, cost allocation remains a material risk for utilities and data center projects.



Contractual and commercial alignment risk

Data center transactions require multiple agreements to manage operations, including utility service agreements, PPAs or resource arrangements, interconnection agreements, reimbursement agreements, credit support arrangements, and regulatory approvals. Each agreement may appear reasonable on its own, but risk can emerge when obligations and exposures do not align across agreements.

This is especially important when the utility sits between a resource provider and the data center customer. If PPA obligations, service agreement terms, COD dates, load commitments, performance standards, termination rights, or cost pass-through mechanisms do not align, the utility may face exposure between the two arrangements. For example, a delayed resource could create interim market exposure, reduced data center load could create stranded cost or under-recovery risk. Differences in how utility tariffs, power supply agreements, and other contracts address congestion, basis, curtailment, or replacement energy could lead to disputes over who bears those costs.



Procurement and construction interface risk

Large data center projects require close coordination across utility infrastructure, customer facilities, transmission upgrades, generation resources, and third-party contractors. Many of these activities have long lead times and may need to begin before the project scope, schedule, or load requirements are fully settled equipment

Utilities may need to procure major equipment before final scope is locked. Early procurement can reduce schedule risk, but it can also increase stranded equipment risk if the project changes. Delayed procurement can reduce stranded cost exposure, but it can jeopardize energization timelines. Balancing this risk across multiple parties typically involves ensuring that each party's risk is limited to the impacts caused by their actions. For example – stranded costs would be borne by the party causing the cancellation, whereas delayed delivery may be borne by the equipment provider and/or the construction execution entity. This often means that large equipment and materials procurements need to have clearly articulated damages clauses and tight commercial contracts in order to ensure that all parties remain whole if project plans change for no cause of their own.

Similar risks arise during construction. A delay in one workstream can cascade into others. For example, if the data center site is not ready, utility crews and equipment may be underutilized. If utility construction is delayed, the data center may not be energized. If generation or transmission resources are delayed, the parties may need interim supply arrangements.

In practice, ensuring that delay and cost impacts are allocated to responsible parties is rendered more difficult by the complex impacts of intertwined events – for example, a weather delay may impact equipment delivery, which would have a follow-on impact to schedule, and may end up impacting future work or even other deliveries and progress payments. Clear delineation of possible causes and outcomes, and the impacted parties, can help all entities identify, measure, and contract for these interface risks.



Third-party dependency risk

Data center-driven infrastructure may depend on processes and parties outside the utility's direct control, including ISO/RTO studies, third-party transmission owners, resource developers, equipment suppliers, and permitting authorities. This creates interface risk because the utility may remain accountable for readiness, reliability, and customer service even when key execution steps are controlled by others. If studies expand required upgrades, third-party facilities are delayed, or resource interconnection timelines slip, the utility may face energization delays, reliability constraints, interim market exposure, or cost allocation disputes.

These risks require early identification, clear responsibility mapping, milestone tracking, and contractual or regulatory mechanisms that define what happens if third-party obligations do not align with the project schedule.



Regulatory interface risk

Data center projects often require alignment between commercial agreements and regulatory approval. A utility and data center may agree on terms, but regulators may still scrutinize cost allocation, risk transfer, rate impacts, and customer protection.

This creates a critical interface between private commercial negotiations and public regulatory oversight. If regulatory considerations are not incorporated early, the project can face delays or required changes after the commercial structure has already been negotiated.

Managing interface risk

The best way to manage interface risk is to address it early and update it continuously.

1. **Map project parties and interfaces** to identify responsibilities, dependencies, contractual relationships, and key handoffs.
2. **Define project stages and identify risks** across schedules, commercial arrangements, procurement activities, regulatory approvals, construction activities, and operational requirements.
3. **Assess probability and impact** across cost, schedule, reliability, commercial, and regulatory dimensions.
4. **Analyze risk propagation and amplification** to understand how risks move across parties, where exposure accumulates, and which participants may be affected by the same triggering event.
5. **Model scenarios and prioritize risks** based on both direct and downstream consequences.
6. **Design risk allocation and mitigation strategies** that assign responsibility to the parties best positioned to manage the risk while identifying where coordinated actions are required.
7. **Evaluate residual risk exposure** following implementation of mitigation measures.
8. **Establish monitoring and governance mechanisms** to identify emerging risks and track mitigation effectiveness throughout project execution.
9. **Periodically reassess the risk profile** as project conditions, participants, commercial arrangements, and assumptions evolve.

Retire, transfer, realize, or release risks as uncertainties are resolved and project milestones are achieved. Risk allocation should begin before major commitments are made. Parties should identify what happens if load changes, timelines shift, costs increase, approvals are delayed, or equipment is procured before final commitment.

Build a shared risk matrix

The risk matrix should not only list risks by category. It should identify:



In addition, parties should ensure their risk assessment encompasses the following:

Account for spillover effects

Parties should explicitly identify secondary impacts. For example, a delay in data center final investment decision may affect procurement, construction sequencing, regulatory filings, cost recovery, contractor mobilization, commissioning, and operations.

Assign responsibility with control

Where possible, risk should sit with the party best able to manage it. If the data center controls project commitment, it should bear appropriate cancellation or downsizing risk. If the utility controls construction execution, it should manage utility delivery risk. If risk is shared, the sharing mechanism should be explicit.

Update the framework as the project evolves

Data center projects can change quickly. Risk allocation should be revisited at key milestones, including site selection, load study, interconnection, commercial agreement, regulatory filing, procurement, construction, commissioning, and operations.

Maintain transparent communication

Interface risk grows when parties make decisions in isolation. Regular communication is essential around load forecasts, schedule changes, design changes, procurement status, regulatory developments, and construction readiness.

Key takeaways

Data center-driven projects with more complex risk profiles require a broader view of overall project risk. Each party may define success differently: for the data center, success may mean speed to power. For the utility, it may mean regulatory prudence and cost recovery. For contractors, it may mean scope certainty. For regulators, it may mean protecting other customers.

A second lesson is that mitigating one risk can increase another. Early procurement may reduce schedule risk but increase stranded cost risk. Stronger customer commitments may protect the utility but slow commercial negotiation. Phased energization may reduce initial investment risk but increase operational complexity. Understanding how risks and mitigations are related and articulating clear risk and impact pathways can help identify and appropriately place these risks.

A third lesson is that interface risk needs to be managed as its own category, not just as a byproduct of planning, construction, or operations. The most material risks may arise not within one party's scope, but at the boundaries between parties.

About CRA's Energy Practice

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