Interconnection and Distribution Engineering: Vehicle-Grid Integration Forum

Jose Aliaga-Caro

Utilities Engineer

March 22, 2024

Contact: Jose.Aliaga-Caro@cpuc.ca.gov

Interconnection and Distribution Engineering: Vehicle-Grid Integration Forum

Eric Martinot (Presenter)
Senior Regulatory Analyst
Energy Division | CPUC

Jose Aliaga-Caro (EVSE Interconnection Lead)
Utilities Engineer
Energy Division | CPUC

March 22, 2024

Contact: Jose.Aliaga-Caro@cpuc.ca.gov

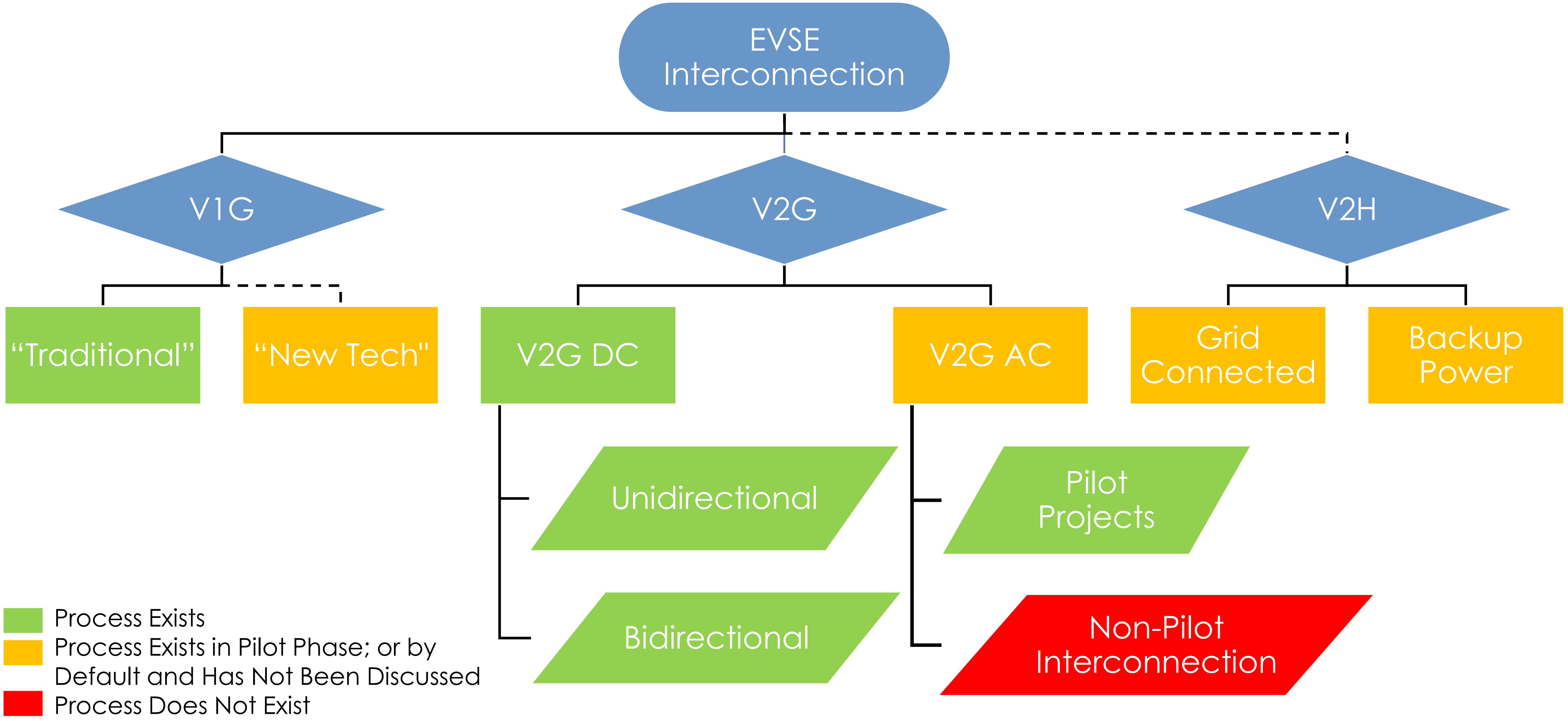
California Public
Utilities Commission

EVSE Interconnection: Relevant Documents

Rule 21 is a tariff that describes the interconnection, operating and metering requirements for certain generating and storage facilities seeking to connect to the electric distribution system.

- **Working Group Three Final Report** (June 14, 2019)
  - Discussed Issue 23: Should the Commission consider issues related to the interconnection of electric vehicles and related charging infrastructure and devices and, if so, how?
- **Final Report of the Vehicle to Grid Alternating Current Interconnection Subgroup** (Dec. 11, 2019)
- **Decision 20-09-035: Decision Adopting Recommendations from Working Groups Two, Three, and Subgroup** (Sept. 30, 2020)
  - Decision D2101027 - Order Correcting Errors in Decision 20-09-035
  - Adopted Issue 23 proposals that had consensus; and guidance for V2G AC systems
- **SDG&E Advice Letter (AL) 3774-E, SCE AL 4510-E, and PG&E 6209-E** (May 28, 2021)
  - Presents (1) the implementation plan for Proposal 23e, which allows V2G DC EVSE that has connected as load-only to switch to bidirectional mode upon receiving PTO from the utility, and (2) proposed temporary pathway for V2G AC EVSE interconnection (V2G AC Pilot)
- **Resolution E-5165: Approval, with Modifications, of Vehicle-to-Grid Implementation Plans and Technical Requirements in Compliance with Decision 20-09-035** (November 5, 2021)
- **PG&E AL 6500-E, SDG&E AL 3955-E, and SCE AL 4718-E** (February 11, 2022)
  - Submitted to incorporate Resolution E-5165's modifications
- **PG&E AL 7125-E, SCE AL 5185-E, and SDG&E AL 4350-E** (January 5, 2024)
  - Recommends (1) extending the V2G AC Pilot with the same requirements for an additional two years, and (2) further study of V2G AC interconnection pathways
- **Resolution Disposing of PG&E AL 7125-E, SCE AL 5185-E, and SDG&E AL 4350-E -- FORTHCOMING**

EVSE Interconnection Landscape



EVSE Interconnection: V1G

V1G

"Traditional"

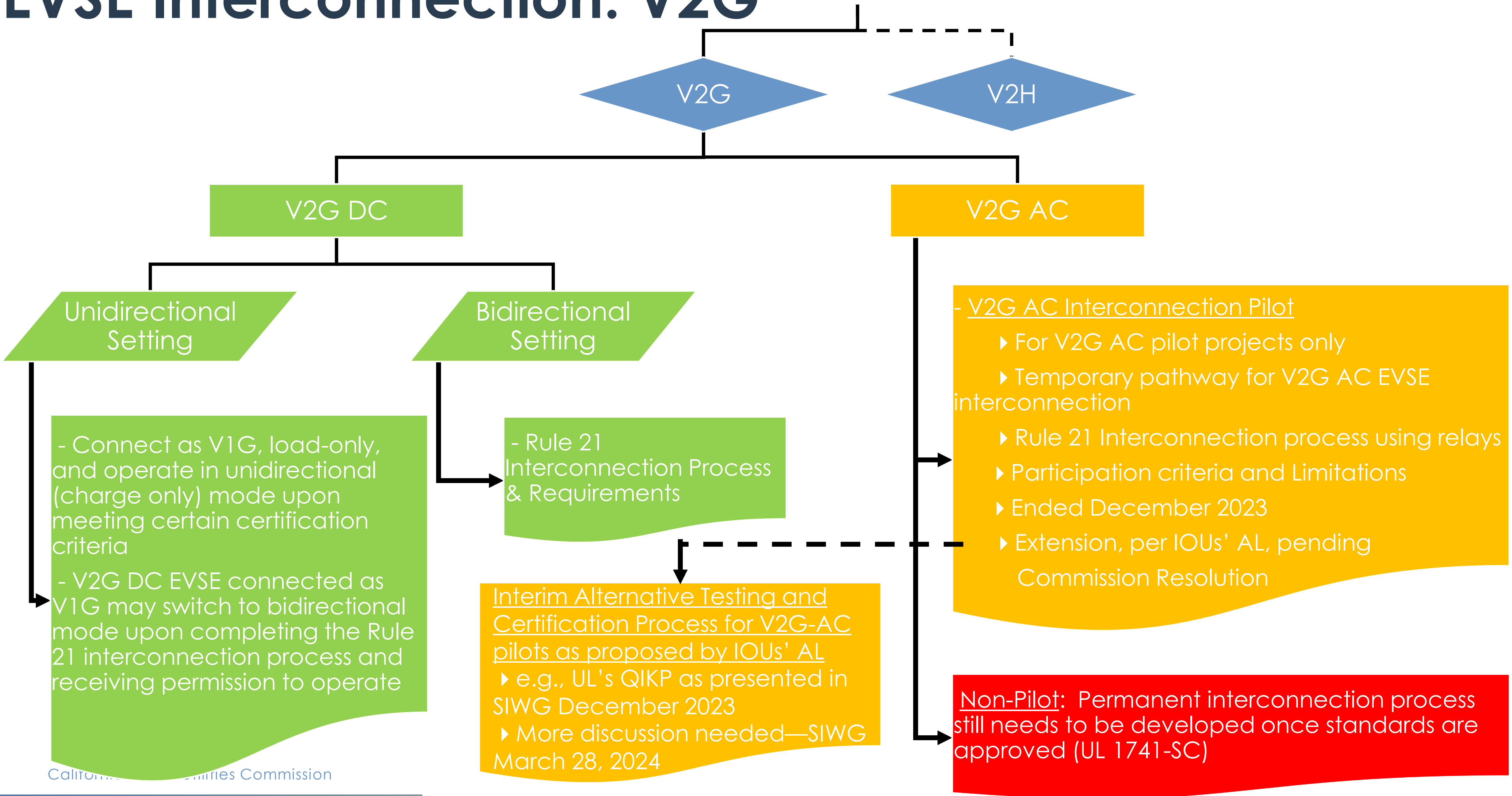
- Unidirectional charge-only: Rule 21 does not apply but Rules 2 (Description of Service), 15 (Distribution Line Extension), and 16 (Service Extensions) are applicable.

"New Tech"

- EVSE with Integrated Battery
- Others?

- EVSE w/ Integrated Battery
  - Process hasn't been addressed in a proceeding
  - Rule 21 governs interconnection of stationary and mobile storage and parallel operations
  - Rule 21: Apply as Non-Export Utilizing Non-Export AC/DC Converter

EVSE Interconnection: V2G



EVSE Interconnection: V2H

- V2G
- V2H
  - Grid Connected
    - Operate in parallel to IOU's electrical system but have automatic controls to prevent the export of energy into IOU's system for long periods of time.
    - V2H → V2G
    - Submit a Rule 21"Non-Exporting" Interconnection Request
  - Grid Disconnected (Backup power)
    - "Microgrid"
    - Submit a "backup isolated system" information
    - Rule 21 does not apply

California Public Utilities Commission

For additional information on EVSE Interconnection contact:

Jose.Aliaga-Caro@cpuc.ca.gov