

# California High-Speed Train Project



## TECHNICAL MEMORANDUM

### TPS Interconnections to Utility TM 300.01

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# **California High Speed Train Project**

**Systems Engineering Team**

**Technical White Paper**

**Permitting and Licensing Issues Related to  
Traction Power System Interconnections to Utility Companies**

**July 24, 2010**

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## **General Overview**

This document summarizes the processes and requirements related to obtaining permits for construction of high voltage transmission lines and facilities for the interconnection of the California High Speed Train Project (CHSTP) traction power substations to the utility network. It is intended to give a basic overview of the requirements which must be followed by the CHSTP and utility companies to obtain permits for construction of the service connections. The steps and timeframes involved in obtaining permits, and the division of responsibilities for the various elements are described in this document.

### **1.0 Utility Permitting Requirements**

The process for obtaining permits for new construction associated with transmission interconnection depends on a number of factors. The status of the supplying utility as either an investor owned or publicly owned entity, the voltage of the supply, and the nature of the connection all influence the approval process.

#### **1.1 Investor Owned Utilities**

Investor owned utilities (IOU) are those utilities that are under regulatory jurisdiction of the California Public Utilities Commission (CPUC) and the corresponding siting and permitting requirements of the CPUC, as well as other local counties and cities. The following IOU utilities are expected to be involved in supplying power for the CHSTP: Pacific Gas and Electric Co., Southern California Edison, and San Diego Gas and Electric Co.

##### **1.1.1 CPUC Permitting**

The permitting requirements for IOUs generally are defined in CPUC General Order No. 131 D. (<http://docs.cpuc.ca.gov/published/Graphics/589.PDF>)

For electric transmission lines two types of permits may be required:

- (1) Permit To Construct (PTC), applies to electric power lines at voltages less than 200 kV and greater than 50 kV
- (2) Certificate of Public Convenience and Necessity (CPCN), applies to electric transmission lines at voltages greater than 200 kV

##### **1.1.1.1 Qualifying for an Exemption from GO-131D**



All projects must adhere to California Environmental Quality Act (CEQA) requirements. But some transmission high voltage projects may be exempt from either the PTC or the CPCN, depending on scope.

#### **1.1.1.1.2 Qualifying for Exemption for PTC**

PTC exemptions are generally consistent with certain categorical CEQA exemptions:

- Replacement of power line facilities with equivalent structures ((GO 131-D(III)(B)(1)(b).))
- Minor relocations up to 2,000 feet in length ((GO 131-D(III)(B)(1)(c).))
- Conversion of existing overhead line to underground ((GO131-D(III)(B)(1)(d).))
- Power lines or substations which undergo CEQA review as part of a larger project in which the final CEQA document (EIR or MND) finds no significant environmental impacts caused by the power line or substation ((GO 131-D(III)(B)(1)(f).))
- Power line or substations to be located in existing franchise, road-widening setback, or utility easement or corridor ((GO 131-D(III)(B)(1)(g).))
- Projects which are Categorical or Statutorily Exempt from CEQA (Exemption H)

A project that appears exempt may be subject to override of the exemption under certain conditions.

#### **1.1.1.1.3 Qualifying for Exemption for CPCN**

Under certain circumstances transmission projects greater than 200 kV may be exempt from GO-131 D licensing requirements, but those exemptions are few. They are defined in the defining paragraph of the CPCN requirements in GO-131 D, and are summarized as follows:

- Replacement of existing poles/towers with either poles/towers of similar size and voltage rating so long as the replacement poles/towers are in same location or adjacent to existing pole/tower locations within an existing ROW.
- Replacement of existing conductor and accessories with conductor and accessories of the same voltage rating or the voltage rating for which the line originally was permitted.
- Relocation of a short section of an existing transmission line (including associated facilities such as poles or towers), whether or not within the



existing easement for such line; provided, however, if relocation impacts sensitive habitats, then exemption may not apply.

- Relocation of an existing transmission line entirely within the existing easement for such line; provided, however, that if such relocation impacts sensitive habitats, the exemption may not apply.
- To convert overhead to underground of the same voltage within the same existing easement; if conversion requires trenching through environmentally sensitive areas, then a review with an environmental legal expert is warranted to determine qualification of exemptions.
- To convert overhead to underground of the same voltage within a single development or construction project with an approved Environmental Impact Report describing the undergrounding of such lines.
- To reconductor an existing overhead with new conductor of the same voltage, and such work may include replacement of existing supporting structures as needed for repair or maintenance.
- To add new conductor and accessories on existing overhead supporting structures so long as total voltage for which the line was permitted or rated is not exceeded, and such work may include replacement of existing supporting structures as needed for repair or maintenance

### **1.1.1.2 Schedules**

The schedule for processing of an application by an IOU, and obtaining either a Permit To Construct (PTC) or a Certificate of Public Convenience and Necessity (CPCN) can be very lengthy. A flowchart showing the process for obtaining a PTC by an IOU is provided in Appendix A, Figure 1, and for a CPCN in Figure 2. Generally the time frame for CPUC processing and approval of a PTC is shorter than that for a CPCN, due to the required proof of need for a CPCN and the corresponding public hearing process. The following is a list of the typical steps and approximate time frames for each step of the process for the PTC and CPCN process for an IOU. All of the following steps start with the assumption that the IOU has completed a Proponents Environmental Assessment (PEA) ready to submit along with its application to the CPUC.

#### **CPUC Permit To Construct (50 kV – 200 kV) – Typical Time Frames (9-12 months)**

1. IOU submits application and PEA to CPUC
2. CPUC assigns case number, Administrative Law Judge (ALJ), CPUC Environmental Consultant
3. CPUC's consultant reviews PEA (90 days)



4. CPUC accepts application as complete (30- 60 days)
5. CPUC makes decision between Negative Declaration (ND), Mitigated Negative Declaration (MND), or a full Environmental Impact Report is required.
6. CPUC Prepares EIR (4 – 6 months), or ND or MND (105 days)
7. CPUC issues ND, MND, or Draft EIR for public review (30 days)
8. CPUC holds public hearing, and finalizes environmental documents
9. ALJ writes decision (90 days)
10. ALJ issues draft decision for public review (30 days)
11. CPUC votes on decision.
12. CPUC issues decision (30 days)
13. IOU begins construction

**CPUC Certificate of Public Convenience and Necessity (200 kV and above)  
– Typical Time Frame (12-18 months)**

1. IOU submits application and PEA to CPUC
2. IOU submits testimony for statement of project need
3. CPUC assigns case number, Administrative Law Judge (ALJ), CPUC Environmental Consultant
4. CPUC's consultant reviews PEA (90 days)
5. CPUC accepts application as complete (30- 60 days)
6. CPUC sets schedule for hearings and process of need statement, schedule for need statement review and approval generally runs parallel with the environmental review process.
7. CPUC makes decision between Negative Declaration (ND), Mitigated Negative Declaration (MND), or a full Environmental Impact Report is required.
8. CPUC Prepares EIR (4 – 6 months), or ND or MND (105 days)
9. CPUC issues ND, MND, or Draft EIR for public review (30 days)
10. CPUC holds public hearing, and finalizes environmental documents
11. ALJ writes decision (90 days)
12. ALJ issues draft decision for public review (30 days)
13. CPUC votes on decision.
14. CPUC issues decision (30 days)
15. IOU begins construction

### **1.1.2 CEQA**

This section provides a short summary of the California Environmental Quality Act (CEQA),. It is important to point out that CPUC GO-131 D requires compliance with CEQA for siting and construction of electric transmission lines. In locations where transmission lines pass through federal lands, compliance with National Environmental Policy Act (NEPA) may also be required, in addition to CEQA clearance.





- The basic goal of the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 *et seq.*) is to develop and maintain a high-quality environment now and in the future, while the specific goals of CEQA are for California's public agencies to:

- 1) Identify the significant environmental effects of their actions; and, either

- 2) avoid those significant environmental effects, where feasible; or

- 3) mitigate those significant environmental effects, where feasible.

- CEQA applies to "projects" proposed to be undertaken or requiring approval by State and local government agencies.

"Projects" are activities which have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits and the approval of tentative subdivision maps.

- Where a project requires approvals from more than one public agency, CEQA requires one of these public agencies to serve as the "lead agency."

A "lead agency" must complete the environmental review process required by CEQA. The most basic steps of the environmental review process are:

- 1) Determine if the activity is a "project" subject to CEQA;

- 2) Determine if the "project" is exempt from CEQA;

- 3) Perform an Initial Study to identify the environmental impacts of the project and determine whether the identified impacts are "significant". Based on its findings of "significance", the lead agency prepares one of the following environmental review documents:

- a) Negative Declaration if it finds no "significant" impacts;

- b) Mitigated Negative Declaration if it finds "significant" impacts but revises the project to avoid or mitigate those significant impacts;

- c) Environmental Impact Report (EIR) if it finds "significant" impacts.

While there is no ironclad definition of "significance", the State CEQA Guidelines provides criteria to lead agencies in determining whether a project may have significant effects in Article 5.



The purpose of an EIR is to provide State and local agencies and the general public with detailed information on the potentially significant environmental effects which a proposed project is likely to have and to list ways which the significant environmental effects may be minimized and indicate alternatives to the project.

### **1.1.3 Local Permitting**

While permitting of transmission lines for IOUs are under the jurisdiction of the CPUC, in California, local permitting issues must be considered. Counties and cities that transmission line facilities pass through, have various local permitting requirements that may need to be factored into the system design, even though CPUC jurisdiction may supersede. There may be discretionary or ministerial permits that are required by the local agency, (for example for audible noise during construction).

### **1.1.4 EMF (Electromagnetic Field)**

If the IOU is the builder of new high voltage transmission for the CHSTP, then the location and construction of the transmission line would be subject to the local utility abiding by their EMF transmission line design guidelines, which are filed with the CPUC. These guidelines are required by the CPUC (California Public Utilities Commission) in compliance with CPUC decision 93-11-013. These guidelines are publicly available, and can be obtained by request directly from the utility, or the CPUC. The EMF design guidelines for SCE can be found on the internet at the following link:

[http://www.cpuc.ca.gov/environment/info/aspen/dpv2/deir/apps/ap6\\_emf\\_design\\_guidelines.pdf](http://www.cpuc.ca.gov/environment/info/aspen/dpv2/deir/apps/ap6_emf_design_guidelines.pdf)). The EMF transmission design guidelines outline specific design measures which can be implemented to reduce EMF. Normally the utility will be required to develop a Field Management Plan (FMP), which describes the design of the transmission line, power system studies, EMF calculations, and mitigation measures taken to reduce EMF, as measured at the edge of the right of way for the transmission line. Usually a copy of the FMP will be attached to the EIR, or with the appropriate GO-131D permit application. The utilities are required to spend about 4% of the capital cost of the transmission line to reduce EMF, which can result in 15% reduction in EMF levels, as measured at the edge of right of way. EMF mitigation measures come in two categories (1) No cost, and (2) Low Cost, the no-cost measures consist of things that can be implemented at no cost (i.e. phase reversal, phase drop roll, reduced phase spacing, etc.), the low cost items are things that can be implemented within the 4% cost, mentioned above, (i.e. taller structures, wider right of way, etc.).

In addition to the "EMF transmission design guidelines", mentioned above, there are also rules on how close to public schools that electric power lines can be located. Appendix C provides a copy of the school siting guidelines developed



by the Office of Environmental Health and Safety. The setback requirements are dependent upon voltage level of the transmission line.

## **1.2 Municipalities (Publicly Owned Utilities)**

The CHSTP route passes through various municipal owned utility districts. These municipalities are not subject to the CPUC regulatory permitting requirements. But generally have local jurisdictional codes that define permitting requirements. Each individual municipality will be contacted to determine applicable permitting and licensing requirements for new or upgraded high voltage transmission facilities. Municipalities impacted by the CHSTP project include: Los Angeles Department of Water and Power, Anaheim, Sacramento Municipal Utility District, and others.

### **1.2.1 CEQA**

Municipal utility districts are subject to compliance with CEQA and all applicable state and federal environmental laws, generally the same as IOUs.

### **1.2.2 City Ordinances**

Cities often have permitting ordinances that may affect design and construction of electric transmission facilities that should be checked.

### **1.2.3 EMF**

Transmission facilities built by municipalities within their jurisdiction are not subject to CPUC EMF guidelines (CPUC decision 93-11-013). However, many of the municipalities use the CPUC decision as a guideline for establishing their EMF requirements. Each concerned municipality should be consulted to determine the specific design requirements to manage EMF related to electric transmission facilities.

## **2.0 Permitting Requirements for Utility Interconnections for CHSTP**

The following is a brief discussion of the two most common scenarios which could occur with regard to design, construction, and permitting of new transmission line facilities associated with supply of power to the traction power substation for the CHSTP.

### **2.1 CPUC**

#### **Scenario 1 – Utility designs, permits, and builds new transmission facilities**

In this scenario the local utility insists on designing, building and permitting any new transmission or substation facilities associated with supplying power to the



CHSTP traction power substations. If the new transmission facilities are going to become part of the utility network and the utility is going to be dependent on them to ensure reliability of their system, then this scenario is likely to occur. The conditions that could result in this scenario are:

- A.** Existing utility owned transmission line passes near the required location of a proposed traction power substation site. The existing utility transmission line needs to be extended to the traction power substation site and looped into the traction power substation.
- B.** Utility requires new utility owned stand alone substation to be built near existing transmission line. Utility loops in existing transmission lines and builds new transmission lines to feed CHSTP traction power substation.

The permitting process and time frame for this scenario is dependent on whether CHSTP includes the environmental impact of the new electric transmission facilities in their EIR.

### **CPUC Permitting Exemptions**

- If the CHSTP does include an adequate description of the environmental impact and associated mitigation in their EIR, of the utility construction and operation of these new transmission facilities, then exemptions for CPUC permitting may apply. Figure 3, in Appendix A provides a flow chart showing the process for obtaining this exemption.
  - If the transmission facilities are less than 200 kV, then the GO-131 D exemption under being included as a part of a larger project may apply (see PTC exemption ((GO 131-D(III)(B)(1)(f).)), described in section 1.1.1.1.3 above). It is likely that the utility will still be required to submit an advice letter, but application of this GO-131 D exemption could reduce the overall permitting time for the utility from 8-12 months to 30-45 days, a significant reduction in time schedule and costs.
  - If the transmission facilities are greater than 200 kV, then the qualification for inclusion as part of the larger project (i.e. CHSTP) may not apply.
- Other exemptions may apply depending on the length of the new transmission facilities (see section 1.1.1.1.3 above)

If the CHSTP does not include a description, assessment, and mitigation of environmental impacts in their EIR, then the utility will be required to go through the entire GO-131 D permitting process, which can be very costly and time consuming (8 – 16 months).



## **2.2 CEQA**

### **Scenario 2 – CHSTP designs, permits, and constructs new transmission facilities**

In this scenario the CHSTP will design, obtain permits, and construct all new electric facilities associated with supplying power to the CHSTP traction power substations. This situation is likely to occur as described as follows:

- A. The CHSTP traction power substation is located very close to an existing utility transmission line or substation, requiring little or no utility construction. Possibly a short section of overhead high voltage or underground lines connecting to the CHSTP traction power substation.
- B. An extension of an existing utility transmission line is built, owned, and operated by the CHSTP that will supply power to the CHSTP traction power substation.

In both of these situations the CHSTP would build and own the electric transmission facilities, and because CHSTP is not subject to CPUC GO-131 D permitting guidelines, the CPUC permitting process and associated hearings could be avoided. However, the applicable compliance with permitting through the CEQA requirements would still need adhered. The avoidance of the CPUC licensing process could significantly reduce the permitting and licensing time.

## **2.3 Other**

There are many other combinations of ownership and construction of transmission facilities to provide power for traction power substations. For example, Southern California Edison has proposed in their screening studies that the utility would not construct new transmission facilities if they were located more than 100 ft. from the edge of the CHSTP right of way. It is possible that an SCE transmission line might be located more than 100 ft. from the location of a proposed traction power substation site. This would require CHSTP to construct and own new transmission facilities that would need to be built from the SCE right of way to the traction power substation site.

## **3.0 Utility Interconnection Procedures**

Based on meetings with the utilities, it appears that each utility seems to have its own procedures for providing interconnection to the power grid for the CHSTP. The interconnection procedures of the utilities must adhere to the Federal Energy Regulatory Commission (FERC), the CPUC, or the agency having jurisdiction (in the case of municipalities, i.e. Los Angeles, and Anaheim).



### **3.1 PG&E Service Territory**

Although specific details have not been stated, PG&E is expected to follow an interconnection procedure generally following Rule 21, similar to the procedure described below for Southern California Edison.

### **3.2 Southern California Edison (SCE) Service Territory**

SCE has provided a framework for interconnection for supply of power to the CHSTP, that follows more closely with interconnection requirements for an industrial customer which would request service and interconnection to the high voltage transmission system. The procedure proposed by SCE would follow the following course:

1. Establish Non-Disclosure Agreement (NDA)
2. Establish "Feasibility Study Agreement", and pay \$ 150,000 fee
3. Collect geographical, and electrical data from CHSTP
4. Conduct initial screening study to establish location (180 days)
5. Establish "Method of Service" study agreement, pay fee
6. SCE will conduct power system studies (time frame unknown)
7. CHSTP to review studies
8. Finalize scope of interconnection facilities and system upgrades
9. Establish Interconnection Agreement,
10. SCE develops cost estimate of system upgrades
11. Pay for SCE system upgrades
12. Complete CHSTP EIR
13. SCE files for CPUC exemptions
14. After approval of EIR and CPUC exemptions, construction begins

### **3.3 Los Angeles Department of Water and Power (LADWP) Service Territory**

LADWP has chosen to follow along the path of the FERC interconnection procedures along the lines of the Large Generator Interconnection Procedures (LGIP). The process is summarized as follows:

1. CHSTP submits "Transmission Interconnection Request" for each traction power substation within LADWP service territory, along with \$ 25,000 payment for each location.
2. LADWP conducts a scoping meeting to discuss interconnection
3. Establish a "Feasibility Study" Agreement, payment of \$ 10,000 required
4. CHSTP provides characterization of traction power loads to LADWP.
5. LADWP conducts power system studies for feasibility study (45 days)
6. LADWP and CHSTP agree on feasibility of interconnection
7. Establish a "System Impact Study" Agreement, pay fees



8. LADWP conducts system impact study and identifies detailed interconnection requirements and system upgrades required to accommodate supply of power to the CHSTP traction power substations.
9. Establish “Facility Study” Agreement
10. LADWP conducts facility study, to determine cost estimates design, and construction requirements. Develops cost estimate for all system upgrades.
11. CHSTP pays system upgrade costs
12. EIR is completed and certified
13. Local permits are obtained
14. Equipment is purchased and construction begins

### **3.4 City of Anaheim Service Territory**

1. NDA established
2. Anaheim provides power system data to CHSTP
3. CHSTP will make arrangements to have an outside independent consultant conduct power system impact studies. City of Anaheim will direct and oversee the consultant’s work.

*To be finished after further discussions with the City of Anaheim*

### **3.5 Interconnection to a transmission line owned by a utility within another’s service territory**

The service territories of the electric utilities in California are established under the California public utility code section 6001 – 6017 and section 6201 – 6205.1. Generally the service territory boundaries of the electric utilities in California as we know them today were established in the late 1960’s, and were the result of acquisitions by investor owned electric utilities of various other publicly owned and investor owned electric utilities. Each investor owned electric utility pays a “franchise fee” to the local agency with jurisdiction (i.e. city or county) for the right to sell electricity as a commodity, and use of public rights of way for electric facilities. Electric utilities may construct transmission and distribution power lines within another utility’s service territory but it cannot serve power to a customer within another’s service territory. This right is highly coveted and any infringement of this right can be met with hostility. Section 9601 (c) of the California Public Utility code reads as follows:

*No local publicly owned electric utility or electrical corporation shall sell electric power to the retail customers of another local publicly owned electric utility or electrical corporation unless the first utility has agreed to allow the second utility to make sales of electric power to the retail customers of the first utility.*



However, it may be possible for CHSTP to obtain service from a transmission line owned by a utility located in another utility's service territory, section 9601 (d) reads:

*This section does not apply to an exchange of customers affected by a local publicly owned electric utility completing a mutually agreeable condemnation process to resolve a fringe area agreement in which there exists a balance of benefits between the customers of the local publicly owned electric utility and the electrical corporation.*

There may be several instances for the CHSTP project, where a transmission line owned by utility *A* passes through the service territory of utility *B*, and the transmission line owned by utility *A* passes close to the proximity of a planned traction power substation location for the CHSTP. It is possible that a transmission line could be built by utility *B* to serve the CHSTP traction power substation, but at a much higher capital cost and more impact to the environment due to construction. There are several possible solutions to providing service to the CHSTP traction power substation in this instance:

1. Utility *A* interconnects to the new CHSTP traction power substation and sells power to utility *B*, which in turn sells power to CHSTP (California public utility code 9601).
2. Utility *B* builds new transmission facilities to the CHSTP traction power substation and serves CHSTP directly.
3. Utility *A* interconnects to the new CHSTP traction power substation, and utility *B* waives its rights to sell power to CHSTP.

Option 1 may be exercised if both utilities are in agreement, but it is possible that utility *A* would require payment of a wheeling fee or transportation charge for using their system to transport power. Also, it would require payment for the cost of the electric facilities required to interconnect. It is also possible that option 2 could be exercised by utility *B*, however CHSTP may have legal recourse to this by using its state authority. It is doubtful that option 3 would be accepted by utility *B*.

#### **4.0 Regenerative Braking (Generation of Power)**

The CHSTP will utilize regenerative braking to slow the train cars on downhill slopes and approaching passenger stations. Regenerative braking will result in the braking energy to be "regenerated" through the use of control of the variable speed drives on the traction motors. The result is that power is generated and sent back to the utility through the traction power substations. The amount of power capacity regenerated is estimated to be in the range of an average of 5





MW, further studies are required to determine the amount of annual energy (kilowatt-hours) that would be generated.

#### **4.1 Applicable Tariffs**

There are basically two tariffs that apply for generator interconnection and pricing:

- California Public Utility Commission (CPUC) Rule 21 (see web site <http://www.cpuc.ca.gov/PUC/energy/DistGen/rule21.htm>), this web site has a copy of rule 21. Each IOU has its own version of rule 21, which is also referenced at this web site.
- Federal Energy Regulatory Commission (FERC) Large Generator Interconnection Procedure (LGIP), which is administered by the California Independent System Operator in the state of California.

Rule 21 generally applies to small generators wishing to connect to a utility's "distribution system". The maximum size of the generator is dependent on the available capacity of the utility's distribution system. The voltage of the distribution system is dependent on the utility's definition of its distribution system. In the case of PG&E its distribution system is 12 kV and the maximum capacity is generally in the range of 20 – 30 MVA (capacity may be higher or lower dependent on equipment limitations and native load being carried, and other factors). In the case of SCE, its distribution system maximum voltage is 66 kV, and has a capacity is generally in the range of 20 – 200 MVA (capacity may be higher or lower dependent on equipment limitations and native load being carried, and other factors). SCE has indicated that they would apply rule 21 to the power generated by CHSTP. Generally it appears that SCE will apply the LGIP if the generator is 20 MW or greater (see SCE's wholesale access tariff [http://www.sce.com/NR/sc3/tm2/RPA/Reg\\_Info\\_Ctr/OpenAccess/wholesale\\_distribution\\_access\\_tariff.pdf](http://www.sce.com/NR/sc3/tm2/RPA/Reg_Info_Ctr/OpenAccess/wholesale_distribution_access_tariff.pdf), sheet 68).

Generators wishing to deliver larger amounts of power capacity may have to interconnect to the electric transmission system, which is under the jurisdiction of the FERC. In this case the LGIP administered by the CAISO applies. A copy of the LGIP can be found at the CAISO web site <http://www.caiso.com/1791/1791bfdc382e0ex.html>. Los Angeles Department of Water and Power (LADWP) has indicated that they would prefer to use the LGIP process for interconnection of the CHSTP. This process would allow the generation of power.

#### **4.2 Requirements for Metering and Payment for Power**

Both rule 21 and the LGIP provide specific provisions for how power would be metered and payment would take place. A Copy of Rule 21 for each of the IOU utilities is attached in Appendix B.



### 4.3 Applicable rates

Each utility has different applicable tariff rules that apply; the following web sites can be accessed:

SCE: <http://www.sce.com/AboutSCE/Regulatory/openaccess/>

PG&E: <http://www.pge.com/tariffs/ERS.SHTML#ERS>

LADWP: <http://www.oatioasis.com/LDWP/>

The rates vary depending on the voltage level of interconnection, the magnitude of the power capacity of the generating source, and the point of interconnection. It will be difficult to establish the applicable rate until the interconnection feasibility studies are completed and the point of interconnections are identified.

One approach that may be advantageous for the CHSTP is to aggregate that traction power substations generation in each utility service territory. This could result in a substantial amount of generation and would simplify agreements and billing, and possibly improve dispatch flexibility. The tariffs governing the sale of generated power are constantly changing and being updated. For example a new feed-in tariff is being discussed for small renewable generators and distributed generation which may be applicable to the CHSTP. Therefore, the applicable tariffs will be further researched at the time of rate negotiations and service agreements.

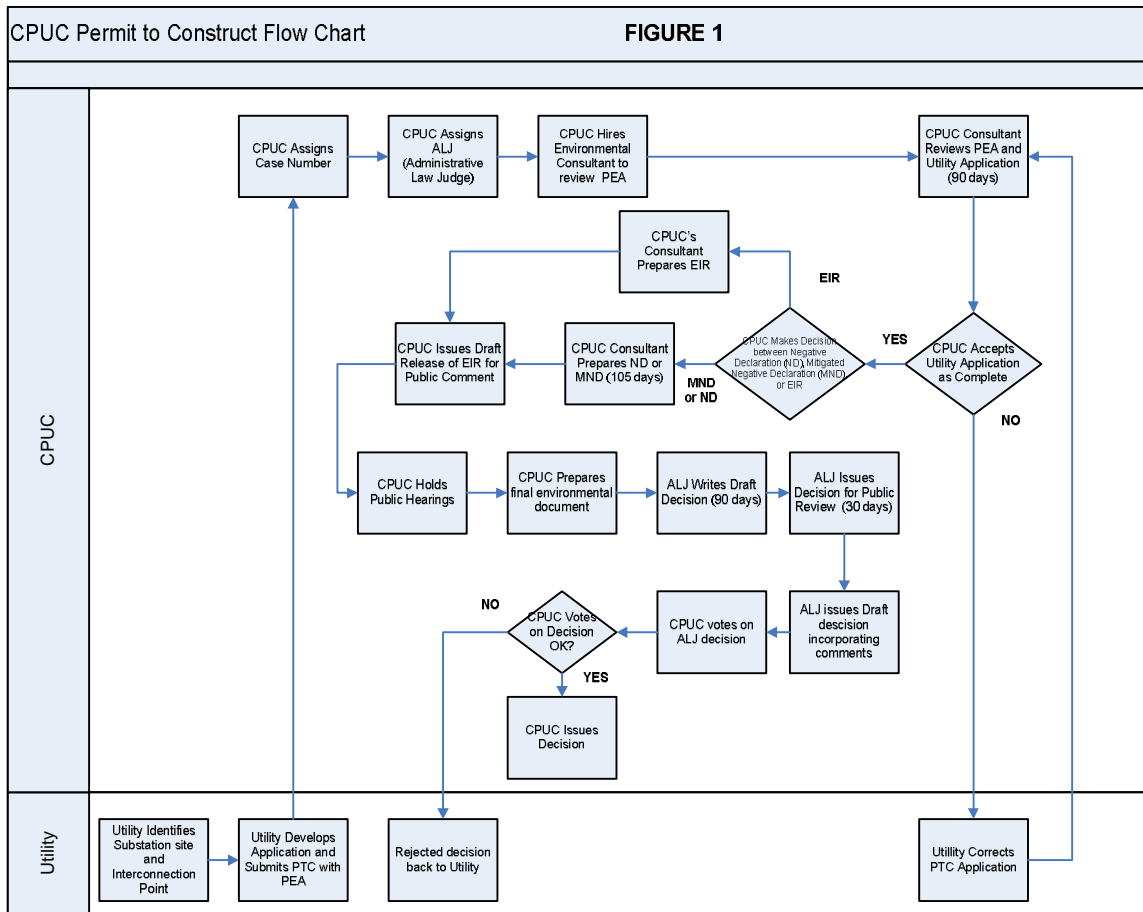
### 4.4 CHSTP Action Required to Obtain Payment for Regenerative Braking

The action required by CHSTP will likely be different for each utility. Currently, LADWP is applying the rules of the LGIP, whereas PG&E and SCE are applying the WDAT rule 21 for interconnection. In each case the interconnection points must be defined, and then at the appropriate point the proper interconnection agreement must be negotiated and a corresponding rate and payment mechanism developed for payment for the regenerative braking power. The Project will likely undertake these negotiations well after the interconnection agreements and technical coordination, but prior to the commissioning of the system.



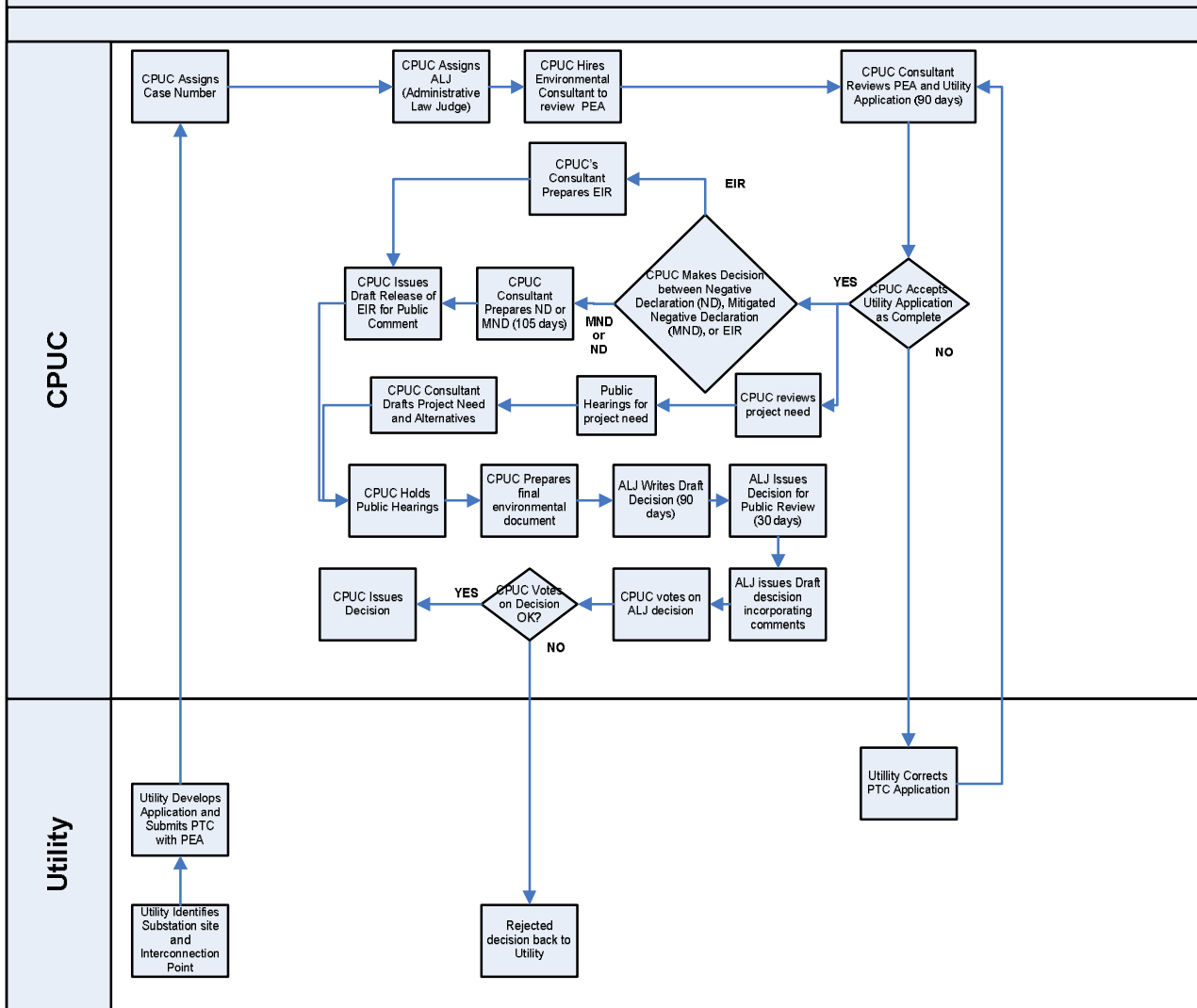
# Appendix A

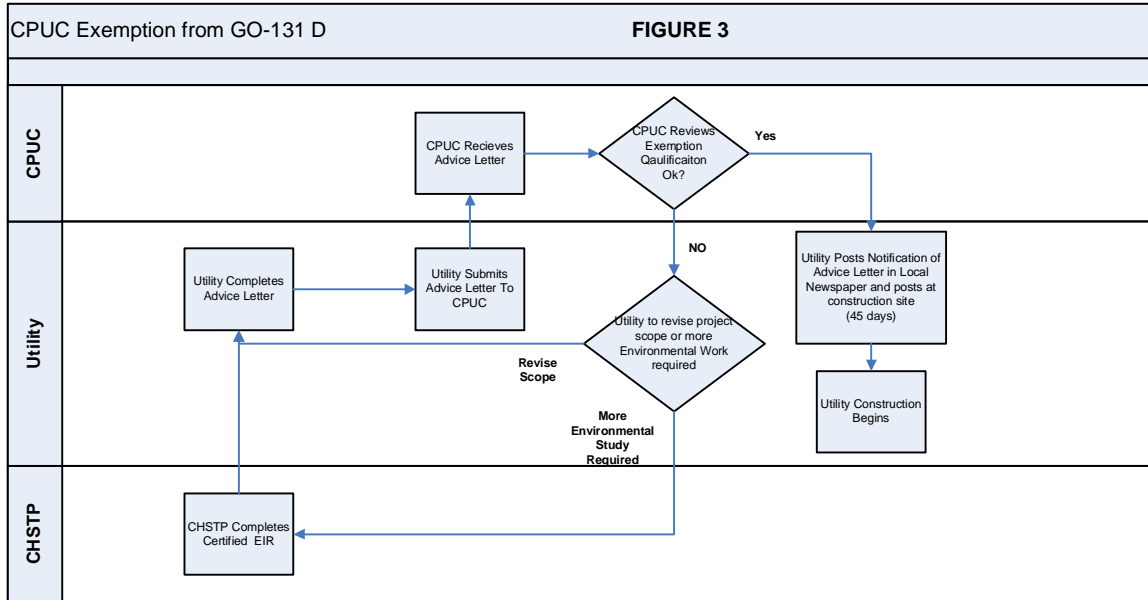
## Flowcharts of CPUC Licensing Process



CPUC Certificate of Public Convenience (CPCN) Flow Chart

FIGURE 2





# Appendix B

## Rule 21 for California Investor Owned Utilities

### Southern California Edison Rule 21



Southern California Edison  
Rosemead, California (U 338-E)

Revised Cal. PUC Sheet No. 36865-E\*\*  
Cancelling Revised Cal. PUC Sheet No. 31574-E

Rule 21 Sheet 1  
GENERATING FACILITY INTERCONNECTIONS

A. Applicability

Applicability: This Rule describes the Interconnection, operating and Metering requirements for Generating Facilities to be connected to SCE's Distribution System over which the California Public Utilities Commission (Commission) has jurisdiction. Subject to the requirements of this Rule, SCE will allow the Interconnection of Generating Facilities with its Distribution System.

Definitions: Capitalized terms used in this Rule, and not defined in SCE's other tariffs, shall have the meaning ascribed to such terms in Section H of this Rule. The definitions set forth in Section H of this Rule shall only apply to this Rule and may not apply to SCE's other tariffs.

Consistent with IEEE 1547: This Rule has been revised to be consistent with the requirements of American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) 1547-2003 Standards for Interconnecting Distributed Resources with Electric Power Systems. In some cases, IEEE 1547 language has been adopted directly, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents. (T)

Language from IEEE 1547 that has been adopted directly (as opposed to paraphrased language or previous language that was determined to be consistent with IEEE 1547) is followed by a citation that lists the Clause from which the language derived. For example, IEEE 1547-4.1.1 is a reference to Clause 4.1.1. (N)

In the event of any conflict between this Rule and any of the standards listed herein, the requirements of this Rule shall take precedence. (N)

B. General, Rules, Rights and Obligations

1. Authorization Required to Operate: A Producer must comply with this Rule, execute an Interconnection Agreement with SCE, and receive SCE's express written permission before Parallel Operation of its Generating Facility with SCE's Distribution System. SCE shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with SCE's Distribution System.
2. Separate Agreements Required for Other Services: A Producer requiring other electric services from SCE including, but not limited to, Distribution Service during periods of curtailment or interruption of the Producer's Generating Facility, must enter into agreements with SCE for such services in accordance with SCE's Commission-approved tariffs. (T)
3. Service Not Provided with Interconnection: Interconnection with SCE's Distribution System under this Rule does not provide a Producer any rights to utilize SCE's System for the transmission, distribution, or wheeling of electric power, nor does it limit those rights. (T)  
(T)
4. Compliance with Laws, Rules, and Tariff Schedules: A Producer shall ascertain and comply with applicable Commission-approved tariffs of SCE; applicable Federal Energy Regulatory Commission (FERC) approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of the Producer's Generating Facility and Interconnection Facilities.

(Continued)

(To be inserted by utility)  
Advice 1820-E  
Decision 01-11-011

Issued by  
John R. Fielder  
Senior Vice President

(To be inserted by Cal. PUC)  
Date Filed Aug 9, 2004  
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Resolution \_\_\_\_\_

1022



# Pacific Gas and Electric Co. Rule 21



Pacific Gas and Electric Company  
San Francisco, California  
U 39

Cancelling

Revised  
Revised

Cal. P.U.C. Sheet No.  
Cal. P.U.C. Sheet No.

23878-E\*  
19404-E

## ELECTRIC RULE NO. 21 GENERATING FACILITY INTERCONNECTIONS

Sheet 1

### A. Applicability

**Applicability.** This Rule describes the Interconnection, operating and Metering requirements for Generating Facilities to be connected to Pacific Gas and Electric's (PG&E) Distribution System over which the California Public Utilities Commission (Commission) has jurisdiction. Subject to the requirements of this Rule, PG&E will allow the Interconnection of Generating Facilities with its Distribution System.

**Definitions.** Capitalized terms used in this Rule, and not defined in PG&E's other tariffs, shall have the meaning ascribed to such terms in Section H of this Rule. The definitions set forth in Section H of this Rule shall only apply to this Rule and may not apply to PG&E's other tariffs.

Consistent with IEEE 1547, this Rule has been revised to be consistent with the requirements of ANSI/IEEE<sup>1</sup> 1547-2003 *Standard for Interconnecting Distributed Resources with Electric Power Systems* (IEEE 1547). In some cases, IEEE 1547 language has been adopted directly, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents. (N)

Language from IEEE 1547 that has been adopted directly (as opposed to paraphrased language or previous language that was determined to be consistent with IEEE 1547) is followed by a citation that lists the clause from which the language derived. For example, IEEE1547-4.1.1 is a reference to Clause 4.1.1. (N)

In the event of any conflict between this Rule and any of the standards listed herein, the requirements of this Rule shall take precedence. (N)

### B. General Rules, Rights and Obligations

1. **Authorization Required to Operate.** A Producer must comply with this Rule, execute an Interconnection Agreement with PG&E, and receive PG&E's express written permission before Parallel Operation of its Generating Facility with PG&E's Distribution System. PG&E shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with PG&E's Distribution System. (L)

<sup>1</sup> ANSI – American National Standards Institute, IEEE – Institute of Electrical and Electronic Engineers. (N)

(Continued)

Advice Letter No: 2703-E  
Decision No. 00-12-037

Issued by  
**Karen A. Tomcala**  
Vice President  
Regulatory Relations

Date Filed August 22, 2005  
Effective September 21, 2005  
Resolution No. \_\_\_\_\_

1C2



# San Diego Gas and Electric Co. Rule 21



Revised Cal. P.U.C. Sheet No. 17275-E\*  
 Canceling Revised Cal. P.U.C. Sheet No. 15511-E

## RULE 21

Sheet 1

### INTERCONNECTION STANDARDS FOR NON-UTILITY OWNED GENERATION

#### A. APPLICABILITY AND INTRODUCTION

**Applicability.** This Rule describes the Interconnection, operating and Metering requirements for Generating Facilities to be connected to San Diego Gas & Electric's (SDG&E) Distribution System over which the California Public Utilities Commission (Commission) has jurisdiction. Subject to the requirements of this Rule, SDG&E will allow the Interconnection of Generating Facilities with its Distribution System.

**Definitions.** Capitalized terms used in this Rule, and not defined in SDG&E's other tariffs, shall have the meaning ascribed to such terms in Section H of this Rule. The definitions set forth in Section H of this Rule shall only apply to this Rule and may not apply to SDG&E's other tariffs.

**Consistency with IEEE 1547.** This Rule has been revised to be consistent with the requirements of ANSI/IEEE<sup>1</sup> 1547-2003 *Standard for Interconnecting Distributed Resources with Electric Power Systems* (IEEE 1547). In some cases, IEEE 1547 language has been adopted directly, in others, IEEE 1547 requirements were interpreted and this Rule's language was changed to maintain the spirit of both documents.

#### B. GENERAL RULES, RIGHTS AND OBLIGATIONS

1. **Authorization Required to Operate.** A Producer must comply with this Rule, execute an Interconnection Agreement with SDG&E, and receive SDG&E's express written permission before Parallel Operation of its Generating Facility with SDG&E's Distribution System. SDG&E shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for a Parallel Operation of Producer's Generating Facility with SDG&E's Distribution System.
2. **Separate Agreements Required for Other Services.** A Producer requiring other electric services from SDG&E including, but not limited to, Distribution Service provided by SDG&E during periods of curtailment or interruption of the Producer's Generating Facility, must enter into agreements with SDG&E for such services in accordance with SDG&E's Commission-approved tariffs.
3. **Services Not Provided with Interconnection.** Interconnection with SDG&E's Distribution System under this Rule does not provide a Producer any rights to utilize SDG&E's system for the transmission, distribution, or wheeling of electric power, nor does it limit those rights.
4. **Compliance with Laws, Rules, and Tariffs Schedules.** A Producer shall ascertain and comply with applicable Commission-approved tariffs of SDG&E; applicable Federal Energy Regulatory Commission (FERC) approved rules, tariffs, and regulations; and any local, state or federal law, statute or regulation which applies to the design, siting, construction, installation, operation, or any other aspect of the Producer's Generating Facility and Interconnection Facilities.

<sup>1</sup> ANSI – American National Standards Institute; IEEE – Institute of Electrical and Electronic Engineers

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1C32 Issued by Date Filed Aug 18, 2004  
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 Vice President  
 Decision No. Regulatory Affairs Resolution No.





# Appendix C

## California School Siting Guidelines



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### Criteria for School Siting in Proximity to High Voltage Power Lines

The California Code of Regulations, Title 5, Section 14010(c) prohibits the siting of new schools or school additions in close proximity to high voltage power transmission lines. Specifically, the California Department of Education (CDE) requires setbacks of 100 feet, 150 feet, and 350 feet for line voltage of 50-200 kv, 220-230 kv, and 500-550 kv, respectively. These setbacks are reduced to 25% of their original distance if the power lines are located underground.

Title 5, Section 14010(u) allows the CDE to grant exemptions to this requirement if certain findings are made. The CDE has developed specific guidance<sup>1</sup> to assist school districts that wish to seek an exemption. OEHS has developed the following criteria to ensure that no exemption request would propose to regularly expose site occupants to higher EMF levels within a setback area than those found in the adjoining community.

The following exemption requests defined in the CDE Guidance will be supported by OEHS without requiring a site-specific EMF study:

- Transmission lines to be undergrounded, thus reducing setback distances.
- Measuring from transmission lines instead of the edge of the easement.
- Encroachment into the setback for limited activity use<sup>2</sup> areas.

In conformance with the CDE Guidance, OEHS has established the following process for evaluating the suitability of an exemption request for unrestricted uses within the 50-200 kv setback areas. This three-step process is to be completed prior to submitting a request for an exemption to the CDE.

1. Determine EMF levels on the proposed school site which are associated with the subject power lines. Whether direct measurements or modeling is utilized, EMF levels must be representative of the full capacity of the power line.
2. Measure the EMF levels within the local community adjoining the school starting at the CDE setback for the current power line configuration and extending into the community. This study should extend at least 500 feet into the community and be composed of at least one duplicate survey of the community taken at a different time of day (all during normal school hours). This community survey will result in a measured, Area-Weighted Average

<sup>1</sup> *Power Line Setback Exemption Guidance – May 2006*, California Department of Education

<sup>2</sup> As defined in Section IIB 2a-g of the CDE Guidance. These include uses such as: parking, drop-off, access roads, landscaping (excluding play areas), low-use buildings such as boiler rooms, etc.

