

TRACTION POWER FACILITIES

FREQUENTLY ASKED QUESTIONS



WHAT IS A TRACTION POWER FACILITY?

Traction Power Facilities (Facilities) are automated power distribution centers that deliver and regulate electricity through the overhead contact system that powers the electric trains.

WHY ARE THE FACILITIES IMPORTANT?

These facilities are necessary to provide a system by which trains can run on electricity rather than diesel engines, thus reducing both carbon emissions and noise pollution. As part of Caltrain electrification, 10 facilities will be installed between San Francisco and San Jose. These facilities will largely be powered by renewable energy, creating a more environmentally-friendly Caltrain and commute to work. These facilities are vital to ensuring the new electric fleet will operate properly and safely.

WHAT ARE THE MAIN COMPONENTS OF A TRACTION POWER FACILITY?

- **Transformers** - The transformers take in and convert power to ensure it is consistently sent out throughout the system. There are 1-2 transformers at each facility, depending on the type of facility.
- **Control House** - The control house is located within the facility footprint that houses the controls for the system.
- **Gantries** - The gantries are H-frame steel structures that support wires perpendicular to the tracks. These wires connect to the overhead contact system and provide power to the trains. There are at least two gantries at each facility. One gantry is housed within the footprint of the facility near the transformers. The other gantries are located on the opposite side of the tracks from the facility.

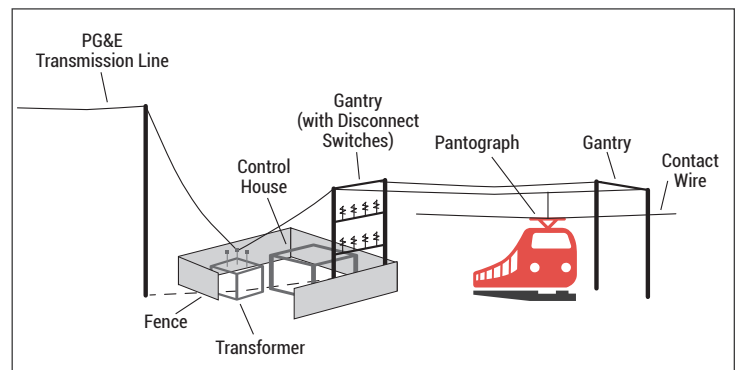
WHAT ARE THE TYPES OF FACILITIES?

There are three types of facilities:

- **Traction Power Substation** - provides a connection from the main power source and transforms it from 115 kilovolt (kV) to 25 kV.
- **Paralleling Station** - maintains and regulates power to the overall system.
- **Switching Station** - allows the overhead contact system to be sectionalized so that in the event of a power outage at one of the substations, power from the other substation can be used for the entire corridor.

WHAT DOES A TRACTION POWER FACILITY TYPICALLY LOOK LIKE?

The size of the facility depends on the type. Traction Power Substations are typically 150 feet by 200 feet, Switching Stations are typically 80 feet X 160 feet, and Paralleling Stations are typically 40 feet X 80 feet. The illustration below shows what these different facilities look like and the features they include:



Note: PG&E transmission line connection are only for the Traction Power Substations. Paralleling stations and switching stations only connect to the wires of the overhead contact system

FOR MORE INFORMATION

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WHAT SAFETY MEASURES WILL BE IN PLACE?

Traction power facilities are standard infrastructure used on electrified train systems around the world. All facilities along the corridor will be enclosed with fencing of at least eight feet in height to deter trespassers. Facilities will be well-lit at night for safety and security.

WHERE WILL THE FACILITIES BE LOCATED AND WHY?

The facilities need to be placed approximately five miles apart and ideally within the Caltrain right-of-way, when space allows. The distance between each facility is based on the distribution of the electrical load throughout the system. For more information, please visit www.CalMod.org/powerfacilities

CITY	TYPE
San Francisco	Paralleling Station (PS-1)
San Francisco/Brisbane	Paralleling Station (PS-2)
South San Francisco	Traction Power Substation
Burlingame	Paralleling Station (PS-3)
San Mateo	Paralleling Station (PS-4)
Redwood City	Switching Station
Palo Alto	Paralleling Station (PS-5)
Sunnyvale	Paralleling Station (PS-6)
San Jose	Traction Power Substation
San Jose	Paralleling Station (PS-7)

WHAT LEVEL OF ELECTROMAGNETIC FIELDS (EMF) WILL BE PRODUCED AT THE FACILITIES?

Electromagnetic fields, or EMFs, are invisible areas of energy associated with the use of electricity. EMFs are associated with the use of things like TV and radio, cell phones, and power lines. The facilities will emit EMFs well below the health impact thresholds for the general public. The electric field levels just outside of the facility compounds are estimated to be 0.1 to 0.7 kilovolts per meter (kV/m) compared to the general public health threshold of 4.2 kV/m* in the environmental impact report (EIR). The magnetic field levels just outside of the facility compounds are estimated to be 15 to 110 milligauss (mG)* compared to the general public health threshold of 833 mG*. No significant impacts on adjacent residents are expected.

The expected EMF levels are based on measurements from existing facilities along the Northeast Corridor in the eastern United States that use an electrical system similar to that planned for Caltrain. EMF levels at residences adjacent to the Caltrain facilities will likely be less than those noted above because residences are not located immediately adjacent to the facilities. For more information, please visit the Caltrain Final Environmental Impact Report Section 3.5 (Electromagnetic Fields and Electromagnetic Interference) at www.caltrain.com/Assets/Caltrain+Modernization+Program/FEIR/3.5+EMF+EMI.pdf

WHAT ARE THE NOISE LEVELS ASSOCIATED WITH THE FACILITIES?

There will be some noise from the facilities related to the transformers, and cooling fans and pumps, as well as "load noise" due to electromagnetic forces. The load noise is a low-frequency noise and may be perceived as a humming or buzzing. Based on the EIR, the noise level for a Traction Power Substation (South San Francisco and San Jose) is anticipated to be 70 dBA Ldn (Day-Night Sound Level; the averaged noise exposure over a 24-hour period) at 50 feet, and for a Paralleling Station is between 51 to 59 dBA Ldn at 50 feet.

WILL THE FACILITIES BE LIT?

The facilities will have lighting at night for safety and security. However, in an effort to minimize lighting impacts on adjacent areas, the lighting will be shielded and focused on the facilities using downcast, cutoff-type fixtures.

WHICH FACILITIES WILL HAVE SCREENING?

The only current facilities that are adjacent to visually sensitive areas include PS-5 near Page Mill Road in Palo Alto and PS-6 at the Sunnyvale Station in Sunnyvale. Due to their proximity to sensitive visual receptors, both of these will include vegetative screening.

WILL PARKING BE IMPACTED BY THE FACILITIES?

There will be some temporary and permanent parking impacts where the facilities are located within Caltrain parking lots (e.g. Bayshore, South San Francisco, Hillsdale, and Sunnyvale stations).

** From the EIR: "These levels are based on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998), Maximum Permissible Exposure Limits for the General Public."*

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