
7. CAPITAL COST ESTIMATES 0.55 MW COMBINED HEAT AND POWER PLANT

1. Civil Works & Installation

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|------|--|--|-----------|
| 1.1. | Fuel Storage / Bunker (incl. foundation) | 16 m x 20 m (53' x 66') freespan steel post & beam, non-insulated, c/w 2 roll-up doors, \$50/sft | \$320,000 |
| 1.2. | Boiler & Power House (incl. foundation) | 13.1m x 15.3m (43' x 50') 12.2 m (40') eve height, freespan steel post & beam, insulated, c/w cat walks, stairs, doors & lighting, \$130/sft | \$280,000 |
| 1.3. | Rentals and Consumables | crane, manlifts, etc. | \$30,000 |
| 1.4. | Heating Installation | incl. pipeline to heat storage tank | \$200,000 |
| 1.5. | Electrical Works | excluding transformer (480 V, 200 amps service) | \$90,000 |
| 1.6. | Paving and Landscaping | road extension and receiving bay area | \$30,000 |
| 1.7. | Commissioning & Training | 2 month, 2 persons, \$10,000/person-month | \$40,000 |

SUB-TOTAL**\$990,000****2. Equipment**

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|-------|---|--|-------------|
| 2.1. | Carcass Grinder | 6 x 12 m (20' x 40') | \$80,000 |
| 2.2. | Front Loader (for loading grinder & moving fuel) | used | \$30,000 |
| 2.3. | Fuel Reclaim System (walking floor system) | 6 x 12 m (20' x 40') | \$140,000 |
| 2.4. | Fuel Conveyors | 2 chain conveyors, 30 m (100') length | \$80,000 |
| 2.5. | Gasifier (incl auto-ash removal and oxidation) | 1.50 tonne of SRM per hour input | \$600,000 |
| 2.6. | Thermal Oil Heater (incl balance of the thermal oil system) | 4 MW (14 mmBTU/h) output | \$1,800,000 |
| 2.7. | ORC Turbine | 0.55 MW electrical output | \$1,950,000 |
| 2.8. | Natural Gas Fired Peak Boilers | 2 x 3 MW | \$100,000 |
| 2.9. | Emission Control Equipment (quencher + WESP + wet scrubber) | 24,000 am ³ /h (14,000 acfm) | \$1,300,000 |
| 2.10. | Transformer & Grid Connection | 480 V, 1000 amps | \$100,000 |
| 2.11. | Controls | complete automation | \$100,000 |
| 2.12. | Flue Gas Ducting & Insulation; Chimney | incl. duct insulation | \$110,000 |
| 2.13. | Heat Storage Tank | 1,000 m ³ , insulated, N ₂ overlay | \$300,000 |
| 2.14. | Continuous Monitoring Equipment | as per MoE requirement, rough estimate | \$250,000 |
| 2.15. | Freight & Brokerage | shipment to Kamloops | \$40,000 |

SUB-TOTAL**\$6,980,000****3. Other**

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|------|--|----------------------------|-------------|
| 3.1. | Engineering (geotechnical, site grading, structural, mechanical, electrical) | 2.0% of total project cost | \$160,000 |
| 3.2. | Project Management / Contractor's Fees | 3.0% of total project cost | \$240,000 |
| 3.3. | Insurance (Builder All Risk) | 1.7% of total project cost | \$140,000 |
| 3.4. | Permits (Building Permit, environmental permits) | 1.0% of total project cost | \$80,000 |
| 3.5. | Contingencies | 20% of total project cost | \$1,590,000 |

SUB-TOTAL**\$2,210,000****TOTAL****\$10,180,000**