Project Construction

Foundation Design and Installation

- **Monopile Foundations**
  - A monopile is a single, hollow cylindrical steel pile that is driven into the seabed.
  - At each foundation position, the main installation vessel will use a crane to upend and lower the monopile to the seabed.
  - To stabilize the monopile's vertical alignment during piling, a pile frame may be placed on the seabed or a pile gripper may extend from the side of the installation vessel.
  - The monopile is then driven into the seabed with an impact pile driving hammer.
  - A vibratory hammer could be used to install the monopile through surficial sediments.
- **Piled Jacket Foundations**
  - Each Electrical Service Platform topside will be supported by a monopile or a piled jacket foundation.
  - A piled jacket foundation is a steel structure comprised of several legs connected by welded tubular cross bracing, which is secured to the seafloor using pin piles.
  - Pin piles are similar to monopiles (they are hollow steel cylinders that are driven into the seabed) but are much smaller in diameter.
  - Pin piles may be installed before or after the jacket structure. If pre-piled (i.e., the pin piles are installed first), a frame would be used to orient the piles during pile driving. The jacket structure would then be lifted by the installation vessel's crane directly onto the piles. If post-piled, the pin piles would be driven through pile "sleeves" or guides mounted to the base of each leg after the jacket structure is installed.

Cable Laying Process

- Between the Lease Area and shore, the offshore export cables will be installed within an Offshore Export Cable Corridor (OECC). Up to six high voltage alternating current (HVAC) cables, two high voltage direct current (HVDC) cable bundles, or a combination of up to four HVAC cables/HVDC cable bundles will be installed within the OECC.
- Activities that will be conducted prior to cable installation include boulder clearance, sand bedform leveling, pre-lay surveys, and pre-lay grapnel runs.
- The offshore export cables will have a target burial depth beneath the stable seafloor of 1.2 m (4 ft) in federal waters and 1.8 m (6 ft) in state waters.
- Three common methods may be used to lay and bury the export cables, inter-array cables, and/or inter-link cables:
  - **Simultaneous lay and burial:** The cable installation tool simultaneously creates a trench in the seabed, lays the cable into the trench, and buries the cable. This method provides immediate protection of the cable.
  - **Post-lay burial:** The cable is laid on the surface of the seabed and subsequently buried by a separate tool.
  - **Pre-lay trenching:** The cable trench is excavated prior to cable installation and the excavated sediment is placed next to the trench. As the cable is laid, the trench is backfilled.
- Proposed cable installation tools include:
  - **Jetting techniques (jet plowing or jet trenching):** Water jetting systems can be used for simultaneous lay and burial or post-lay burial and are best suited for installation in sands or soft clays.
  - **Mechanical plowing:** A mechanical plow cuts a trench into the seabed and holds the sidewalls of the trench open while the cable is fed into the trench. Some plowshares are equipped with jetting nozzles to increase performance. Mechanical plowing is best suited for stiffer soil conditions.
  - Specialty cable installation techniques **(mechanical trenching, precision installation, controlled flow excavation)** may also be used along limited sections of the offshore export cables to achieve sufficient burial depth.