Judge Francis Carr Powerplant
Central Valley Project

Ancillary Services

<table>
<thead>
<tr>
<th>Judge Francis Carr 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>Judge Francis Carr 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>70,722</td>
<td>6,478</td>
<td>77,200</td>
</tr>
<tr>
<td>2</td>
<td>70,722</td>
<td>6,478</td>
<td>77,200</td>
</tr>
<tr>
<td>1 units</td>
<td>141,444</td>
<td>12,956</td>
<td>154,400</td>
</tr>
</tbody>
</table>

The maximum operational capacity is restricted to 150,000 kW due to the tunnel.
Judge Francis Carr
100-500 MW

Generation

**Judge Francis Carr Fiscal Year Net Generation**

- **GWh**
- **Net Generation**
- **10 Year Average**

**Judge Francis Carr Monthly Net Generation**

- **GWh**
- **Oct** Dec Feb Apr Jun Aug
- **10-Year Average**
- **2007**

**Judge Francis Carr Water Supply**

- **Thousand Acre-Feet**
- **Water Spilled**
- **Water Supply**
Prime Laboratory Benchmarks

Benchmark 1
Wholesale Firm Rate

- Wholesale Firm* Composite Rate
- Sacramento Rate

![Graph showing Wholesale Firm* Composite Rate vs. Sacramento Rate from 1999 to 2007.](image)

*Effective Annual Composite Rate beginning FY 2006

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

- Western-Central Valley Project Rate
- Other WAPA Costs 79%
- Other Project Costs 98%
- Judge Francis Carr 2%

![Pie chart showing Reclamation O&M Production Cost as Percentage of Wholesale Firm Rate for Fiscal Year 2007.](image)
Benchmark 3
Production Cost

Judge Francis Carr
100-500 MW

Judge Francis Carr Operation Costs

Judge Francis Carr Operation Costs Fiscal Year 2007

Judge Francis Carr Maintenance Costs

Judge Francis Carr Maintenance Costs Fiscal Year 2007
Benchmark 3
Production Cost

**Judge Francis Carr**

### Operation and Maintenance Costs

**Fiscal Year 2007**

![Graph showing operation and maintenance costs over fiscal years 1998 to 2006.]

### Total Production Costs

**Fiscal Year 2007**

#### External Comparison

- **External Group Average:** $63.9/MWh
- **Reclamation Group Average:** $4.9/MWh

![Graph showing total production costs with data points for 107 external plants.]

**Fiscal Year 2007**

#### External Comparison

- **External Group Average:** $21,167/MW
- **Reclamation Group Average:** $9,854/MW

![Graph showing total production costs with data points for fiscal year 2007.]

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This page provides a visual representation of production costs and maintenance costs for fiscal years 1998 to 2006, along with data on external comparisons and group averages for fiscal year 2007.
### JF Carr FY 2007 Equivalent Work Staffing Year Levels

<table>
<thead>
<tr>
<th></th>
<th>Equivalent Work Year 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>0.44</td>
<td>0.04</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Operation</td>
<td>0.05</td>
<td>0.01</td>
<td>0.00</td>
<td>0.06</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Maintenance</td>
<td>1.37</td>
<td>0.13</td>
<td>0.00</td>
<td>1.51</td>
<td>0.75</td>
<td>0.01</td>
</tr>
<tr>
<td>Total Staffing</td>
<td>1.43</td>
<td>0.14</td>
<td>0.04</td>
<td>1.60</td>
<td>0.80</td>
<td>0.01</td>
</tr>
</tbody>
</table>

### Judge Francis Carr

**Equivalent Work Year per Unit**

- **1998**
  - Maintenance: 0.5
  - Operation: 1.5
  - General: 0.2
- **2000**
  - Maintenance: 1.5
  - Operation: 1.5
  - General: 0.5
- **2002**
  - Maintenance: 2.5
  - Operation: 2.5
  - General: 0.5
- **2004**
  - Maintenance: 3.5
  - Operation: 3.5
  - General: 0.5
- **2006**
  - Maintenance: 4.5
  - Operation: 4.5
  - General: 0.5

### Judge Francis Carr

**O&M Equivalent Work Years per Unit**

- **1998**
  - 0.05
- **2000**
  - 0.10
- **2002**
  - 0.15
- **2004**
  - 0.20
- **2006**
  - 0.25

### Judge Francis Carr

**O&M Equivalent Work Years per MW**

- **1998**
  - 0.01
- **2000**
  - 0.02
- **2002**
  - 0.03
- **2004**
  - 0.04
- **2006**
  - 0.05
Benchmark 5
Availability Factor

Judge Francis Carr
100-500 MW

Benchmark 6
Forced Outage Factor
<table>
<thead>
<tr>
<th>Fiscal Year 2007</th>
<th>Judge Francis Carr 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>13.7</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>0.8%</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>2.38</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>4,450</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>0.01</td>
<td>0.04</td>
<td>0.03</td>
<td>Not Available</td>
<td>0.0</td>
</tr>
<tr>
<td>Availability Factor</td>
<td>86.7</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>13.1</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