

Natural Gas Supply

4.1 Introduction

This section discusses the natural gas supply for the Hidden Hills Solar Electric Generating System (HHSEGS). Section 4.2 describes the construction methods for the gas pipeline, metering station, and metering sets. Section 4.3 discusses pipeline operations, and Section 4.4 lists applicable permits and the permitting schedule for the project. Section 4.5 provides the references used to prepare this section.

The HHSEGS natural gas supply will connect to the Kern River Gas Transmission (KRGT) pipeline approximately 35.3 miles southeast of the project site (see Figure 4.1-1). The Kern River Gas Transmission Company owns and operates 1,680 miles of pipeline ranging from 36 to 42 inches in diameter. The FERC-regulated pipeline begins in Opal, Wyoming, and travels through Utah and Nevada, terminating in Kern County, California (KRGT, 2011; EIA, 2011).

A new 12- to 16-inch gas pipeline will exit the HHSEGS site from the common area and cross over the state line into Nevada. The line will follow the California-Nevada border (on the Nevada site) to Tecopa Road where it will turn northeast following the west side of Tecopa Road about 9.8 miles to Nevada State Route (SR) 160. From that point, the pipeline will follow SR 160 and the proposed Eldorado Option transmission line route (described in Section 3.0) on the north side of SR 160 past the point where SR 160 turns toward Las Vegas. The gas line will continue following the Eldorado Option transmission line route in a southeastern direction to the KRGT natural gas transmission line; a distance of approximately 26 miles from the Tecopa Road intersection. The 35.3-mile total length will be located on federal land in Nevada under the jurisdiction of the U.S. Bureau of Land Management (BLM).

On site, the gas line will enter the project in the common area and travel about 900 feet to the gas metering station, from there it will continue northwest along the edge of the Solar Plant 2 solar field to the common road between Solar Plants 1 and 2. It will continue down that road to the access road going to each power block. The total distance of the gas line from the gas metering station to the metering set at the power block is 2.4 miles for Solar Plant 1 and 2.3 miles for Solar Plant 2.

Construction will primarily use the open trench method. Jack and bore or horizontal directional drilling will be used to cross under SR 160. Because of the disturbance that would occur with construction of the proposed Eldorado Option transmission line, the gas pipeline will use the same construction corridor to minimize construction disturbance.

4.2 Construction Practices

4.2.1 Gas Pipeline

The natural gas pipeline will be constructed with a minimum of one crew working continuously along the right-of-way (ROW), with construction of the entire pipeline requiring a peak workforce of approximately 30 workers. The 125-foot-wide pipeline construction corridor will be located on the edge of, and overlapping, the transmission line construction corridor. However, the gas line construction corridor will extend 50 feet beyond the 250-foot-wide transmission corridor. Therefore, in areas where the gas line and transmission line are adjacent to each other, the total construction corridor will be 300 feet wide.

Workers will park along the pipeline ROW or at designated parking areas (staging areas) and be transported to the work site. The ROW will be accessed from existing roads or short access roads. Most major pieces of construction equipment will likely remain along the ROW over the course of construction. Piping will be stored at the project site, in staging areas or along the pipeline ROW. Pipeline construction is estimated to occur during the timeframe and with the workforce described in Table 5.10-16. Construction will be performed in accordance with the BLM requirements as set forth in its ROW grant. Construction will be scheduled so that transmission line and gas pipeline construction are not occurring in the same segment at the same time, allowing the staging areas to be used for both. Pipeline construction will take approximately 6 months as shown in Table 5.10-16.

Excavated soils will be stored within the construction ROW. During non-work hours, the exposed trench will be covered by wood or other material of sufficient strength to support wildlife. If necessary, additional material-storage locations will be located along the ROW. The natural gas pipeline will be constructed of carbon steel in accordance with the American Petroleum Institute (API) specification for line pipe. The pipe will have factory-applied corrosion protection coating, and joints will be welded and radiographically inspected.

The construction of the natural gas pipeline will consist of the following activities:

1. **Trenching**-width depends on the type of soils encountered and requirements of the governing agencies. The optimal trench will be approximately 36 inches wide and 4 to 10 feet deep. With loose soil, a trench up to 8 feet wide at the top and 3 feet wide at the bottom may be required. The pipeline will be buried to provide a minimum cover of 36 inches. The excavated soil will be piled on one side of the trench and used for backfilling after the pipe is installed. The pipeline will be installed through trenching at all locations except where boring or directional drilling is required to pass beneath a highway, natural water course, or any other location where boring is the preferred method of construction.
2. **Stringing** consists of trucking lengths of pipe to the ROW and laying them on wooden skids beside the open trench.
3. **Installation** consists of bending, welding, and coating the weld-joint areas of the pipe after it has been strung, padding the ditch with sand or fine soil, and lowering the pipe string into the trench. Bends will be made using a cold bending machine or shop-fabricated as required for various changes in bearing and elevation. Welding will

meet the applicable API standards and will be performed by qualified welders. Welds will be inspected in accordance with API Standard 1104. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coating will be checked for defects and will be repaired before lowering the pipe into the trench.

4. **Backfilling** consists of returning soil back into the trench around and on top of the pipe, ensuring that the surface is returned to its original grade or level. The backfill will be compacted to protect the stability of the pipe and to minimize subsequent subsidence.
5. **Plating** consists of covering any open trench in areas of foot or vehicle traffic at the end of a workday. Plywood plates will be used in areas of foot or wildlife traffic and steel plates will be used in areas of vehicle crossing to ensure public safety. Plates will be removed at the start of each workday. Efforts will be made to minimize the length of open trench along the ROW.
6. **Boring** - The boring method will be used for moderately short crossings under roads, highways, canals, etc., where dictated by a government agency or where it would be inconvenient or environmentally unsound to use the open-cut method. Boring pits will be dug on each side of the crossing. On the inlet side, a boring machine with an auger typically will be used, or a ramming device may be used to "jack" the pipe into place.
7. **Horizontal Directional Drilling** - Horizontal directional drilling will be used to route the pipeline under water features or other crossings where trenching or jack and bore are inappropriate. The horizontal directional drilled equipment will initially drill a pilot hole, which will be followed by a pilot hole drill string. A reaming device will be attached to the drill string and will be pulled through the pilot hole. The reamer will enlarge the pilot hole to a diameter of 35 to 50 percent greater than the final pipeline size. The pipeline will then be welded, radiographed, hydrotested, and pulled through the enlarged borehole.

Drilling mud will be used as part of the horizontal directional drill process to lubricate and cool the drill. The mud will be non-toxic bentonite. Approximately 1,300 barrels of drilling mud will be used and will require disposal for each crossing. The drilling mud will be collected at the directional drilling site. It will then be disposed of at a Class III landfill.

8. **Pigging** - The underground gas line will be designed to accommodate pigging, including the connection of launchers and receivers for intelligent pigs. Each pigging station will include a permanently installed valve manifold, with full port piggable ball valves as required. Pig launchers and receivers will not be permanently installed, but will be provided by the pigging subcontractor, who will perform the pigging.
9. **Hydrostatic testing** consists of filling the pipeline with water, venting all air, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. Stainless steel piping will be tested with demineralized water, while carbon steel piping will be pressure tested using either demineralized water or groundwater. Demineralized water would be trucked in until the water treatment plant is operational. After hydrostatic testing, the test water will be chemically analyzed for contaminants and discharged to the surrounding area (or into a dewatering structure consisting of hay

bales, geotextile fabric, and silt fencing) unless the analysis shows that the water is contaminated; in which case, the water would be trucked to an appropriate disposal facility. Temporary approvals for test water use and permits for discharge will be obtained by the construction contractor, as required.

10. **Cleanup** consists of restoring the surface of the roadway or ROW by removing any construction debris, grading to the original grade and contour, and revegetating or repairing where required.
11. **Commissioning** consists of cleaning and drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.
12. **Safety** consists of using a standard safety plan for the project, or if constructed by others, the contractor will prepare a safety plan. These plans would address specific safety issues, working in desert areas, and other issues as required by permits.

4.2.2 KRGT Metering Station and Metering Sets

A gas-metering station will be required at the KRGT tap point to measure and record gas volumes. Additionally, a gas meter station will be required in the common area and a gas metering set will be installed at each power block.

Construction activities related to the metering station will include grading a pad and installing above- and belowground gas piping, metering equipment, and possible pigging facilities. A distribution power line for the metering station operation lighting and communication equipment will be installed, and the metering station perimeter will be fenced for security.

4.3 Pipeline Operations

The natural gas supply pipeline will be designed, constructed, and operated in accordance with Title 49, Code of Federal Regulations, Section 192 (49 CFR 192). Specifically, the pipeline will be designed in accordance with the standards required for gas pipelines in this environment. It will be installed with a minimum of 36 inches of cover, as required by Federal Code.

An operations and maintenance plan will be in place, addressing both normal procedures and conditions and any upset or abnormal conditions that could occur. Periodic leak surveys and cathodic protection surveys will be performed along the pipeline, as required by 49 CFR 192. The pipeline will be continuously protected by a cathodic protection system, if warranted.

Isolation block valves will be installed at both ends of the pipeline. These valves will be manually controlled, lockable, gear-operated ball valves. A pipeline supervisory control and data acquisition system will provide flow rate and pressure data.

4.4 Permits and Schedule

Construction of the gas pipeline will require a ROW grant from BLM and a notice to proceed before work can begin. Prior to issuing a ROW grant, BLM will prepare and issue an environmental document that complies with the requirements of the National Environmental Policy Act (NEPA). A National Pollutant Discharge Elimination System (NPDES) permit will also be required, with the application being submitted 120 days before the start of construction.

TABLE 4.4-1
Permits and Permit Schedule

Permit	Agency Contact	Schedule
ROW Grant	Greg Helseth BLM Nevada (702) 515-5173 ghelseth@blm.gov	9 to 12 months
NPDES Permit	Bonnie Hartley NV Bureau of Environmental Protection Bureau of Water Pollution Control (775) 687-9430	120 days before construction start

4.5 References

Kern River Gas Transmission Company (KRGT). 2011. Company overview. Available online at: <http://www.kernrivergas.com/InternetPortal/Desktop.aspx>

U.S. Energy Information Administration (EIA), Office of Oil and Gas. 2011. "Natural Gas Pipelines in the Western Region." Available online at: http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/western.html



- LEGEND**
- Solar Power Tower
 - Gasline Survey Corridor (125ft)
 - - - Kern River Gasline
 - Highway
 - Major Road
 - Local Road
 - HHSEGS Boundary

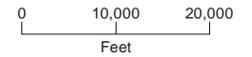


FIGURE 4.1-1
Gas Line
 Hidden Hills Solar Electric Generating System