

# HVDC Converter Station Overview

## What is a converter station?

Three Corners Connector (3CC) is a high-voltage direct current (HVDC) transmission line that will require converter stations near each endpoint. A converter station is a specialized type of substation that transforms alternating current (AC) electricity to direct current (DC) electricity and vice versa. Power flowing on to 3CC will be converted from AC to DC for transmission, and will be converted from DC to AC at the end of the line for delivery to customers through the existing AC grid.

A map showing existing HVDC facilities in North America is available below.

## Existing HVDC Facilities in North America

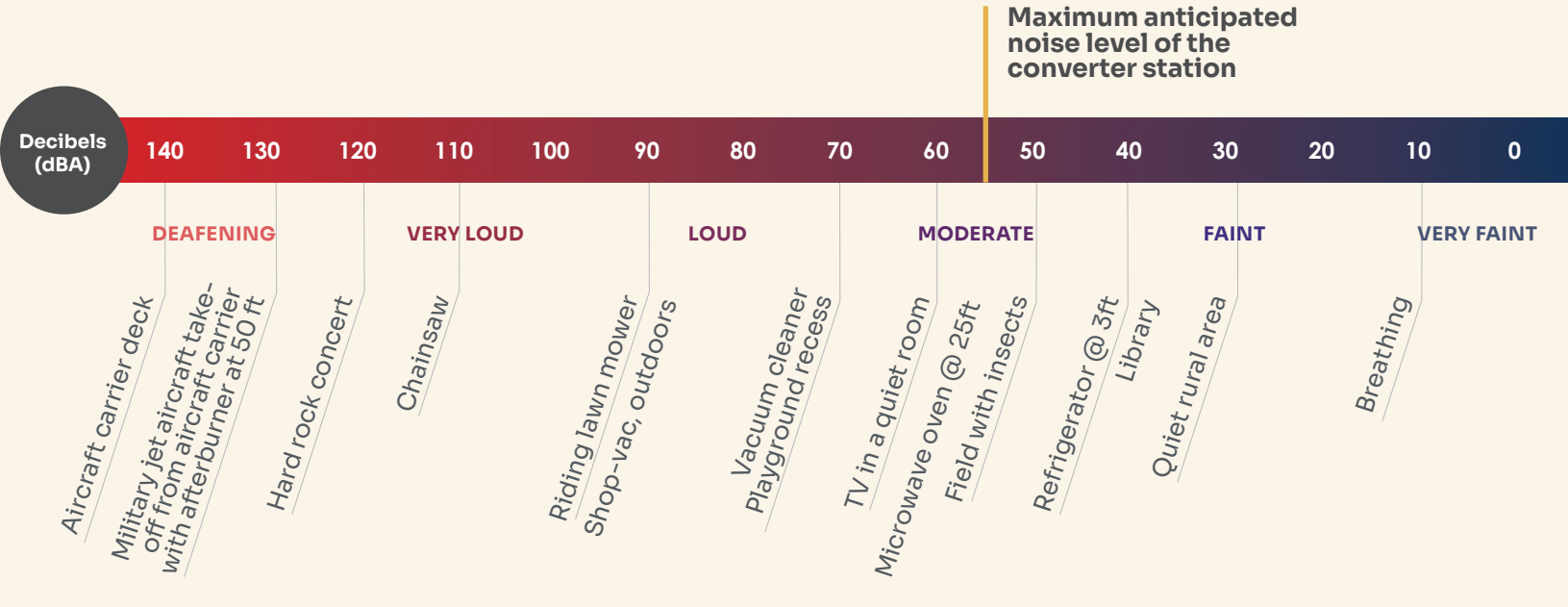


## Converter Station Specifications

- **Location:** Pueblo County, Colorado
- **Footprint:** 20-acre fenced facility within a 40-acre tract
- **Valve hall specifics:**
  - **Height:** Approximately 75-100 feet
  - **Color:** Neutral/earthy color, to be determined based on engineering design
- The transmission line will enter from the south and exit the north side of the site, though this is subject to change based on engineering design.
- The construction timeline is approximately three years – one for ground work and two for building construction.
- The site will have security lighting like that of a substation.

## Audible Noise

- During periods of construction, elevated sound levels will occur from the operation of heavy machinery, truck traffic, and construction worker presence.
- The sound level at the nearest residential property line during operation is not anticipated to exceed 55 decibels (dBA), similar to a field with insects.
- Sun Mountain Solar was recently completed nearby. During construction, a similar elevated sound level may occur from the site, however, condensed within a smaller footprint.

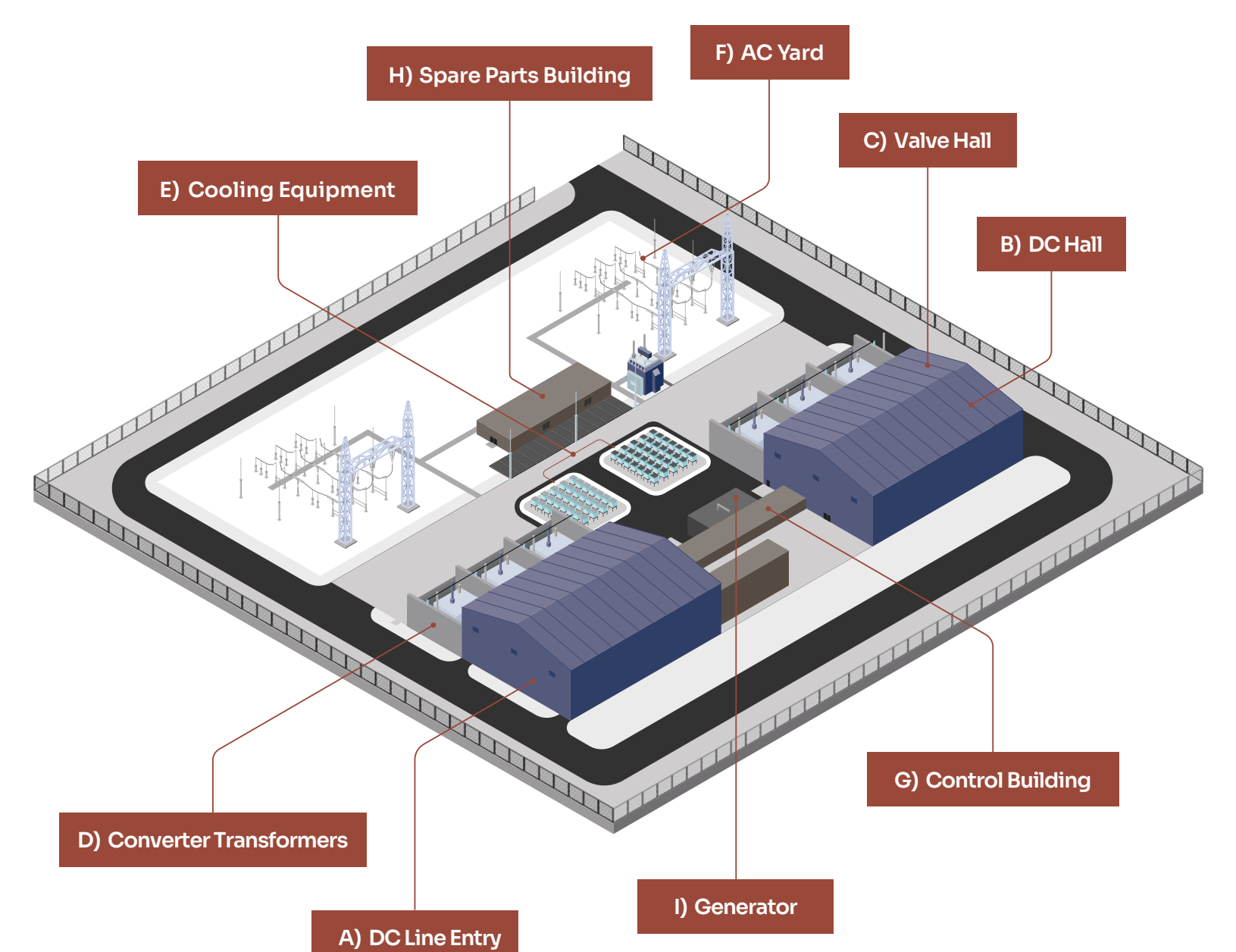


<sup>1</sup> The Department of Chemistry at Purdue University

## Converter Station Equipment

Each converter station is equipped with the following components:

- A) DC Line Entry:** Where DC transmission lines enter the converter station
- B) DC Hall:** Where DC power enters the valve hall and contains equipment to control the power flow
- C) Valve Hall:** The heart of the conversion process; contains numerous valves – or electronic switches – that switch off and on to convert DC to AC and vice versa
- D) Converter Transformers:** Steps up the AC voltage and minimizes AC and DC voltage stresses generated in the conversion process
- E) Cooling Equipment:** Used for system cooling in the valve hall as the DC/AC conversion takes place
- F) AC Yard:** Where the power enters or leaves the converter station and ties to the AC network to be dispersed onto the power grid and delivered to customers
- G) Control Building:** Contains control room, mechanical and electrical operations, and additional operational and maintenance facilities
- H) Spare Parts Building:** Contains necessary backup equipment for operation and maintenance of the converter station
- I) Generator:** Used for backup system operations and blackstart capability



## Environment

- A converter station is a private facility that usually does not have staff onsite once operational. It is a passive use of land.
- Impacts to the environment during construction will be similar to those of a typical substation.
  - This includes machinery for leveling the ground, building the structure, setting up electrical equipment, and restoring any areas temporarily disturbed.
  - Impacts are expected to be short-term and limited to the immediate area.

## Traffic

- Since the converter station usually does not have staff onsite during operations, it causes very little traffic.
- During construction, traffic levels will increase around the site, including oversized vehicles and machinery.
  - 3CC will provide traffic control and flaggers for safety as appropriate.
  - While road closures are not expected, if any occur for heavy loads, 3CC will work to minimize any traffic delays.
- 3CC will work with the Colorado Department of Transportation and county officials and engineers to plan road use during construction.
- 3CC will repair any damage caused to surrounding property by construction activities.

## Water Use

- During construction, water will be used for concrete mixing and curing, dust control, and equipment cleaning.
  - Curing is the process of keeping the concrete moist and at temperature after it is poured to ensure it hardens properly.
- The amount of water needed depends on the extent of construction activities, site conditions, and dust control measures used.
- The converter station requires very little water for day-to-day operations. The station's water-based cooling system operates in a closed loop, meaning it recirculates water without needing a continuous additional supply.
- 3CC will work with local officials to determine available water sources to ensure no disruption of residential water.

## Fire Mitigation and Safety

- Fire suppression systems and safety monitoring equipment are built into the converter station's design.
- Like other electrical facilities, the converter station will follow national fire safety standards.
- 3CC will work closely with local fire departments to ensure they are familiar with the facility's safety features in case of an emergency.
- 3CC commits to using best practices for fire prevention throughout both construction and operations.