

# **Boysen Powerplant**

## **Pick-Sloan Missouri Basin Program**

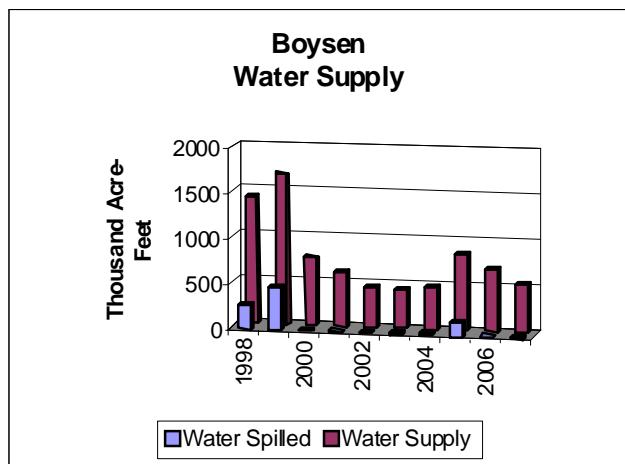
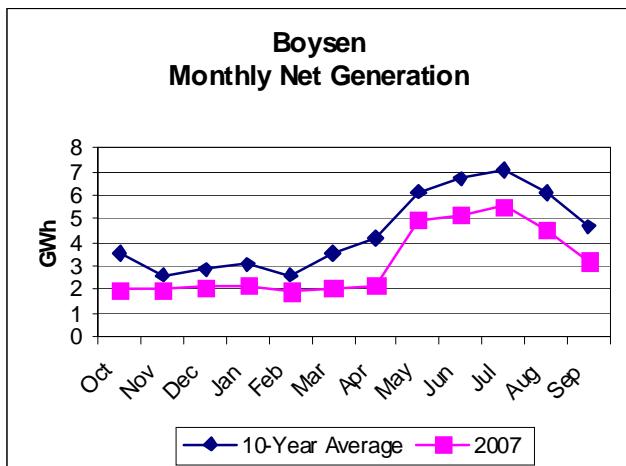
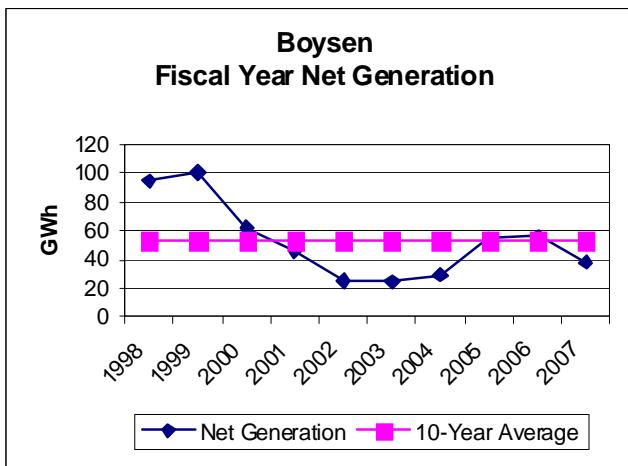
### **Ancillary Services**

<b>Boysen Ancillary Services</b>	
Spinning Reserve	No
Non-Spinning Reserve	No
Replacement Reserve	No
Regulation/Load Following	No
Black Start	No
Voltage Support	Yes

### **Generators**

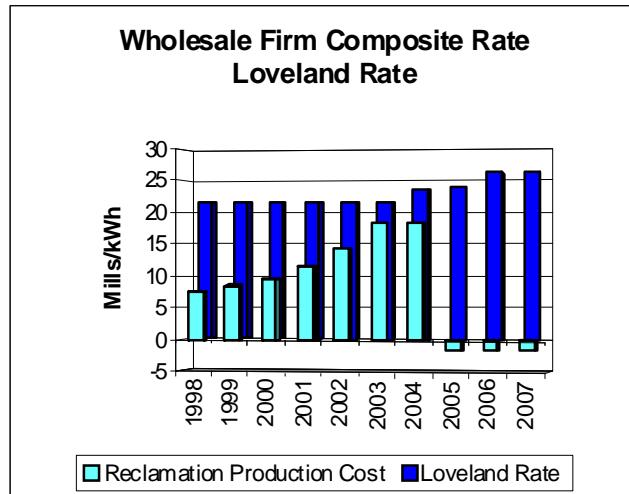
<b>Boysen Generators</b>			
Existing Number and Capacity			
Unit #	Original Capacity (kW)	Capacity Increased (kW)	Present Capacity (kW)
1	7,500	-	7,500
2	7,500	-	7,500
2 units	15,000	-	15,000

**Generation**

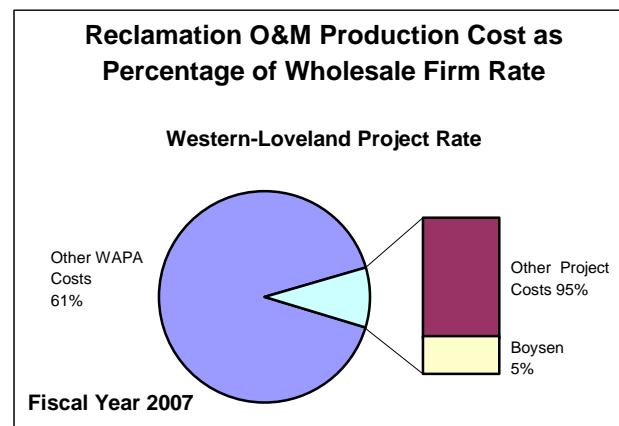


## **Prime Laboratory Benchmarks**

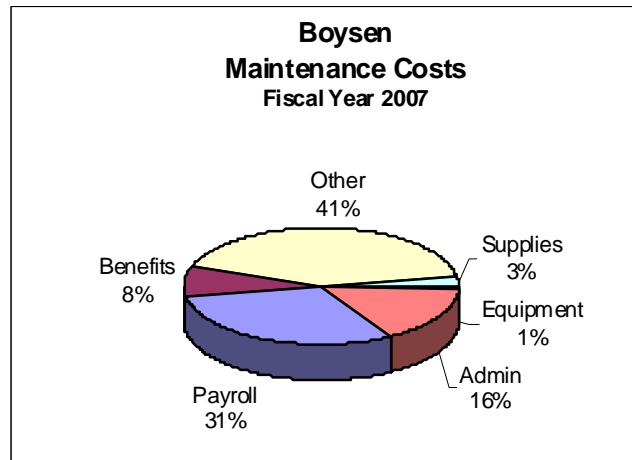
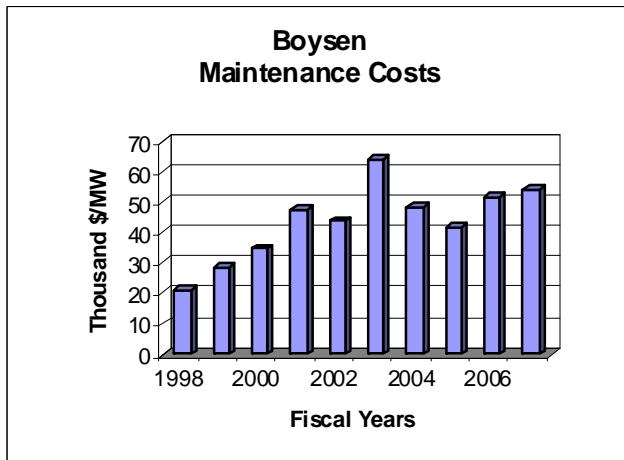
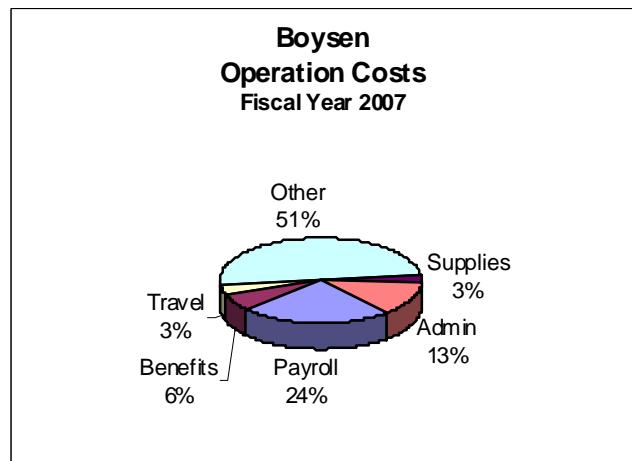
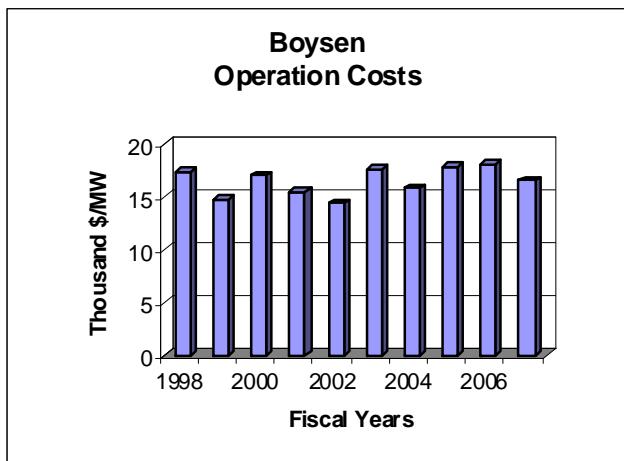
### **Benchmark 1** **Wholesale Firm Rate**



### **Benchmark 2** **Reclamation's Production Costs as Percentage of Wholesale Firm Rate**



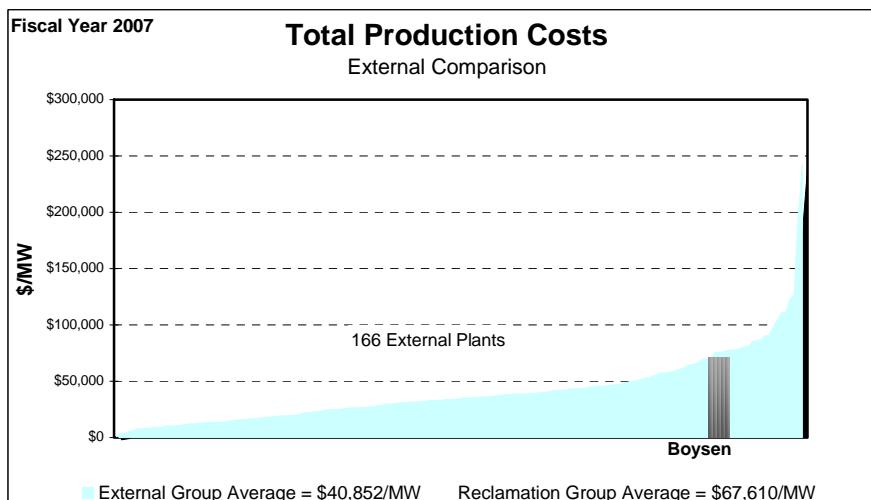
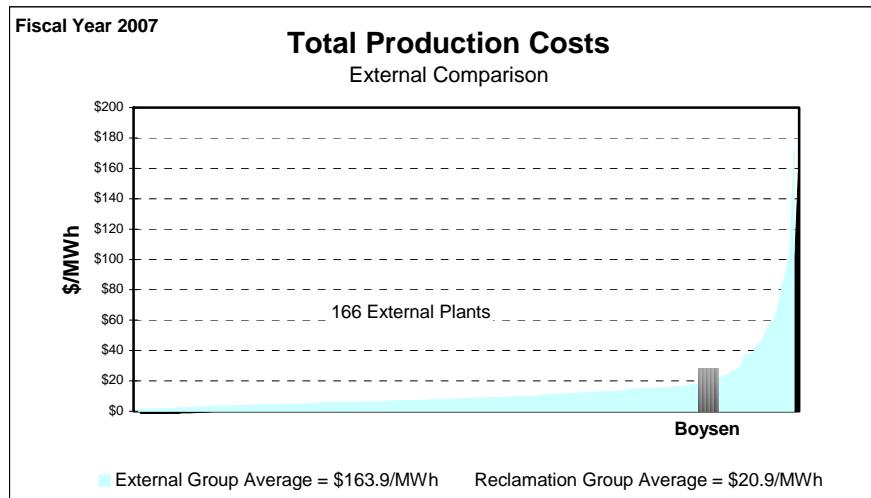
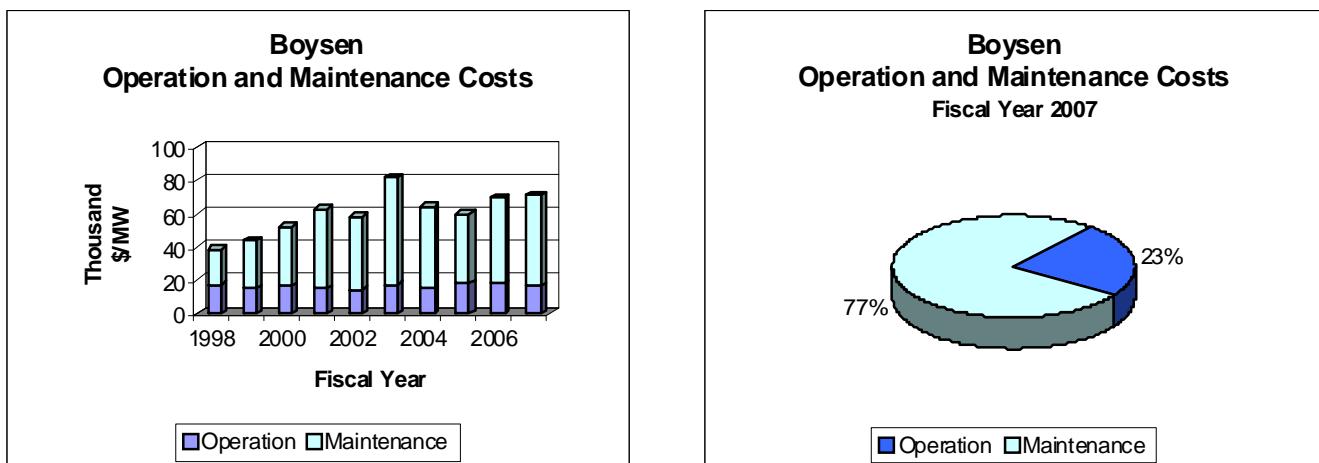
**Benchmark 3**  
**Production Costs**



FY 2001 – Repair of Unit #2 wicket gates and re-packing of penstock expansion joints.

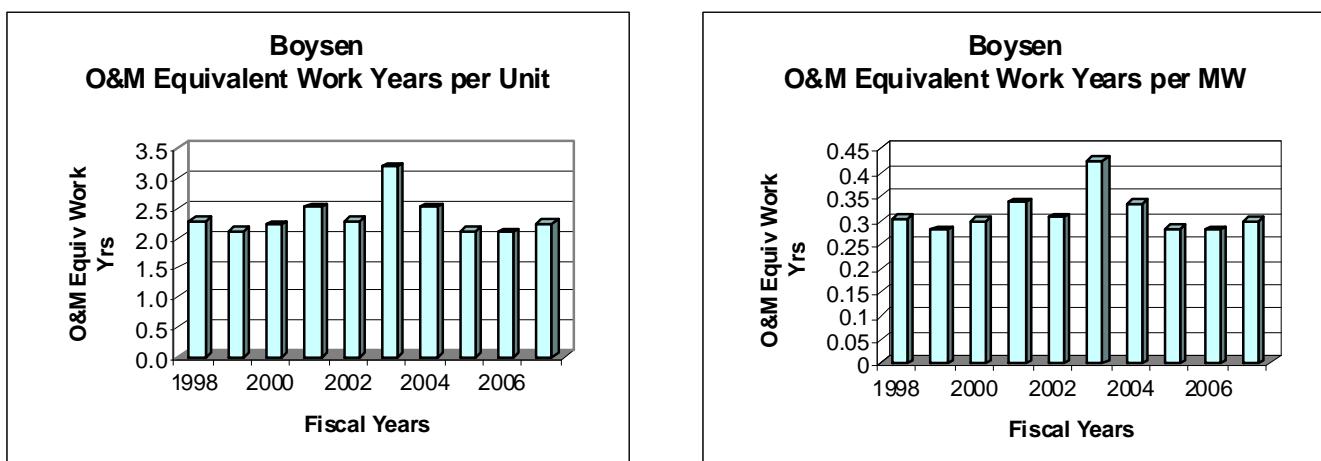
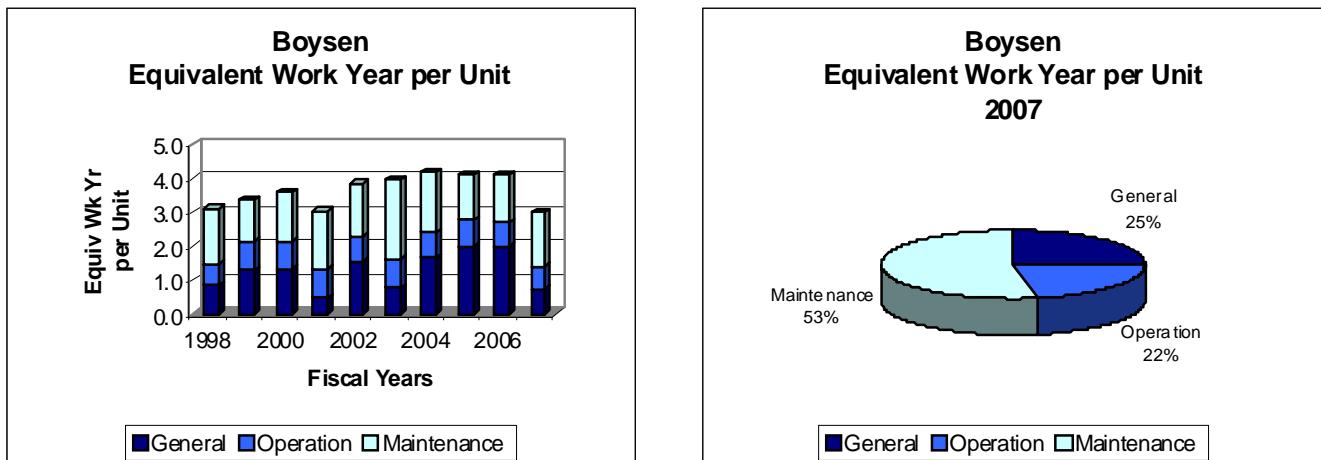
FY 2003 – Maintenance Costs include wicket gate greasing system repairs and transformer Doble testing.

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

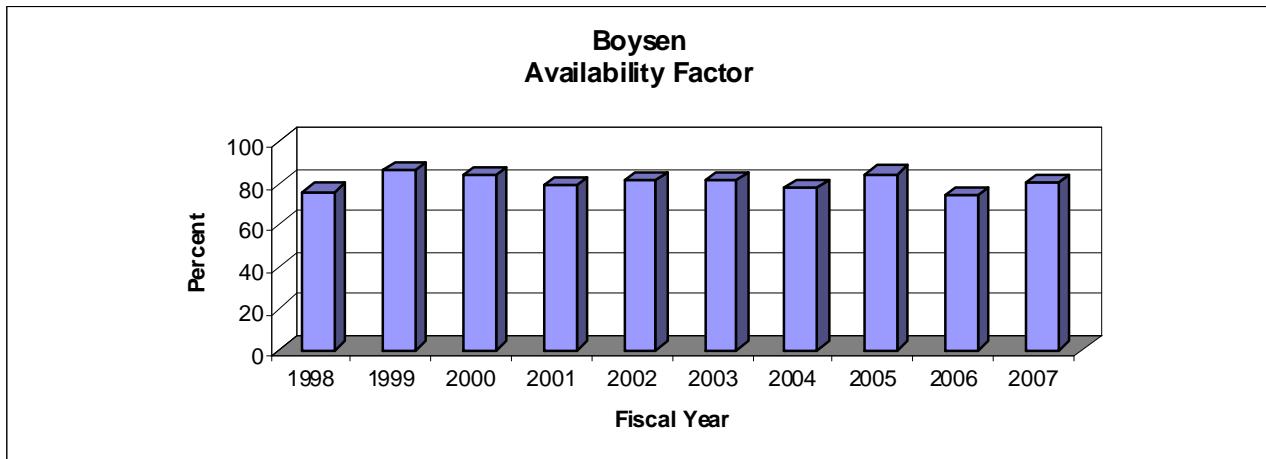


**Benchmark 4**  
**Workforce Deployment**

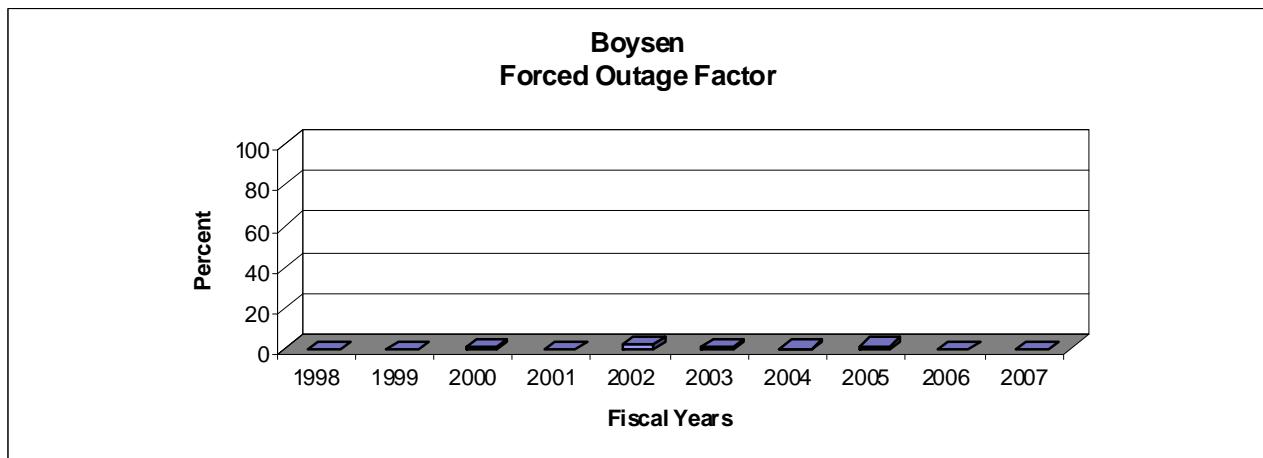
<b>Boysen FY 2007 Equivalent Work Staffing Year Levels</b>						
	Equivalent Work Year Staffing Charged to Powerplant	Leave Additive	Denver and Washington Equivalent Work Year Staffing Additive	Total Equivalent Work Year Allocated to Powerplant	Total Equivalent Staffing Work Year per Generating Unit	Total Equivalent Work Year Staffing per Megawatt
General	1.30	0.15	0.04	1.49	0.74	0.10
Operation	1.18	0.13	0.00	1.31	0.66	0.09
Maintenance	2.83	0.32	0.00	3.15	1.58	0.21
Total Staffing	5.32	0.60	0.04	5.95	2.98	0.40



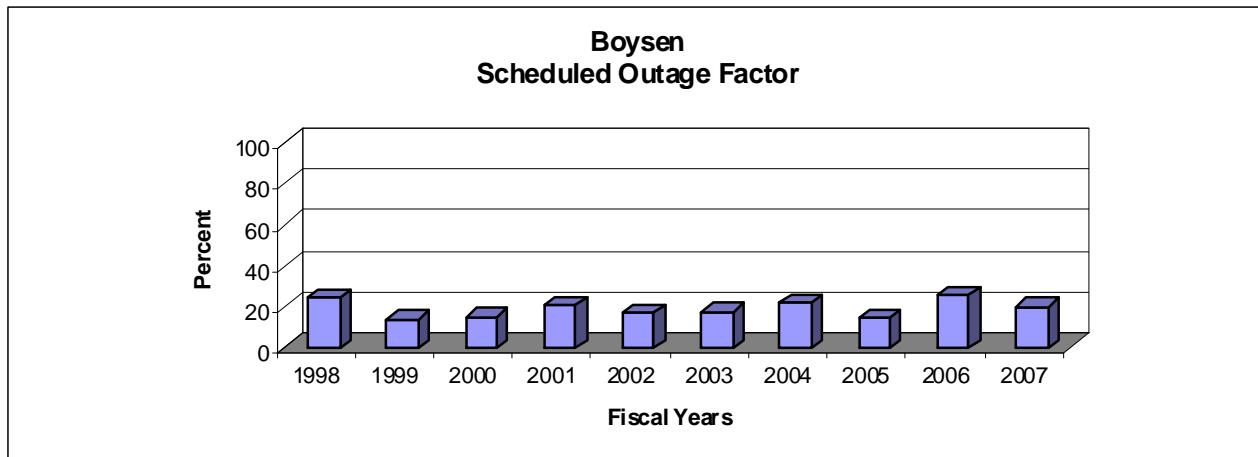
**Benchmark 5  
Plant Availability Factor**



**Benchmark 6  
Plant Forced Outage Factor**



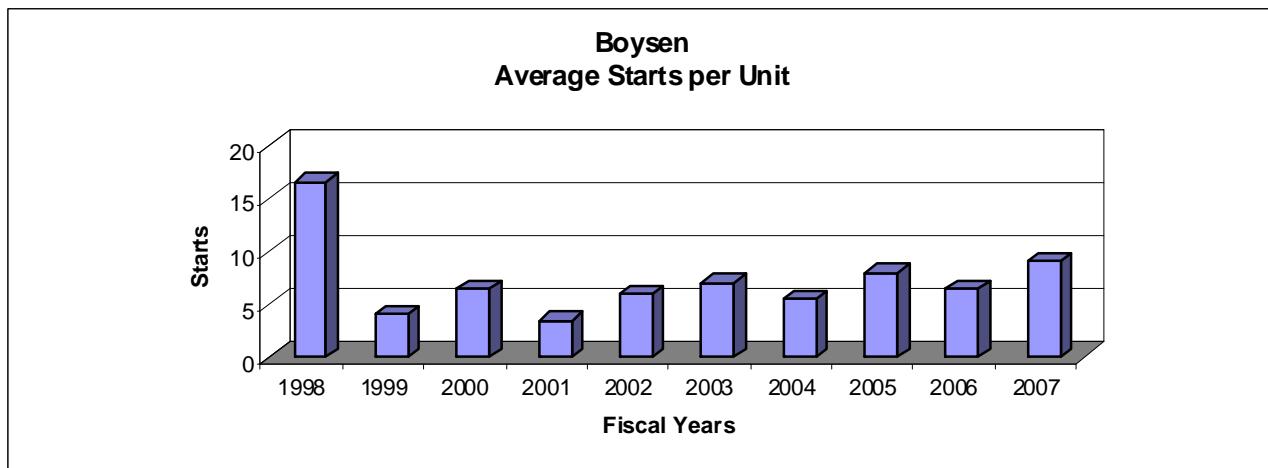
**Benchmark 7**  
**Plant Scheduled Outage Factor**



FY-1997 – Unit 2 extended maintenance.

FY-1998 – Units 1 and 2 voltage regulator and exciter replacement.

**Unit Starts**



<b>Benchmark Data Comparison</b>					
<b>Fiscal Year 2007</b>	<b>Boysen Powerplant</b>	<b>Reclamation Average 10-30 MW Group</b>	<b>Total Reclamation Average</b>	<b>Industry Average</b>	<b>Best Performers</b>
<b>Wholesale Firm Rate Mills/kWh</b>	23.9	Not Applicable	*22.45	Not Available	Not Available
<b>Production Cost as Percentage of Wholesale Firm Rate</b>	2.42%	Not Applicable	12.1%	Not Applicable	Not Applicable
<b>O&amp;M Cost \$/MWh</b>	28.18	16.40	2.76	***163.95	1.00
<b>O&amp;M Costs \$/MW</b>	71,112	62,731	7,847	***40,852	2,897
<b>O&amp;M Equiv Work Year per MW</b>	0.30	0.2	0.03	Not Available	0.0
<b>Availability Factor</b>	80.0	88.5	82.3	**88.64	98.5
<b>Forced Outage Factor</b>	0.00	0.1	2.6	**2.61	0.0
<b>Scheduled Outage Factor</b>	20.0	11.4	15.1	**8.74	0.0

\*Weighted by Net Generation

\*\*2006 NERC Average

\*\*\*Energy Information Administration Data