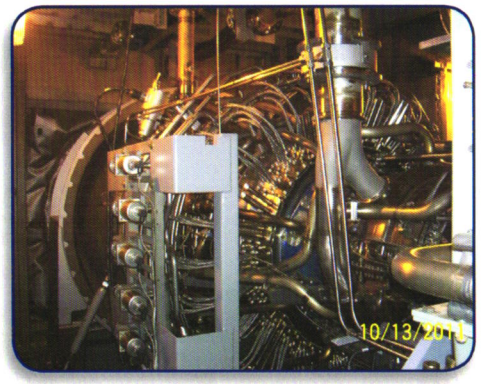
Welders Work on the Gas Pipeline
APRIL 2010

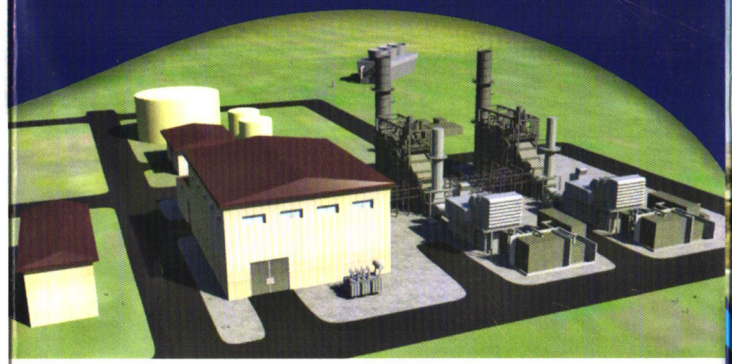
Natural Gas-Fired Combustion Turbine Generator (CTG) after Constructed Completed
OCTOBER 2011



Inside view of CTG
OCTOBER 2011

DESCRIPTION OF PHASE 2
(PROPOSED)

Phase 2 would consist of one additional simple cycle natural gas-fired CTG, two additional gas compressors, two additional generator step-up transformers, and one additional unit auxiliary transformer. Further, Phase 2 would include the addition of combined cycle equipment including two Heat Recovery Steam Generators (HRSG's) with natural gas-fired duct burners, one condensing Steam Turbine Generator, one water-cooled Condenser, one wet Cooling Tower, and supporting balance of plant systems and equipment.



HGS rendering after the construction of (proposed) Phase 2

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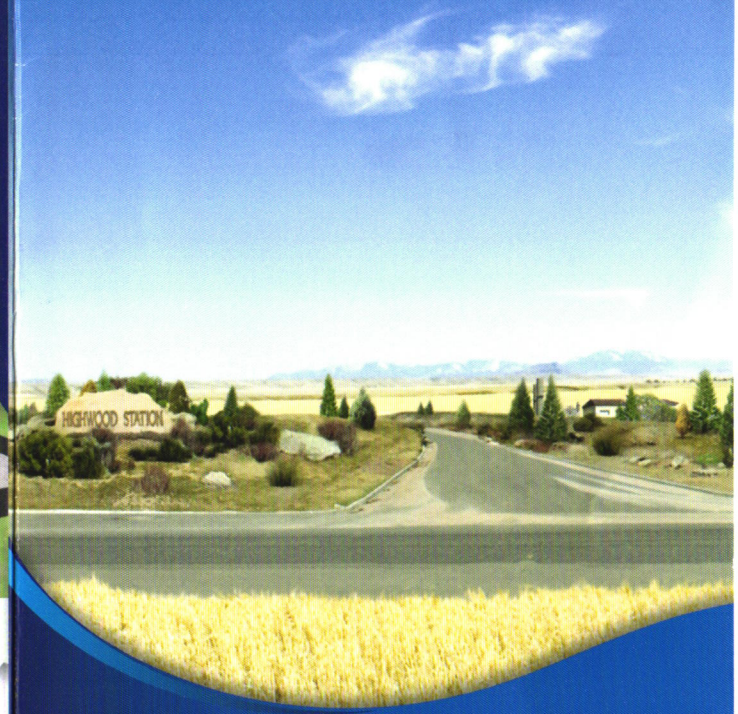
HIGHWOOD GENERATING STATION



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OVERVIEW OF HIGHWOOD GENERATING STATION PROJECT

Southern Montana Electric has stated that its mission is to provide cost-based, competitively-priced energy and related services to its members. In furtherance of this mission, Southern Montana Electric made the decision to construct the Highwood Generating Station ("the Highwood Station"), a 120 megawatt natural gas fired combined cycle generating facility and supporting infrastructure located near Great Falls, Montana. The primary reason for this initiative was to meet a portion of its members' existing and future wholesale power needs subsequent to the complete expiration of Southern Montana Electric's power purchase agreement with BPA in 2011. In an effort to tailor development activity at the Highwood Station to available funding opportunities Southern Montana Electric modified its construction plans for the Highwood Station allowing for facility development in two phases; Phase 1 was the construction of a 46 MW simple cycle unit with a commercial operation date beginning in February 2012, the second phase would be the construction of the second combustion turbine and the combined cycle portion of the Highwood Station.

DESCRIPTION OF PHASE 1

Phase 1 consists of one 46 MW simple cycle natural gas-fired Combustion Turbine Generator (CTG), one gas compressor, a new natural gas pipeline, one CTG step-up transformer, one unit auxiliary transformer, and supporting balance of plant systems and equipment. Also included in Phase 1 is a 4.6 mile 230 kV generator lead line and a new switchyard to interconnect with NorthWestern Energy's existing 230 kV transmission line.

PHASE 1 (46 MW CAPACITY) FACT SHEET

(All numbers represent estimates from preliminary engineering and are subject to change)

GENERAL PLANT INFO

Property Boundary Area	200 acres
Site Elevation	3,315 feet
Simple Cycle Stack Height	80 feet

NATURAL GAS

(From Pipeline)

Higher Heating Value	1,000 Btu/scf
Nitrogen (mol %)	5.426
Methane (mol %)	90.971
Max. Daily Gas Usage	8,664 dekatherm/day
Max. Hourly Gas Usage	361 dekatherm/hr
Supply Pressure (psig)	150-258

WATER

Service/Fire Water Tank	240,000 gal
Demineralized Water Tank	260,000 gal
Service Water Storage	3 days
Demineralized Water Storage	10 days
Fire Water Storage	2 hr Fire Event
Waste Water Pond	79' x 64'
Raw Water (Max.)	35 gpm
Raw Water (Avg.)	14 gpm
Wastewater (Avg.)	1 gpm
Raw Water Source	On-site Wells

PLANT PERFORMANCE

Net Output (92 °F)	38.8 MW
Net Output (57 °F)	41.4 MW
Aux Power (avg)	1.8 MW
Heat Rate (avg, LHV)	8,500 Btu/kWh
Ambient Temperature (summer avg)	57° F
Ambient Humidity (summer avg)	53%

COMBUSTION TURBINE GENERATOR (CTG)

GE LM6000 PF

Gross Output (92° F)	40.6 MW
Gross Output (57° F)	43.2 MW
Gross Output (20° F)	44.5 MW

FIRE PROTECTION

Fire Pump Capacity at 125 psig	2,000 gpm
Main Transformer	Deluge System
Balance of Plant Equipment with Hydrants	Fire Loop
Gas Turbine System	CO_2 Suppression
Water Treatment Building	Fire Extinguishers
Control Room	Fire Extinguishers
Fire Water Source Tank	Service Water
Storage Capacity Dedicated	120,000 gal

INLET HEATING SYSTEM

Maximum Temperature Rise	28° F
Maximum Power Consumption	1.1 MW

EMPLOYMENT

Full-Time Employees	8
Construction Employees (Peak)	100

UTILITY CORRIDORS

Length of Gas Transmission Line	19 miles
Length of Generator Lead Line	4.6 miles

ELECTRICAL

CTG Generator Voltage	13.8 kV
Transmission Voltage	230 kV
Medium Voltage	4,160 V
Low Voltage	120-480 V

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