Palisades Powerplant
Palisades Project

Ancillary Services

<table>
<thead>
<tr>
<th>Palisades 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>Palisades Generators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Number and Capacity</td>
</tr>
</tbody>
</table>

<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>28,500</td>
<td>15,641</td>
<td>44,141</td>
</tr>
<tr>
<td>2</td>
<td>28,500</td>
<td>15,641</td>
<td>44,141</td>
</tr>
<tr>
<td>3</td>
<td>28,500</td>
<td>15,641</td>
<td>44,141</td>
</tr>
<tr>
<td>4</td>
<td>28,500</td>
<td>15,641</td>
<td>44,141</td>
</tr>
<tr>
<td>4 units</td>
<td>114,000</td>
<td>62,564</td>
<td>176,564</td>
</tr>
</tbody>
</table>
Palisades Powerplant
100-500 MW

Generation

Palisades Fiscal Year Net Generation

Palisades Monthly Net Generation

Palisades Water Supply

Water Spilled  Water Supply
Prime Laboratory Benchmarks

Benchmark 1
Wholesale Firm Rate

![Wholesale Firm Composite Rate vs Bonneville Power Administration Rate](image)

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

![Reclamation O&M Production Cost as Percentage of Wholesale Firm Rate](image)

Fiscal Year 2007

Other BPA Costs 99%

Other Project Costs 95%

Palisades 5%
Palisades Powerplant
100-500 MW

Benchmark 3
Production Cost

Palisades Operation Costs

Fiscal Years

Palisades Maintenance Costs

Fiscal Years

Palisades Operation Costs
Fiscal Year 2007

Palisades Maintenance Costs
Fiscal Year 2007

Payroll
50%

Equipment
8%

Admin
20%

Supplies
7%

Benefits
17%

Travel
1%

Other
5%

Payroll
42%

Benefits
13%

Utilities
1%

Travel
1%

Other
12%
Palisades Powerplant
100-500 MW

Benchmark 3
Production Cost

### Palisades Operation and Maintenance Costs

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Operation</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>2000</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>2004</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Palisades Total Production Costs

**Fiscal Year 2007**

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

- 107 External Plants

### Total Production Costs

**Fiscal Year 2007**

- External Group Average = $21,167/MW
- Reclamation Group Average = $9,854/MW
Palisades Powerplant
100-500 MW

Benchmark 4
Workforce Deployment

### Palisades 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>1.27</td>
<td>0.13</td>
<td>0.07</td>
<td>1.48</td>
<td>0.37</td>
<td>0.01</td>
</tr>
<tr>
<td>Operation</td>
<td>2.42</td>
<td>0.26</td>
<td>0.00</td>
<td>2.68</td>
<td>0.67</td>
<td>0.02</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4.15</td>
<td>0.44</td>
<td>0.00</td>
<td>4.59</td>
<td>1.15</td>
<td>0.03</td>
</tr>
<tr>
<td>Total Staffing</td>
<td>7.84</td>
<td>0.83</td>
<td>0.07</td>
<td>8.75</td>
<td>2.19</td>
<td>0.05</td>
</tr>
</tbody>
</table>

### Palisades Equivalent Work Year per Unit

- **1998**
- **2001**
- **2004**
- **2007**

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

- **1998**
- **2000**
- **2002**
- **2004**
- **2006**

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

- **1998**
- **2000**
- **2002**
- **2004**
- **2006**
Benchmark 5
Availability Factor

Palisades Powerplant
100-500 MW

Fiscal Year

Fiscal Years

Benchmark 6
Forced Outage Factor
Benchmark 7
Scheduled Outage Factor

Palisades Scheduled Outage Factor

Starts

Palisades Average Starts per Unit
## Benchmark Data Comparison

<table>
<thead>
<tr>
<th>Fiscal Year 2007</th>
<th>Palisades 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>24.8</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>0.07%</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>3.96</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>11,362</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>0.00</td>
</tr>
<tr>
<td>Availability Factor</td>
<td>91.1</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>8.8</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