

***MESABA ENERGY PROJECT  
FUEL FLEXIBLE IGCC POWER PLANT  
ITERATION “2” TARGET PRICE ESTIMATE  
(Nov 15, 2005 Update)***

***SCOPE OF FACILITIES***

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## **INCLUDED FACILITIES IN ITERATION 2 TARGET PRICE**

### **Air Separation (2 X 50%)**

- Air Separation Unit
- MP N2 Compressor (for CTG NOx Control)
- Liquid Oxygen (LOX) storage (1 x 100%)
- Liquid Nitrogen (LIN) storage (1 x 100%, LP N2 purging services only)
- Compressor Building

### **Feed Handling (1 X 100%)**

- Feedstock (Coal/Coke) Active Storage/Conveying/Reclaiming
- Feedstock (Coal/Coke) Inactive Storage
- Flux Storage (Silos)/Conveying/Reclaiming
- Rail Unloading Facilities & Thaw Shed (Feedstock)
- Truck Unloading Facilities (Flux)

### **Gasification Island (3 X 50%)**

- Grinding and Slurry Preparation (2 x 60%)
- Slurry Feed
- Gasification
- High Temperature Heat Recovery
- Dry Char Removal
- Slag Grinding
- Slag Dewatering (1 x 100%)
- Slag Storage and Loading System (1 x 100%)

### **Gas Treating (2 X 50%)**

- Gas Scrubbing
- Low Temperature Syngas Cooling
- COS Hydrolysis
- Recycle Gas Compression
- Acid Gas Removal
- Acid Gas Enrichment (1 x 100%)
- Mercury Removal
- Syngas Moisturization
- Sour Water System (1 x 100%)
- Initial Catalyst Fill

### **Sulfur Recovery and Tail Gas Recycle (2 x 50%)**

- Claus Plant Sulfur Recovery (Oxygen Blown)
- Molten Sulfur Storage

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- Molten Sulfur Truck/Rail Loading Facilities (1 x 100%)
  - Tail Gas Recycle (1 x 100%)
  - Tank Vent Gas Incineration (1 x 100%)

**Power Block**

- Combustion Turbine-Generator (2 x 50%)
- Heat Recovery Steam Generator & Exhaust Stack (2 x 50%)
- Steam Turbine-Generator (1 x 100%)
- Surface Condenser (1 x 100%)
- Vacuum Condensate and Boiler Feedwater Systems (1 x 100%)
- Power Block Circulating Water/Cooling Tower System
- Filtered Raw Water Tank/Firewater Tank & Pumps
- Demineralizer System
- Demineralized Water Tank & Pumps
- Wastewater Separation
- Plant & Instrument Air
- Step-up Transformers
- Turbine Hall (CTGs and STG)

**General Facilities (1 x 100%)**

- Site Preparation, assuming clear and level site (Inside Boundary Limit - ISBL)
- Gasification/ASU Circulating Water/Cooling Tower System
- Auxiliary Boiler
- Zero Liquid Discharge Unit (for Process Condensate Blowdown)
- Process Condensate Blowdown Holding Tank
- Gasification Unit Flare
- Emergency Diesel Generator
- Natural Gas distribution (ISBL)
- Wastewater Collection
- Drains and Blowdowns
- Nitrogen Distribution
- Potable & Utility Water
- Sanitary Sewage System
- Control and Administration Building
- General Buildings (Maintenance, Warehouse - ISBL)
- DCS/UPS/Communications
- Electrical Distribution
- Switchyard
- Roads, Surfacing, Paving, & Lighting (ISBL)
- Fencing
- Site Drainage

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## **EXCLUDED FACILITIES IN ITERATION 2 TARGET PRICE**

### **OSBL Facilities**

Including:

- Railways
- Raw Water Supply/Discharge to/from B.L.
- Raw Water Clarification/Treatment
- Natural Gas to B.L.
- Electrical Transmission Lines outside B.L.
- Access Roads to B.L.

### **Site Preparation**

- Clearing
- Grubbing
- Mucking
- Blasting
- Cut
- Fill
- Grading
- Hauling
- Surveying