Flatiron Powerplant
Colorado-Big Thompson Project

Ancillary Services

**Flatiron Ancillary Services**

<table>
<thead>
<tr>
<th>Service</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning Reserve</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Spinning Reserve</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Replacement Reserve</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation/Load Following</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Start</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage Support</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Generators

**Flatiron Generators**

<table>
<thead>
<tr>
<th>Unit #</th>
<th>Original Capacity (kW)</th>
<th>Capacity Increased (kW)</th>
<th>Present Capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31,500</td>
<td>11,500</td>
<td>43,000</td>
</tr>
<tr>
<td>2</td>
<td>31,500</td>
<td>11,500</td>
<td>43,000</td>
</tr>
<tr>
<td>3</td>
<td>8,500</td>
<td>-</td>
<td>8,500</td>
</tr>
<tr>
<td>3 units</td>
<td>71,500</td>
<td>23,000</td>
<td>94,500</td>
</tr>
</tbody>
</table>
Flatiron Powerplant
30-100 MW

Generation

**Flatiron Fiscal Year Net Generation**

- **X-axis:** Year (1998 to 2006)
- **Y-axis:** GWh (0 to 300)
- **Legend:** Net Generation, 10 Year Average

**Flatiron Monthly Net Generation**

- **X-axis:** Month (Oct to Aug)
- **Y-axis:** GWh (0 to 35)
- **Legend:** 10-Year Average, 2007

**Flatiron Water Supply**

- **X-axis:** Year (1997 to 2005)
- **Y-axis:** Thousand Acre-Feet (0 to 400)
- **Legend:** Water Spilled, Water Supply
Prime Laboratory Benchmarks

Benchmark 1
Wholesale Firm Rate

![Wholesale Firm Composite Rate Loveland Rate](chart)

Benchmark 2
Reclamation’s Production Costs as Percentage of Wholesale Firm Rate

![Reclamation O&M Production Cost as Percentage of Wholesale Firm Rate](chart)
**Flatiron Powerplant**  
30-100 MW

**Benchmark 3**  
**Production Costs**

**Flatiron Operation Costs**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Payroll</th>
<th>Benefits</th>
<th>Travel</th>
<th>Utilities</th>
<th>Supplies</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>1%</td>
<td>5%</td>
<td>36%</td>
</tr>
<tr>
<td>2000</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>1%</td>
<td>5%</td>
<td>36%</td>
</tr>
<tr>
<td>2002</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>1%</td>
<td>5%</td>
<td>36%</td>
</tr>
<tr>
<td>2004</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>1%</td>
<td>5%</td>
<td>36%</td>
</tr>
<tr>
<td>2006</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>1%</td>
<td>5%</td>
<td>36%</td>
</tr>
</tbody>
</table>

**Flatiron Maintenance Costs**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Payroll</th>
<th>Benefits</th>
<th>Travel</th>
<th>Supplies</th>
<th>Equipment</th>
<th>Admin</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>2%</td>
<td>20%</td>
<td>27%</td>
</tr>
<tr>
<td>2000</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>2%</td>
<td>20%</td>
<td>27%</td>
</tr>
<tr>
<td>2002</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>2%</td>
<td>20%</td>
<td>27%</td>
</tr>
<tr>
<td>2004</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>2%</td>
<td>20%</td>
<td>27%</td>
</tr>
<tr>
<td>2006</td>
<td>26%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>2%</td>
<td>20%</td>
<td>27%</td>
</tr>
</tbody>
</table>
Flatiron Powerplant
30-100 MW

Benchmark 3
Production Costs

**Flatiron Operation and Maintenance Costs**

**Flatiron Operation and Maintenance Costs**

**Fiscal Year 2007**

$0 $20 $40 $60 $80 $100 $120

**Total Production Costs**

External Comparison

**Total Production Costs**

External Comparison

Fiscal Year 2007

External Group Average = $54.6/MWh
Reclamation Group Average = $9.1/MWh

**Total Production Costs**

External Comparison

Fiscal Year 2007

167 External Plants

Flaferon (Unit 1,2)

External Group Average = $30,336/MW
Reclamation Group Average = $25,237/MW
## Flatiron FY 2007 Equivalent Work Staffing Year Levels

<table>
<thead>
<tr>
<th></th>
<th>Equivalent Work Year Staffing Charged to Powerplant</th>
<th>Leave Additive</th>
<th>Denver and Washington Equivalent Work Year Staffing Additive</th>
<th>Total Equivalent Work Year Allocated to Powerplant</th>
<th>Total Equivalent Staffing Work Year per Generating Unit</th>
<th>Total Equivalent Work Year Staffing per Megawatt</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>0.03</td>
<td>0.00</td>
<td>0.05</td>
<td>0.09</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Operation</td>
<td>1.54</td>
<td>0.17</td>
<td>0.00</td>
<td>1.71</td>
<td>0.57</td>
<td>0.02</td>
</tr>
<tr>
<td>Maintenance</td>
<td>6.85</td>
<td>0.77</td>
<td>0.00</td>
<td>7.62</td>
<td>2.54</td>
<td>0.08</td>
</tr>
<tr>
<td>Total Staffing</td>
<td>8.42</td>
<td>0.95</td>
<td>0.05</td>
<td>9.43</td>
<td>3.14</td>
<td>0.10</td>
</tr>
</tbody>
</table>

### Flatiron Equivalent Work Year per Unit

- **1998**: 0.03, 0.17, 6.85, 8.42
- **2000**: 0.00, 0.00, 0.00, 0.00
- **2004**: 0.00, 0.00, 0.00, 0.00
- **2007**: 0.00, 0.00, 0.00, 0.00

### Flatiron O&M Equivalent Work Years per Unit

- **1998**: 0.03, 0.03, 0.03, 0.03
- **2000**: 0.03, 0.03, 0.03, 0.03
- **2002**: 0.03, 0.03, 0.03, 0.03
- **2004**: 0.03, 0.03, 0.03, 0.03
- **2006**: 0.03, 0.03, 0.03, 0.03

### Flatiron O&M Equivalent Work Years per MW

- **1998**: 0.03, 0.03, 0.03, 0.03
- **2000**: 0.03, 0.03, 0.03, 0.03
- **2002**: 0.03, 0.03, 0.03, 0.03
- **2004**: 0.03, 0.03, 0.03, 0.03
- **2006**: 0.03, 0.03, 0.03, 0.03
Flatiron Powerplant
30-100 MW

Benchmark 5
Plant Availability Factor

Benchmark 6
Plant Forced Outage Factor
Benchmark 7
Plant Scheduled Outage Factor

Flatiron 1 and 2
Scheduled Outage Factor

Unit Starts

Flatiron 1 and 2
Average Starts per Unit
## Benchmark Data Comparison

<table>
<thead>
<tr>
<th>Fiscal Year 2007</th>
<th>Flatiron Powerplant</th>
<th>Reclamation Average 30-100 MW Group</th>
<th>Total Reclamation Average</th>
<th>Industry Average</th>
<th>Best Performers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale Firm Rate Mills/kWh</td>
<td>23.9</td>
<td>Not Applicable</td>
<td>*22.45</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Production Cost as Percentage of Wholesale Firm Rate</td>
<td>4.81%</td>
<td>Not Applicable</td>
<td>12.1%</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>O&amp;M Cost $/MWh</td>
<td>8.82</td>
<td>7.85</td>
<td>2.76</td>
<td>***54.63</td>
<td>1.00</td>
</tr>
<tr>
<td>O&amp;M Costs $/MW</td>
<td>24,628</td>
<td>24,132</td>
<td>7,847</td>
<td>***30,336</td>
<td>2,897</td>
</tr>
<tr>
<td>O&amp;M Equiv Work Year per MW</td>
<td>0.10</td>
<td>0.10</td>
<td>0.03</td>
<td>Not Available</td>
<td>0.0</td>
</tr>
<tr>
<td>Availability Factor</td>
<td>61.0</td>
<td>81.3</td>
<td>82.3</td>
<td>**88.64</td>
<td>98.5</td>
</tr>
<tr>
<td>Forced Outage Factor</td>
<td>0.1</td>
<td>0.2</td>
<td>2.6</td>
<td>**2.61</td>
<td>0.0</td>
</tr>
<tr>
<td>Scheduled Outage Factor</td>
<td>38.9</td>
<td>18.5</td>
<td>15.1</td>
<td>**8.74</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Weighted by Net Generation*
Flatiron Powerplant
30-100 MW

**2006 NERC Average
***Energy Information Administration Data

Note: Performance data based on Units 1 and 2. Unit 3 is primarily used as a pump.