BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future.	Rulemaking 21-06-017 (Filed June 24, 2021)

OPENING COMMENTS OF SPAN.IO, INC. ON THE RULING REQUESTING COMMENT ON ASSIGNED COMMISSIONER'S PROPOSAL ON FLEXIBLE SERVICE CONNECTIONS

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In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), SPAN.IO, Inc. ("SPAN") hereby submits these reply comments on the *Assigned Commissioner's And Administrative Law Judge's Ruling* ("Ruling") *Requesting Comment On Assigned Commissioner's Proposal On Flexible Service Connections* ("Proposal"), filed on July 7, 2026, and modified by the the July 13, 2027, *E-Mail Ruling Granting Schedule Modification.*

I. INTRODUCTION.

The Proposal put forth in the Ruling is an important step forward in managing distribution system costs as Californians adopt more electric devices, all while maintaining grid reliability. The Proposal correctly incorporates state-of-the-art technology and learnings from recent programs to establish a robust path forward for flexible service connections.

SPAN is a provider of energy infrastructure that is transforming the grid-edge through combined hardware and software innovation. The SPAN product portfolio includes five smart electrical panel models, SPAN Edge (the intelligent service point), electric vehicle ("EV") charging solutions, SPAN Fleet Manager, SPAN Fleet APIs, and the SPAN Home App. SPAN

delivers energy management and advanced power controls that unlock greater grid utilization, benefiting homeowners, builders, and utilities with lower costs and faster speed to power.

SPAN's smart electric panels and SPAN Edge are certified to UL Power Control System ("PCS") standards, which gives us unique insights into the capabilities of this technology set. We are enthusiastic about the promise of flexible service connections and are broadly supportive of this Proposal. In these comments, we are offering feedback that is intended to ensure that a final order takes full advantage of PCS technologies and flexible service connections. Our six key recommendations are:

A. Flexible service connections should be considered for all new electric loads and sources, including heat pumps and appliances, not just EVs.

B. Flexible service connections should be deployed in all appropriate use cases, including for residential and commercial service upgrades.

C. A final order should include a clear cost recovery mechanism for flexible service connection investments.

D. A final order should include definitions of "Grid-Edge DERMS" and "Enterprise DERMS" to provide clarity to stakeholders.

E. A final order should adopt Path H from the SIO-CS working group report, and adopt a best-in-class standard.

F. A final order should adopt UL 3141 certification as the sole definition of a Power Control System.

Each of these recommendations is described in detail below.

II. COMMENTS.

A. Flexible service connections should be used for all new electric loads and sources, including heat pumps and appliances, not just EVs.

Californians are rapidly adopting many types of electric devices. For example, the California Air Resources Board 2022 Scoping Plans calls for the installation of 6 million heat pumps by 2030.[1] Additionally, most new heating, ventilation, and air conditioning ("HVAC") systems[2] and heat pumps[3] in the Bay Area will be electric in response to new and proposed standards to improve air quality in the region.

Many customers who install these devices will face costly and time-consuming service upgrades that can be avoided with a flexible service connection. For non-EV load additions, speed and cost are perhaps more critical as many heating/cooling and water heating transitions happen under distress due to the failure of the original gas appliance. Enabling PCS solutions to support these electrification loads is a critical step to ensure these electrification projects proceed and are not replaced with a gas appliance, losing that electrification opportunity (and the associated greenhouse gas emission reductions and avoided gas appliance maintenance) for an entire appliance lifecycle. Customers could wire these new loads in a smart electric panel that is certified to UL 3141 standards — such as the panels manufactured by SPAN — and the panel will automatically ensure that the home never exceeds its service limit. This functionality and use case is already being used today in Pacific Gas and Electric's ("PG&E") PanelBoost program.[4]

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[1] California Air Resources Board, *2022 Scoping Plan*, pg. 76. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

[2] Bay Area Air District, Rule 9-4: Nitrogen Oxides from Fan-Type Residential Central Furnaces, https://www.baaqmd.gov/Rules-and-Compliance/Rules/Reg-9-Rule-6-Nitrogen-Oxides-Emissions-from-Natural-GasFired-Water-Heaters

[3] Bay Area Air District, Rule 9-6: Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters. https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-6-nitrogen-oxides-emissions-from-natural-gasfired-water-heaters.

[4] PG&E, "PanelBoost." https://www.pge.com/en/clean-energy/building-electrification/panelboost.html.

We appreciate that the Proposal recognizes that this functionality is being deployed through PG&E's ChargeBoost program. The Proposal directs Southern California Edison ("SCE") and San Diego Gas and Electric ("SDG&E") to implement a program similar to ChargeBoost, and the Proposal also directs all three investor-owned utilities ("IOUs") to, "[P]ropose in their Tier 2 Grid Edge DERMS AL how they plan to scale this offering beyond the first 1,000 customers and whether this approach should become the default mitigation for all residential EV customers, not just those on 100 A services."[5]

While this Proposal is laudable, we maintain it should be expanded to apply to all home electrification efforts, not just EV charging. Limiting the focus of a flexible connect program to the addition of EV charging infrastructure denies the benefits of a flexible service connection to homeowners who are installing other new, large electric loads and sources. Furthermore, we believe it is shortsighted to address only one specific load. A home that installs electric vehicle service equipment ("EVSE") will most likely ultimately install electric appliances like heat pumps. Limiting the flexible interconnection to EVSE creates a high risk for a service upgrade with any subsequent electrical additions.

Controlling multiple loads also improves the customer experience. Greater control over all of a customer's electric loads makes it more likely they will participate in load management, since they will be able to control which specific devices are managed in real time. For example, consider a homeowner who needs to charge their electric vehicle before or during emergencies, and may be restricted from charging if they can't use the PCS to manage other loads.

[5] CPUC, *Flexible Service Connections: Advancing Affordable Electrification Through Efficient Distribution Grid Utilization*, July 2026. https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M610/K354/610354105.PDF. pg. 49.

This can be easily improved by changing the language in this Proposal to include *all* electric loads that could cause a service upgrade and utilizing smart electric panel technology to future proof these services for future load additions.

Our recommendation is that Section 4.3. of the Proposal be changed in a final order to the following:

> "All three large IOUs should propose in their Tier 2 Grid Edge DERMS AL how they plan to scale this offering beyond the first 1,000 customers and whether this approach should become the default mitigation for all residential customers adding new electric loads, not just those on 100 A services."

B. Flexible service connections should be deployed in all appropriate use cases, including for residential and commercial service upgrades.

While the Proposal clearly recognizes the potential for flexible service connections, it is not always clear about when they should be utilized. For example, the Executive Summary of the Proposal says, "The vision for this proposal is to advance initiatives that use flexible connections to provide customers capacity in a manner that increases the utilization of existing grid infrastructure and provides more affordable options that will benefit ratepayers," but "grid infrastructure" is not defined with more specificity.

As Section 3 of the Proposal demonstrates, the distribution system is complex and multi-layered. We believe that the intent of the Proposal is to use flexible service connections whenever they are a cost-effective and reliable solution. To that end, we encourage the Commission to make this explicit in a final order by clarifying that flexible service connections should be used for *all* infrastructure improvements and for *all* customer classes, including service upgrades for residential customers.

C. A final order should include a clear cost recovery mechanism for flexible service connection investments.

As the Commission knows from experience, the success of a directive to the IOUs often depends on pairing the directive with a clear mechanism for cost recovery of prudent investments. These economic considerations appear to be missing from this Proposal, and we are concerned that lack of clarity on funding and cost recovery could hinder the effort to deploy flexible service connections.

There are likely many funding sources and cost recovery pathways, and we encourage the Commission to work with the IOUs to find satisfactory outcomes. One example of a cost recovery mechanism is the service upgrade allowances that reside in Rules 15 and 16 of the utility tariffs.[6] Under Rules 15 and 16, ratepayer dollars are used to pay for traditional utility infrastructure. This incentivizes the utility to upgrade its infrastructure even when a lower cost alternative may be available. In situations where flexible service connections are a cost-effective alternative to traditional infrastructure investments, the utility will have more incentive to pursue that path if they are able to recover the cost in the same fashion they would through a service line upgrade.

Consequently, we recommend that a final order include a clear path for the utility to recover costs for flexible service connections that result in overall ratepayer savings including the existing service upgrade allowance dollars in Rules 15 and 16.

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[6] This issue has been presented to the Commission in other proceedings. For example, see the Energization (R.24-01-018): San Francisco Bay Area Planning and Urban Research Association's (SPUR) Opening Comments on the Assigned Commissioner's Amended Phase 2 Scoping Memo and Ruling, https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=605874803. Also see Building Decarbonization (R.19-01-011): SPAN's Comments On the Ruling Seeking Information on Building Decarbonization and Entering Pilot Programs Draft Reports Into the Record, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M604/K921/604921137.PDF and SPUR's Reply Comments on the Assigned Commissioner's and Assigned Administrative Law Judge's Ruling Seeking Information on Building Decarbonization and Entering Pilot Programs Draft Reports Into the Record, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M605/K578/605578364.PDF.

D. A final order should include definitions of "Grid-Edge DERMS" and "Enterprise DERMS" to provide clarity to stakeholders.

The Proposal includes many references to both "Grid-Edge DERMS" and "Enterprise DERMS," but does not appear to define either term. We have searched the record of this proceeding and have not found definitions in any other ruling or order.[7] This is likely to lead to some uncertainty as the IOUs file advice letters that include information about and plans for Grid-Edge DERMS.

Based on the Proposal, and previous uses of these terms in the state, our understanding is that the term "Enterprise DERMS" refers to a utility-owned tool that sends a signal to a service point. For example, a customer using a dynamic operating envelope would receive a notification to raise or lower their allowed usage limit in real-time from the utility via the Enterprise DERMS. Then, a "Grid-Edge DERMS" is a tool that orchestrates multiple loads within a customer's premise and can be owned by the utility, the customer, or a third-party. In this example, the Grid-Edge DERMS would manage usage of individual customer-owned devices in order to keep the premise within its operating envelope. Traditionally, Grid-Edge DERMS manage resource aggregations remotely via internet-based connectivity and controls, which is not well-suited to respond with sufficient speed and reliability to deliver flexible interconnection nor to qualify as a PCS.

Given our interpretation of this distinction, we understand it to be the case that each SPAN Panel or SPAN Edge could act as a self-sufficient Grid-Edge DERMS, operating locally on a premise; however, this is quite different from conventional Grid-Edge DERMS solutions. Our products are able to receive a signal from the utility (which we refer to as a Dynamic Service

[7] This is a complex and long proceeding, dating back many years, and we recognize that our search may have been incomplete. We apologize in advance if this recommendation is unnecessary and the Commission has previously defined these terms.

Rating and is similar in design to optional functions of UL 3141 currently in draft, specifically UL 3141-PIL (Power Import Limit)) and then manage loads in alignment with customer preferences to keep the entire premise below the service limit defined by the utility. This capability has been comprehensively tested by PG&E, and their evaluation concluded, "[A]ll functions were found to work as intended."[8]

E. A final order should adopt Path H from the SIO-CS working group report, and adopt a best-in-class standard.

The Proposal correctly identifies cybersecurity as a priority issue to be addressed. The Proposal asks for feedback on adopting the SIO-CS working group recommendations. Our understanding is that Path H from the report is the Commission's preferred path. We support this approach.

We recognize that the Commission is balancing many priorities and therefore doesn't have the bandwidth to create a comprehensive set of cybersecurity requirements. And, if the Commission did adopt a set of requirements, there is a very real risk that the requirements would become outdated over time. Instead of taking on this responsibility, we encourage the Commission to adopt cybersecurity standards from outside organizations by reference. This is Path H of the report, which we support.

Of course, Path H requires the Commission to identify at least one standard to adopt by reference. We look forward to participating in utility-facilitated conversations about the appropriate standard to adopt. We also recommend that if the Commission adopts multiple

[8] Pacific Gas and Electric Company, "SPAN PowerUp, Dynamic Service Rating and SPAN Drive Testing," https://www.dret-ca.com/wp-content/uploads/2026/06/SPAN-PowerUp-Dynamic-Service-Rating-and-SPAN-Drive-Test-Final-Report.pdf

standards by reference that it clarifies that Power Control Systems must meet at least one of the standards and not all of them.

F. A final order should adopt UL 3141 certification as the sole definition of a Power Control System.

Similar to the cybersecurity requirements, the Commission has neither the expertise nor the bandwidth to manage a technology specification. We believe the Commission agrees with this, which is why the Proposal specifically references UL 3141 Power Control Systems throughout.

We anticipate that there will be a temptation for utilities to use technologies that perform some of the functions of a PCS but don't have the full certification. This will result in short term deferrals and/or suboptimal customer experience, and the Commission should not allow this. When safety, reliability, and affordability are all at stake - as they are in the case of using flexible service connections as an alternative to traditional infrastructure - the Commission should set a high bar and not allow exceptions. Requiring a UL 3141 certification for any device used for flexible service connections is a reasonable place to set the high bar.

The UL 3141 certification is likely to evolve over time to include subsets of requirements and capabilities for specific use cases. As the certification changes, we encourage the Commission to adopt the elements of the certification that provide the best flexible service connection experience, including hard-wired communications between the PCS hardware and appliances located on the customer's premise. This is in line with SPAN's current capabilities.

III. CONCLUSION.

With Californians rapidly electrifying, now is the time to adopt robust standards for flexible service connections. This Proposal is an important milestone in the adoption of flexible service connections, and we are enthusiastic about what the Proposal would enable.

We appreciate the opportunity to provide these comments, which are focused on discrete, specific improvements that we believe align with the Commission's objectives. We look forward to continued engagement in this proceeding.

Respectfully submitted,

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