

Accelerating Electrification with Flexible Interconnections such as PG&E FlexConnect

2026



This report examines how flexible grid interactions and utility programs like FlexConnect accelerate EV charging installations while maximizing power availability. By leveraging these strategies, fleet depots and public hubs can bypass traditional infrastructure delays and achieve faster electrification.



More information: www.ampcontrol.io

Overview

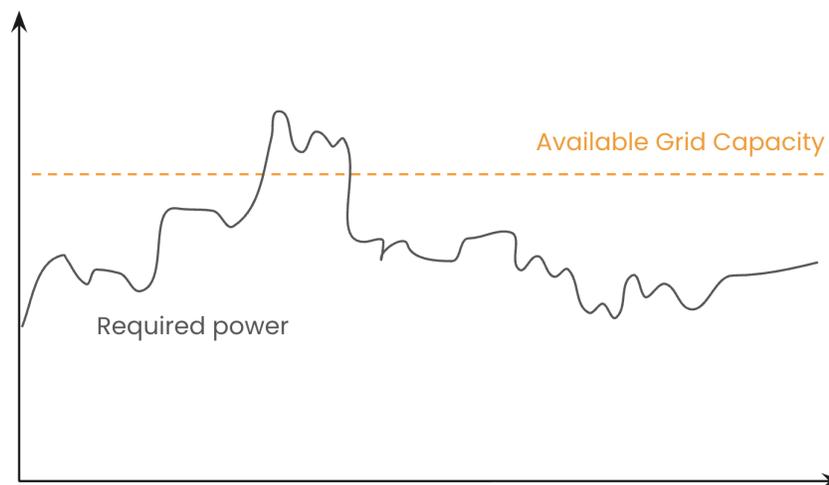
As the demand for Electric Vehicle (EV) infrastructure outpaces traditional utility capacity, "Flexible Interconnection" has emerged as a critical bridge. This report examines how Ampcontrol leverages utility programs—specifically to help fleet operators and large energy users bypass multi-year grid upgrade delays. By utilizing advanced energy management, sites can achieve full operational status up to 18 months earlier than traditional methods allow. We will specifically review PG&E's FlexConnect program, which is key for deployments in many parts of California.

The Grid Connection Challenge

Large-scale electrification for logistics hubs, drayage fleets, and ports typically requires significant power (often 2–10 MW+). However, many locations are in "constrained" grid zones.

Traditional Hurdles:

1. **Infrastructure Bottlenecks:** Utilities often require substation or feeder upgrades to meet the "worst-case scenario" (peak demand) of a new site. These upgrades can take 2 to 5 years to complete.
2. **The "No-Go":** Projects are frequently stalled because the grid cannot support 100% of the requested load 100% of the time, even if that peak load is only needed for a few hours a day.
3. **High CAPEX:** The cost of upgrading physical grid components is often passed to the developer, making many sites financially unviable.



The site is labelled as No-Go since the required capacity is above the available grid capacity

The Solution: Variable Interconnections

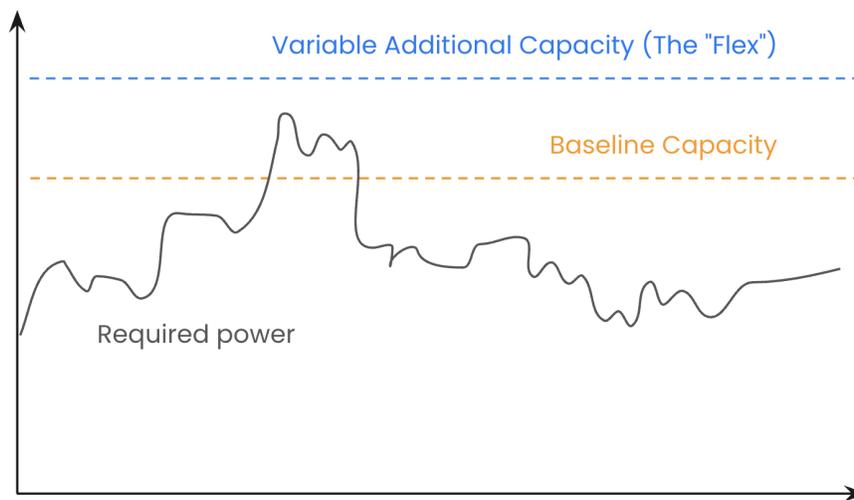
Programs like PG&E's FlexConnect are a game-changer for site operators. No matter if public or as fleet depot. It moves away from static "firm" capacity and toward dynamic operating limits.

How it Works:

Instead of waiting for a 5 MW upgrade, a customer might receive an agreement that says:

- **Off-Peak:** 100% of requested capacity (e.g., 5 MW) during most hours.
- **On-Peak:** 80% of capacity (e.g., 4 MW) during the busiest grid hours.

While the exact program structure can vary, typically, utilities use approve a baseline capacity for the new site and a variable capacity.



The additional variable capacity provides sufficient power to the site

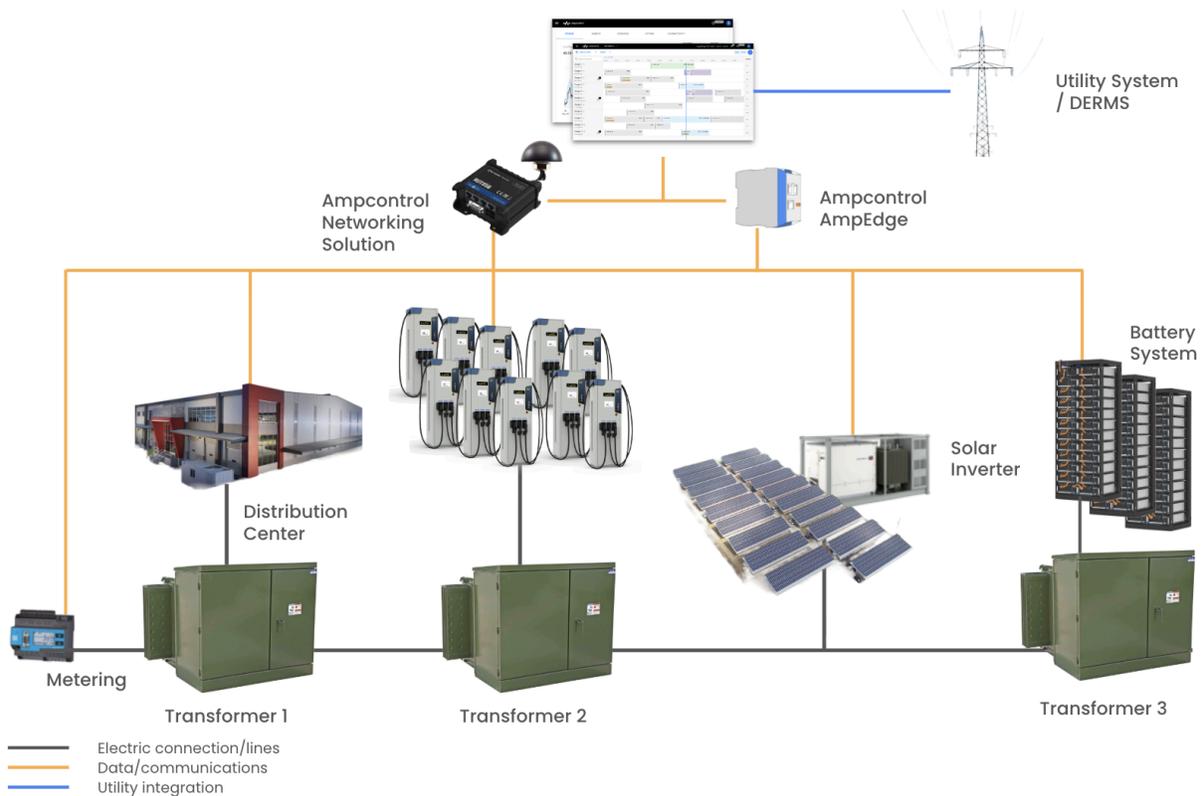
Example FlexConnect:

- **Predictable Scheduling (24-Value Blocks):** To make operations manageable, PG&E now provides a structured 24-value schedule. This allows for hourly power limits to be set a day in advance, giving fleet managers a clear "energy forecast" so they can plan their vehicle routes and charging times without surprises.
- **A Universal "Grid Language":** The program uses a standardized communication method (IEEE 2030.5) that allows the utility's system to "talk" directly to the site. Ampcontrol acts as the translator, taking these utility signals and instantly turning them into instructions the chargers can understand.

- Built-in Safety (Fail-Safe Mode):** A critical requirement for FlexConnect is a "fail-safe" protocol. If the internet connection between the utility and the site is interrupted, the AmpEdge controller automatically switches to a pre-approved safety mode. This ensures the site never accidentally overloads the grid while keeping as many vehicles charging as safely as possible.

Implementation: Ampcontrol & AmpEdge

Ampcontrol's AmpEdge Site Controller provides the *capability* to comply with variable interconnection programs around the world. It uses various protocols, including but not limited to Modbus TCP/IP, IEEE 2030.5, MQTT, OpenADR, and OCPP to communicate with EV chargers, energy assets such as solar, Battery BESS and utility platforms.



Energy management integration and communication with the utility (IEEE 2030.5 or OpenADR)

Step 1: Automated Compliance

The AmpEdge controller receives dynamic signals from the utility. It automatically throttles or shifts EV charging sessions to ensure the site never exceeds the utility limit.

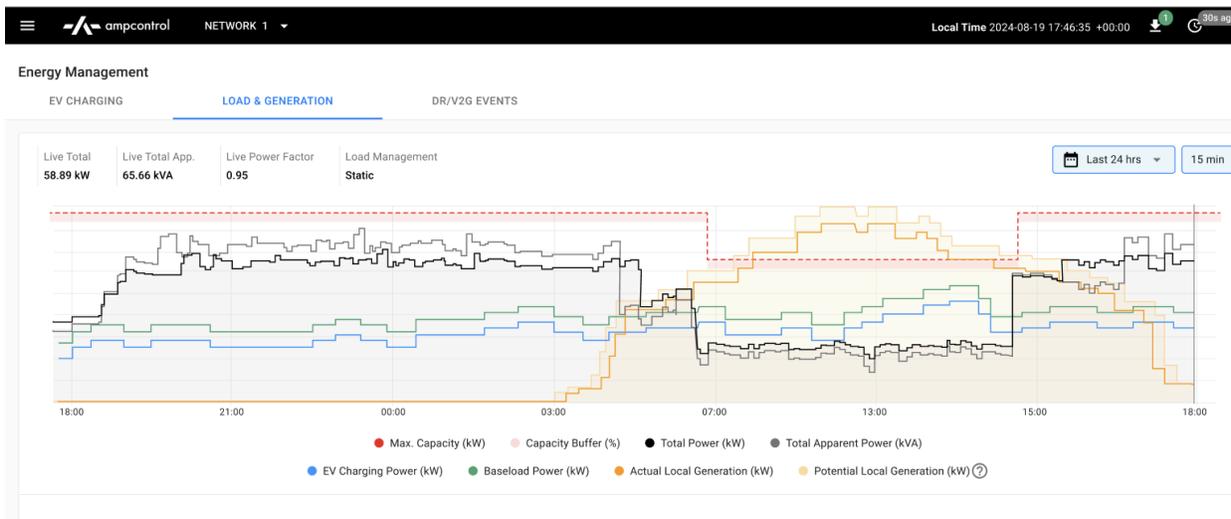
- Automation:** No manual monitoring is required; the system handles all utility constraints in the background.

- **Reliability:** Even if the cloud connection is lost, AmpEdge operates locally to keep the site within grid safety parameters.

Step 2: Leveraging Microgrid Assets

To maintain operational uptime during peak limit periods, Ampcontrol integrates on-site assets:

- **Solar & BESS:** During a utility "curtailment" event, Ampcontrol discharges on-site batteries to fill the gap, ensuring trucks still get a full charge.
- **Smart Scheduling:** Ampcontrol's AI-powered algorithms schedule heavy charging for the hours when the utility provides 100% capacity.



Real-World Benefits

The impact of flexible interconnection is already visible in major California deployments:

Benefit	Impact
Speed to Energization	Sites online 6–18 months faster by bypassing grid upgrades.
Operational Continuity	Distribution or fleet depot facilities increased their EV fleet from 30 to 50 vehicles using variable interconnections.
Infrastructure Savings	Avoids millions in upfront "make-ready" costs for transformer upgrades.

Conclusion

At Ampcontrol, we partner with fleet and site operators to enable reliable electrification without compromising operational performance. Through initiatives such as FlexConnect, we support flexible interconnections that allow customers to electrify sooner, manage grid limitations, and maintain on-time fleet departures.

About Ampcontrol

Ampcontrol is a leading provider of energy management and EV charging optimization solutions, designed to streamline the deployment and operation of charging infrastructure. Its innovative software and hardware solutions cater to diverse requirements, enabling seamless integration, real-time monitoring, and intelligent management of EV charging networks. Ampcontrol's Energy Management system optimizes energy usage across diverse sites, accommodating unique port and depot constraints such as transformers, grid connections, energy tariffs, and vehicle departure schedules. The system enables real-time monitoring and optimization of both chargers and vehicles, integrating seamlessly with OEM telematics systems or third-party telematics devices, requiring no additional hardware installation.

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