Morrow Point Powerplant
Colorado River Storage Project
Wayne N. Aspinall Storage Unit

Ancillary Services

<table>
<thead>
<tr>
<th>Morrow Point Ancillary Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinning Reserve</td>
</tr>
<tr>
<td>Non-Spinning Reserve</td>
</tr>
<tr>
<td>Replacement Reserve</td>
</tr>
<tr>
<td>Regulation/Load Following</td>
</tr>
<tr>
<td>Black Start</td>
</tr>
<tr>
<td>Voltage Support</td>
</tr>
</tbody>
</table>

Generators

<table>
<thead>
<tr>
<th>Morrow Point Generators</th>
<th>Existing Number and Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit #</td>
<td>Original Capacity (kW)</td>
</tr>
<tr>
<td>1</td>
<td>60,000</td>
</tr>
<tr>
<td>2</td>
<td>60,000</td>
</tr>
<tr>
<td>2 units</td>
<td>120,000</td>
</tr>
</tbody>
</table>
Morrow Point Powerplant
100-500 MW

Generation

Morrow Point
Fiscal Year Net Generation

Morrow Point
Monthly Net Generation

Morrow Point
Water Supply
Prime Laboratory Benchmarks

**Benchmark 1**
Wholesale Firm Rate

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

[Fiscal Year 2007](#)
Benchmark 3
Production Cost

Morrow Point Powerplant
100-500 MW

Morrow Point Operation Costs

Fiscal Year 2007
Payroll 38%
Benefits 14%
Travel 1%
Utilities 1%
Equipment 1%
Admin 18%
Other 20%
Supplies 7%

Morrow Point Maintenance Costs

Fiscal Year 2007
Payroll 34%
Benefits 11%
Travel 1%
Utilities 1%
Other 28%
Equipment 2%
Supplies 8%
Admin 15%
Benchmark 3
Production Cost

Morrow Point Powerplant
100-500 MW

Morrow Point
Operation and Maintenance Costs

Fiscal Year

Morrow Point
Operation and Maintenance Costs
Fiscal Year 2007

Total Production Costs
External Comparison

Fiscal Year 2007

Total Production Costs
External Comparison

Fiscal Year 2007

External Group Average = $63.9/MWh
Reclamation Group Average = $4.9/MWh

External Group Average = $21,167/MW
Reclamation Group Average = $9,854/MW
## Morrow Point FY 2007 Equivalent Work Staffing Year Levels

<table>
<thead>
<tr>
<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>0.00</td>
<td>0.00</td>
<td>0.04</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Operation</td>
<td>2.37</td>
<td>0.25</td>
<td>0.00</td>
<td>2.62</td>
<td>1.31</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4.15</td>
<td>0.44</td>
<td>0.00</td>
<td>4.59</td>
<td>2.29</td>
</tr>
<tr>
<td>Total Staffing</td>
<td>6.52</td>
<td>0.69</td>
<td>0.04</td>
<td>7.25</td>
<td>3.62</td>
</tr>
</tbody>
</table>

## Morrow Point Equivalent Work Year per Unit

- **1998**: 0.00
- **2000**: 0.005
- **2002**: 0.01
- **2004**: 0.015
- **2006**: 0.02

## Morrow Point O&M Equivalent Work Years per Unit

- **1998**: 0.05
- **2000**: 0.1
- **2002**: 0.15
- **2004**: 0.2
- **2006**: 0.25

## Morrow Point O&M Equivalent Work Years per MW

- **1998**: 0.005
- **2000**: 0.01
- **2002**: 0.015
- **2004**: 0.02
- **2006**: 0.025
Benchmark 5
Availability Factor

Morrow Point
Availability Factor

Fiscal Year

Benchmark 6
Forced Outage Factor

Morrow Point
Forced Outage Factor

Fiscal Years
Benchmark 7
Scheduled Outage Factor

Morrow Point
Scheduled Outage Factor

Starts

Morrow Point
Average Starts per Unit

Fiscal Years
## Benchmark Data Comparison

<table>
<thead>
<tr>
<th>Fiscal Year 2007</th>
<th>Morrow Point Powerplant</th>
<th>Reclamation Average 100-500 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>20.7</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>2.3%</td>
<td>Not Applicable</td>
<td>12.1%</td>
<td>Not Applicable</td>
<td>Not Available</td>
</tr>
<tr>
<td>O&amp;M Cost $/MWh</td>
<td>7.66</td>
<td>4.44</td>
<td>2.76</td>
<td>***63.88</td>
<td>1.00</td>
</tr>
<tr>
<td>O&amp;M Costs $/MW</td>
<td>12,941</td>
<td>10,502</td>
<td>7,847</td>
<td>***21,167</td>
<td>2,897</td>
</tr>
<tr>
<td>O&amp;M Equiv Work Year per MW</td>
<td>0.04</td>
<td>0.04</td>
<td>0.03</td>
<td>Not Available</td>
<td>0.0</td>
</tr>
<tr>
<td>Availability Factor</td>
<td>96.3</td>
<td>83.5</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>1.2</td>
<td>2.6</td>
<td>**2.61</td>
<td>0.0</td>
</tr>
<tr>
<td>Scheduled Outage Factor</td>
<td>3.6</td>
<td>15.4</td>
<td>15.1</td>
<td>**8.74</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Weighted by Net Generation  
**2006 NERC Average  
***Energy Information Administration Data