

Exploring pathways to streamline interconnection and energization for DERs and new load

INITIATIVE DESCRIPTION

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- Accelerates interconnection and energization by addressing both the analytical and operational barriers that delay DER deployment, electrification, EV charging infrastructure, and new load connections.
- Combines interconnection automation, advanced modeling, enhanced data infrastructure, and novel energization approaches to reduce customer delays and improve utility decision-making.
- Integrates streamlined study processes with innovative bridging technologies and grid-management capabilities that enable customers to receive service sooner while maintaining reliability and safety.
- Together, the RTAs address the full customer journey from interconnection request through energization, reducing timelines, increasing grid throughput, and expanding access to electrification solutions in underserved communities.

PROPOSED INITIATIVE BUDGET	\$13,605,000
% OF TOTAL BUDGET (excl. admin & overhead)	15.05%
# OF RESEARCH TOPIC AREAS	2

ALIGNMENT SUMMARY

STRATEGIC OBJECTIVE ALIGNMENT

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The EPIC Program will support acceleration of the development, testing, and integration of innovative technology, communication protocols, and modeling approaches to streamlining interconnection and energization processes for DER and new load including electric vehicle charging infrastructure, with a goal to demonstrate the capability to significantly reduce interconnection and energization approval or online timelines under multiple high DER penetration and electrification scenarios, with a priority for addressing challenges in Disadvantaged and Vulnerable Communities.

Develops and demonstrates the technologies, analytical tools, communication capabilities, and operational approaches needed to accelerate interconnection and energization for DERs and new load.

CPUC ALIGNMENT

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- CPUC interconnection, energization, DER integration, and electrification proceedings increasingly require solutions that reduce customer wait times while maintaining grid reliability under high DER adoption and load-growth.
- This research develops the tools, data infrastructure, communication capabilities, and operational approaches needed to evaluate and implement faster interconnection and energization pathways at scale.
- The initiative produces evidence on how automation, advanced modeling, flexible service arrangements, and bridging technologies can reduce approval timelines and accelerate customer access to grid service.
- EPIC is appropriate because these capabilities require testing and validation within utility planning and interconnection environments before broader deployment through standard utility programs and investments

6.1 Streamlining Customer Interconnection

WHAT PROBLEM ARE WE SOLVING? Page(s) 76

The rapid growth of DERs, EV chargers, vehicle-to-grid technologies, and large loads is straining interconnection workflows, with queue growth outpacing existing planning systems, slowing electrification, raising costs, and creating reliability challenges. Today's process is limited by poor data quality, manual forecasting and evaluation, low customer visibility into constraints, and disconnected workflows, while flexible resources like VPPs add further delay-causing complexity. By automating and integrating these workflows to accelerate energization while keeping large-load growth rate-reducing for other customers, this Topic directly advances SO 10's goal of expediting and streamlining interconnection and energization.

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START	2027
OUTPUTS	2028-2030
MARKET READY	2030-2035

ALIGNMENT SUMMARY

WHAT IS THE DISTINCT RESEARCH APPROACH?	HOW WILL YOU KNOW YOU ARE SUCCESSFUL?	HOW WILL YOU COORDINATE?
- Improves interconnection study inputs through GIS/CYME/model synchronization, granular customer-type load shapes, and AI/ML that raises data quality down to the premise level. - Applies AI/ML both to reconstruct missing GIS/CYME data (equipment settings, service-to-transformer mapping) and to simplify the flexible-resource complexity that slows manual review today. - Automates first-pass screenings and rapid scenario evaluation and connects previously siloed workflows so interconnection, hosting capacity, and flexible load are evaluated together to improve responses to complex interconnection requests. - Gaps Addressed p. 76	- Automated screening and scenario-evaluation tools plus a validated library of customer-type load shapes that increase visibility into T&D constraints. - Integrated workflows and evidence on how flexible service arrangements can accelerate energization while managing constraints, especially for large loads. Primary outcome: Faster, lower-cost interconnection and energization through automated analysis and integrated workflows. Metrics: Reduced time from application to Permission to Operate, lower per-project approval costs, increase in projects interconnected within target timelines. - Metrics and Impact Assessment p. 77	- CEC and IOUs will share data and coordinate during early project ideation to avoid duplication, where CEC focuses on statewide planning, studies and decision support tools while PG&E's TD&D focuses on utility-side automation tools and study inputs to streamline interconnection workflows, (Coordination p. 78). - IOUs may also advise on non-firm and flexible interconnection options and serve as technical advisors on CEC GFOs for behind-the-meter vendor standards enabling flexible service connections (Coordination p. 78). - Builds on EPIC 4.27, whose customer design research and interfaces inform iterative customer-input handling during interconnection application. (Leveraging Past RD&D p. 77).

6.2 Accelerating Speed-to-Power

WHAT PROBLEM ARE WE SOLVING? Page(s) 79

Grid upgrades cannot keep pace with the extraordinary load growth across PG&E's service area, creating a critical misalignment between customers' desired in-service dates and actual energization timelines. Existing bridging options are either fossil-fuel-based, narrow in applicability, or add complexity and risk that is unsustainable at scale, and connecting new load before upgrades can introduce power-quality and reliability risks that cause further delay. By enabling safe energization ahead of permanent grid upgrades without creating reliability risk, this Topic directly advances SO 10's goal of expediting and streamlining interconnection and energization.

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ALIGNMENT SUMMARY

WHAT IS THE DISTINCT RESEARCH APPROACH?	HOW WILL YOU KNOW YOU ARE SUCCESSFUL?	HOW WILL YOU COORDINATE?
• Demonstrates novel transmission and distribution bridging technologies that enable customers to receive service before permanent grid upgrades are complete. • Develops grid-stability and power-quality mitigation capabilities that reduce energization risks under high-load and high-DER conditions. • Builds decision-support tools that combine planning outputs, real-time grid conditions, and bridging technology capabilities to identify the lowest-cost, lowest-risk path to energization. • Gaps Addressed p. 79	• Validated transmission and distribution bridging technologies and grid-stability mitigations that safely energize customers ahead of permanent upgrades. • Decision-support tools that consistently identify the fastest, lowest-cost, lowest-risk energization path under high-DER, high-load-growth conditions. • Primary outcome: Faster energization through deployment-ready bridging technologies and grid-stability capabilities. Metrics: Reduced interconnection-request-to-service timelines, load energized on an accelerated schedule, and lower energization costs per project • Metrics and Impact Assessment p. 80	• Coordinates with CEC and other IOU administrators to advance novel bridging solutions, potentially informing or co-developing CEC solicitations for speed-to-power demonstrations reflecting IOU operating requirements (Coordination p. 81). • CEC matures earlier-stage solutions (e.g., mobile power-electronics transformers) while PG&E evaluates more mature solutions and integrated solution ecosystems in an IOU operating environment (Coordination p. 81). • Builds on learnings from EPIC 4.29, which develops transmission look-ahead forecasting and load-modification signaling paired with flexible service agreements to enable speed-to-power, and EPIC 4.05 dynamic/ambient-adjusted line ratings. (Leveraging Past RD&D p. 80).