

Section L4: OPERATING PROCEDURES AND REQUIREMENTS FOR LOAD-ONLY AND TRANSMISSION-ONLY ENTITIES

PURPOSE

The purpose of this section is to provide Load Entities and Transmission Entities with a general understanding of applicable PG&E and ISO operating procedures and requirements. PG&E and the Load Entity shall execute a PG&E Load Operating Agreement ([Appendix I](#)) prior to commencing interconnected operation.

APPLICABILITY

The following operating procedures apply to interconnections with PG&E which do not include generation facilities. If the interconnection involves both generation and load, or both generation and transmission, or transmission facilities interconnecting network that connects to generation, then [Section G4](#) shall also apply.

The PG&E operating agreement is in addition to any agreements that the Independent System Operator ([ISO](#)) may require to be in place for loads or transmission facilities connected to the ISO Controlled Grid.

L4.1. JURISDICTION OF THE ISO AND THE DESIGNATED PG&E CONTROL CENTER

Beginning 3/31/98 the California Independent System Operator (ISO) assumed Operational Control over most of the PG&E transmission grid operating at voltages of 60 kV and above. The jurisdiction of the ISO includes control of operations involving customer loads that are directly connected to the ISO controlled grid as described in the [CAISO Tariff](#) and any written agreements between the Load Entity or Transmission Entity and the ISO. Notwithstanding the operational jurisdiction of the ISO over most of the PG&E transmission system, it is expected that the ISO Protocols will delegate certain operational activities to PG&E on selected parts of the ISO Controlled Grid operating at 115 kV and below. Under the ISO's control and instruction, PG&E will continue to perform all physical switching operations, including de-energization and restoration of PG&E-owned facilities. PG&E will continue to serve as the primary point of contact for Load Entities that are connected to the ISO-controlled grid or the PG&E distribution system and will communicate and coordinate with the ISO as specified in the ISO's Protocols, Operating Procedures and tariffs.

L4.2. COMMUNICATIONS

The Load Entity or Transmission Entity shall maintain telephone service to PG&E from the interconnection facility location. If the location is remote or unattended, telephone service shall be provided to the nearest location normally occupied by the customer (acting on its own behalf or through its designated facility operator). PG&E and the facility operator shall maintain operating communications through the Designated PG&E Control Center. The facility operator shall be accessible at all times and shall provide to

the Designated PG&E Control Center a 24hour phone number where such facility operator may be reached. The facility operator shall maintain, in a prominent location, the name of the Designated PG&E Control Center along with applicable instructions and a list of necessary telephone numbers and coded alarms for such facility (refer also to Sections [L1-D.3](#) and [L1-T.3](#)).

L4.3. ATTENDED LOAD FACILITIES OR TRANSMISSION FACILITIES REQUIREMENTS

L4.3.1. Voltage Control Device Operation and Special Service Requirements

The facility operator shall operate any voltage control facilities at the direction of the Designated PG&E Control Center and in accordance with applicable provisions of the PG&E Load Operating Agreement ([Appendix I](#)), applicable tariffs, ISO requirements, and other electric service schedules or agreements. The facility operator shall post voltage orders from the Designated PG&E Control Center prominently so that any relief or backup operator is aware of the current PG&E voltage instruction. The Load Entity or Transmission Entity is responsible for the safe interruption and de-energization of customer-owned voltage-control devices (e.g., shunt capacitors).

L4.3.2. Connecting and Separating from the Power System

The facility operator shall notify the Designated PG&E Control Center before connecting to or separating from the ISO Controlled Grid and/or the PG&E Power System. For unexpected separations, the facility operator shall inform the Designated PG&E Control Center of the nature of the problem (i.e., overvoltage, underfrequency, ground fault, remedial action, etc.) and report any relay target operations. Relays must be capable of retaining targets upon loss of power. Refer to Section L4.4 below for unattended facilities with automatic or remotely initiated restoration.

L4.3.3. Clearances and Switching Requests

The facility operator must request a clearance from the Designated PG&E Control Center with sufficient time for all regulatory review and approvals. In many cases this is 45 to 60 days. When possible PG&E will work to minimize that timeline that is within PG&E's control but not less than a minimum of one week (seven calendar days) PG&E shall handle any required coordination with the ISO, and shall notify the Load Entity's or Transmission Entity's facility operator of any PG&E plans to take a clearance which affects the customer. As established in the PG&E Load Operating Agreement, each interconnected facility shall have installed an approved disconnect or other switching device for operation by the facility operator as a clearance point. The disconnect switch must be capable of being locked open and be accessible to PG&E personnel.

L4.3.4. Unusual or Emergency Conditions

For System Emergencies impacting the ISO Controlled Grid, the ISO is responsible for managing the emergency and for restoration. PG&E is responsible for complying with all directions from the ISO regarding management and alleviation of the System Emergency, unless such compliance would impair the health and Safety of personnel or the general public. PG&E will be responsible for all communication with Load Entities regarding emergencies, as described below, and will coordinate such communications with the ISO as required by the [CAISO Tariff](#), the [TCA](#), and applicable protocols and instructions.

Unusual operating conditions or other factors that have affected or may affect the ISO Controlled Grid and/or PG&E's electric system (e.g. abnormal voltages or loading, or unbalanced loading) must be reported to the Designated PG&E Control Center as soon as possible. Conditions imperiling life or property must be reported to the Designated PG&E Control Center immediately. The Designated PG&E Control Center shall be notified of any forced outage. The Switching Control Center shall notify the facility operator of any unusual PG&E or ISO Controlled Grid conditions that may affect the Load Entity's facility. During any system emergency the facility operator shall follow the instructions of the Designated PG&E Control Center. Interruptible Load Entities may not reconnect until authorized by the Designated PG&E Control Center.

L4.3.5. Other Communications

The facility operator shall notify the Designated PG&E Control Center of the following:

- Any replacement, modification or removal of any interconnection facilities (e.g., transformer, breaker, disconnect, relays, remedial action equipment, etc.).
- Results of three-year or four-year bench tests on all PG&E-required relays.
- Results of six-year or eight-year tests on interconnection circuit breakers and transformers.
- Any relay operations and the targets of the relay that caused the facility to separate, if applicable.
- The time of all separations from and reconnections to the PG&E system.
- The time of the change in operating status (i.e. opened or closed) of any voltage control device.
- Whenever any live line work is being performed and, in addition, whenever such work causes any trouble.

The facility operator shall ensure that any reported time readings are accurate, and maintain their accuracy compared to a reliable time standard.

L4.4. UNATTENDED LOAD FACILITIES REQUIREMENTS

L4.4.1. Verification of Energized Circuit

Unattended facilities having remotely initiated restoration may interconnect only after verifying with PG&E that the circuit to which the facility is to be connected is energized by a PG&E-approved source of energy.

L4.4.2. Separation/Restoration

After any separation from ISO Controlled Grid or the PG&E's system, if automatic restoration equipment has locked out or if the connection was separated manually, the facility operator must notify the Designated PG&E Control Center and receive permission before reconnecting.

L4.5. SPECIAL SERVICE REQUIREMENTS

If the Load Entity or Transmission Entity is participating in a load management program or other interruptible service schedule, the customer's facilities may also be required to add equipment that will let it respond to:

- system or local load levels, or
- system frequency deviations, or
- other direct or automatic control from PG&E

In addition, where identified in an Interconnection Study or required by the ISO, the facility may be required to participate in a Remedial Action Scheme to maintain or enhance the operating capability or performance of the ISO Controlled Grid and PG&E electric system.

During any period in which primary relays or protective devices are out of service, backup or secondary relays must be available to clear faults. If the backup relays malfunction, the Load Entity or Transmission Entity must keep an operator ready to manually perform operations that may be necessary. Note that the ISO has special operation, maintenance and replacement requirements for certain relays, designated by the ISO as Grid Critical Protective Devices, and such relays must be treated according to the requirements of the [CAISO Tariff](#) and [TCA](#).

When restoring any relays that have been out of service, the customer's facility operator shall verify that any such relay output contact, which is normally open, is in fact open.

L4.6. LOAD ENTITY OR TRANSMISSION ENTITY INTERFERENCE WITH POWER QUALITY

Under [Electric Rule 2](#), the Load Entity or Transmission Entity is responsible for operating its facilities and equipment to avoid unacceptable interference which may adversely affect PG&E's operations or service provided to other customers, whether by voltage fluctuations, harmonics, or inductive interference. As an example, total voltage harmonic distortion may not exceed 5 percent. The Load Entity or Transmission Entity is responsible for the costs of mitigating interference it causes.

Phase Unbalance: Also as outlined in [Electric Rule 2](#), the Load Entity or Transmission Entity is responsible to maintain their demand load balance to which the difference in amperes between any two phases at the Load Entity's peak load should not be greater than 10% or 50 amperes at the service delivery entrance, whichever is greater.

Harmonics: In regards to harmonic issues, it is advised for the Load Entity or Transmission Entity to follow [IEEE 519-1992](#), Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems as a guide to address acceptable limits of voltage and current distortions.

L4.7 500kV Interconnection

Note: The "500kV class system" is operated at 525kV with a typical operating range of 525 – 540 kV.

- For a 500kV breaker to remain in service, the breaker failure relay must be operational and cut in.
- For a 500kV line to remain in service, one communication aided protection scheme in service and cut in (high speed protection and DTT) and at least one additional non-communication aided relay in service and cut in.
- At least one 500kV bus differential protection must be in service and cut in for the bus to remain in service.
- At least one high speed protection must be in service and cut in for any 500kV element connected to the 500kV system to remain in service (such as transformer).