

Reclamation-Wide Power Profile



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Reclamation:

The Bureau of Reclamation, an agency of the Department of the Interior, manages water and related resources in the western United States. Five regions cover the 17 Western States. The Power Resources Office develops and coordinates policy and power activities with external groups and provides leadership and guidance for Reclamation's power program.

NERC Regions:

Western Systems Coordinating Council

PMA Service Area:

Bonneville Power Administration and Western Area Power Administration

Authorization:

The Secretary of the Interior has authority to develop the hydropower potential of Reclamation projects under the following acts:

- The Reclamation Act of 1902 authorized the Secretary of the Interior to develop irrigation and hydropower projects in the 17 Western States.
- The Town Sites and Power Development Acts of 1906 authorized the Secretary of the Interior to lease surplus power or power privileges.
- The Federal Water Power Act of 1920 regulated hydroelectric development of navigable waterways.
- The Reclamation Project Act of 1939 extended the contract term to 40 years for sale of power or lease of power privileges, giving preference to qualifying entities.
- Individual project authorizations.

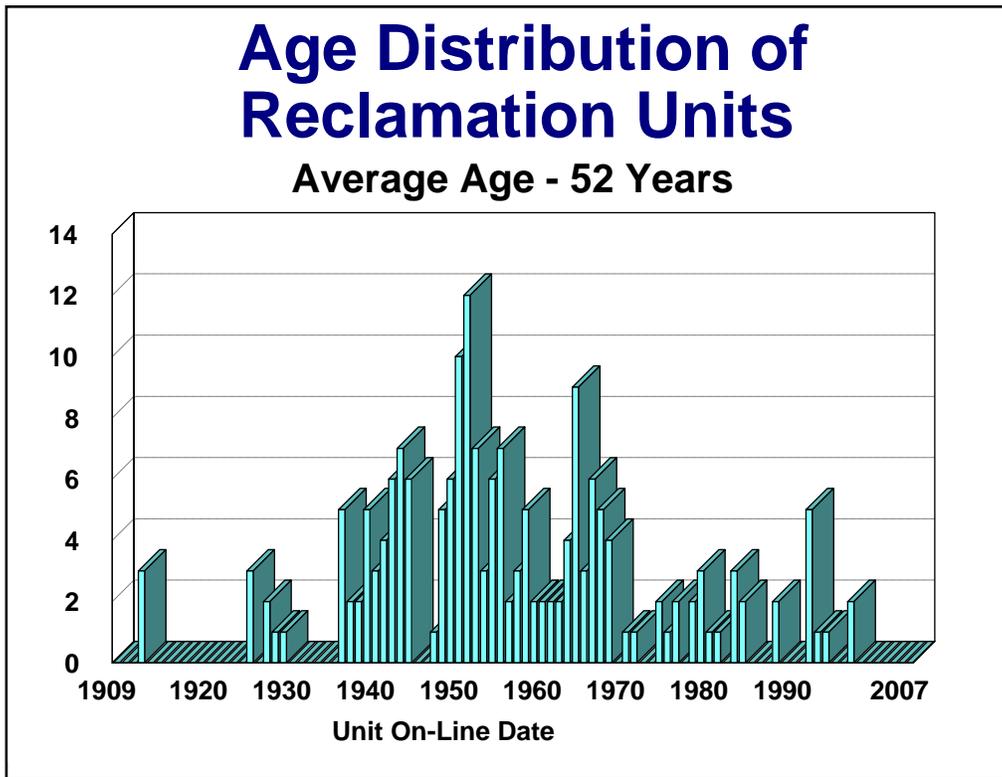
Reclamation-Wide

- Purposes:** Reclamation plans, develops, and manages multipurpose water projects in the 17 Western States. The primary purposes of Reclamation projects have been irrigation; flood control; and water for domestic, industrial, and municipal uses. Including power in multipurpose Federal Reclamation projects is considered when it is in the national interest, economically justified, feasible by engineering and environmental standards, required for pumping to supply irrigation water, and capable of repaying its share of the Federal investment in accordance with Reclamation law.
- Power Uses:** Electric power produced at Reclamation's 58 hydropower facilities is used for pumping on Reclamation projects or sold as excess power. Reclamation power is marketed and transmitted by Federal PMAs. Preference for firm power contracts is given to municipalities, public corporations, public agencies, and cooperatives or other nonprofit organizations. Revenues from power sales are used to repay project costs. In addition, power revenues are scheduled to repay portions of other project costs, such as salinity control and irrigation.
- Facts:** Reclamation's power facilities cover a wide range of capacities, designs, and functions. This report provides powerplant facts, locations, purpose, special issues, etc. Similar information is available on the Internet at www.usbr.gov/power.
- History:** Reclamation's original purpose, "to provide for the reclamation of arid and semiarid lands in the West," now covers a wide range of interrelated functions. These include providing municipal and industrial water supplies, hydroelectric power generation, irrigation water for agriculture, water quality improvement, flood control, river regulation, navigation improvement, fish and wildlife enhancement, recreation, and research in water management. Reclamation programs involve close cooperation with the Congress, other Federal agencies, States, Indian Tribes, local governments, academic institutions, water user organizations, wildlife groups, recreation groups, conservation groups, and others.
- Electric power generated at Reclamation damsites was initially used to process materials as well as to construct the engineering works. The plants powered sawmills, concrete plants, cableways, hoists, giant shovels, and draglines; they also powered lights for round-the-clock operations at some damsites. After construction, the energy-powered pumps provided drainage or conveyed water to lands that gravity canal systems could not reach. Surplus power was sold to municipal and farm consumers and helped meet local industrial demands for electricity. Hydroelectric features were included in project construction costs repaid by the water and power users under provisions of the Reclamation Act of 1902.
- Location:** Reclamation operates in the 17 Western States and has powerplants in 11 of the most western States.

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Rivers:	Reclamation's 58 hydropower electric powerplants are on 18 major rivers and numerous smaller tributaries.		
Installed Capacity (FY 2007):	14,859 MW	Initial Operation:	1909-1994
Net Generation (FY 2007):	40.53 billion kWh	Average Unit Size¹:	78 MW
Average Powerplant Size:	256 MW	Average Age:	51 years
Range of Rated Head:	24 to 2,490 feet	Remotely Operated:	44 Yes and 14 No
Average Annual Plant Factor:	31.36 percent		

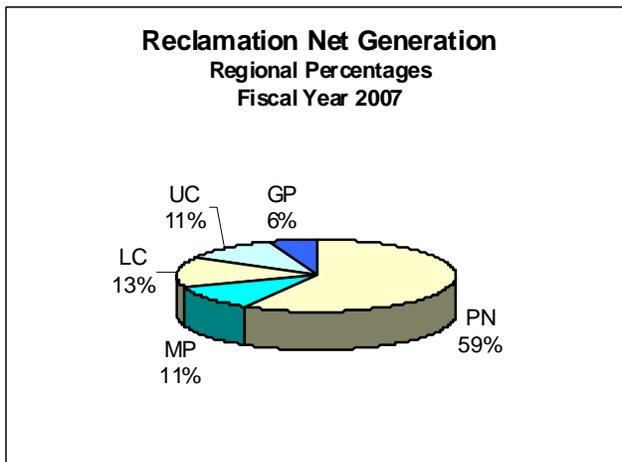
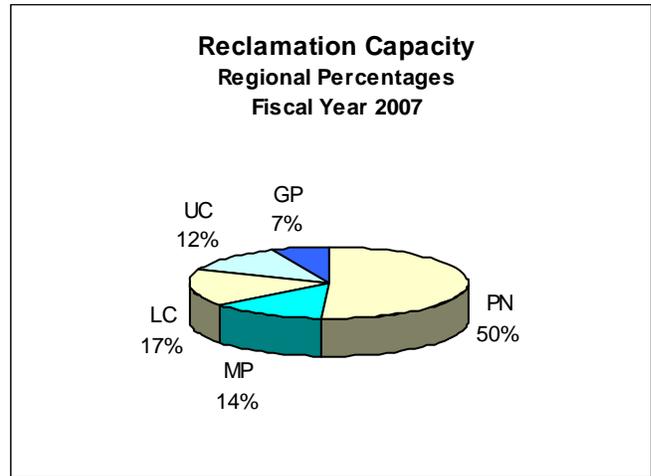
The accompanying chart portrays the age distribution of the generating units.



¹The average includes the portion of San Luis' eight units jointly owned with the State of California.

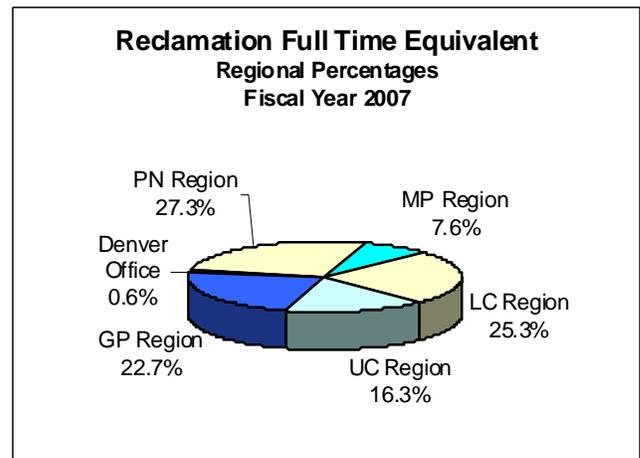
Reclamation-Wide

The total capacity for Reclamation in fiscal year 2007 was 14,859 megawatts. The regional breakdown is shown on the accompanying chart.

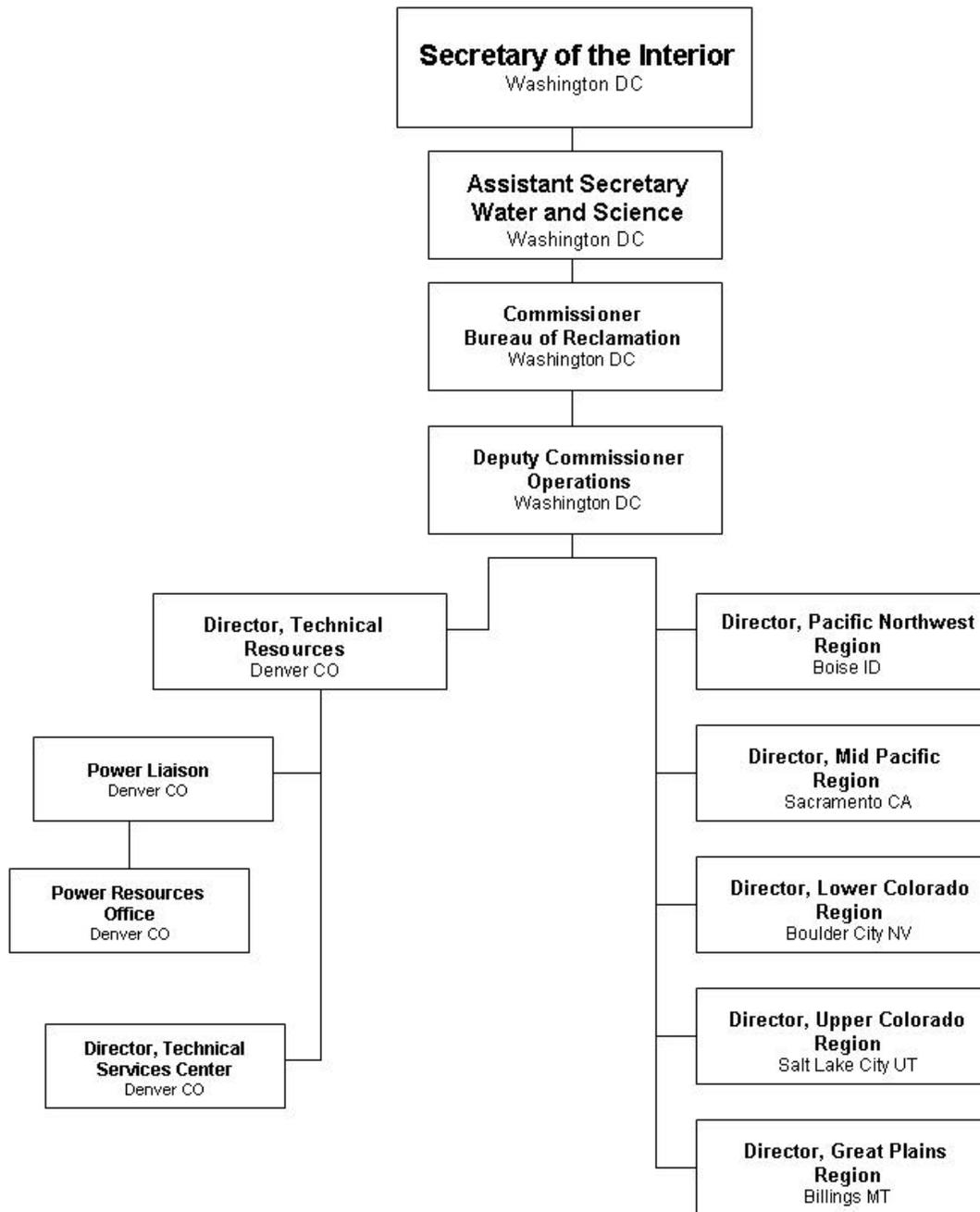


In fiscal year 2007, Reclamation produced 40529295.88 net megawatt hours of energy.

In fiscal year 2007, the power employees worked the equivalent of full time employees.



Organizational Structure:



This organizational structure displays the offices directly involved with the power program.

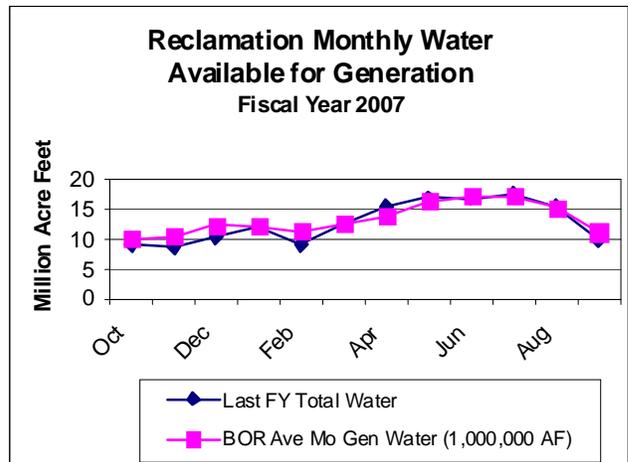
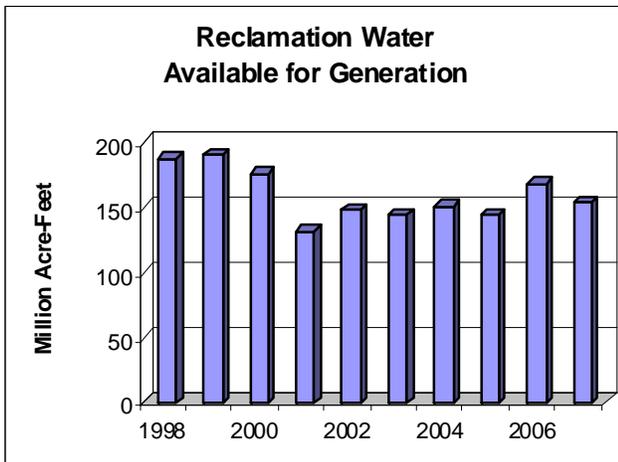
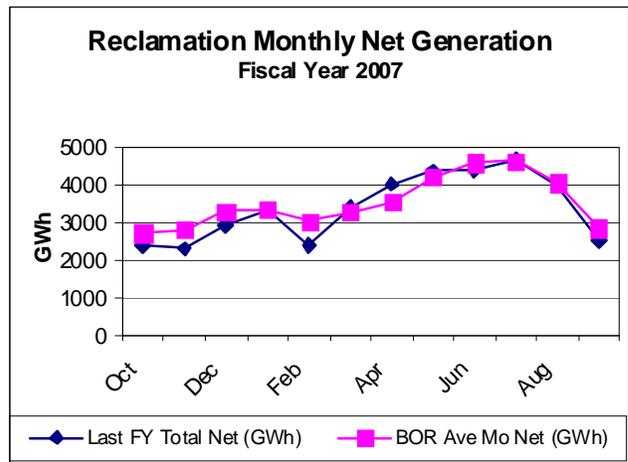
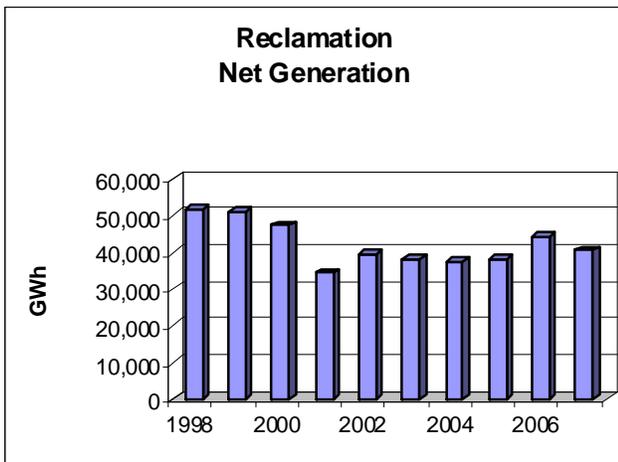
Generators

Reclamation Generators

Existing Number and Capacity
Fiscal Year 2007

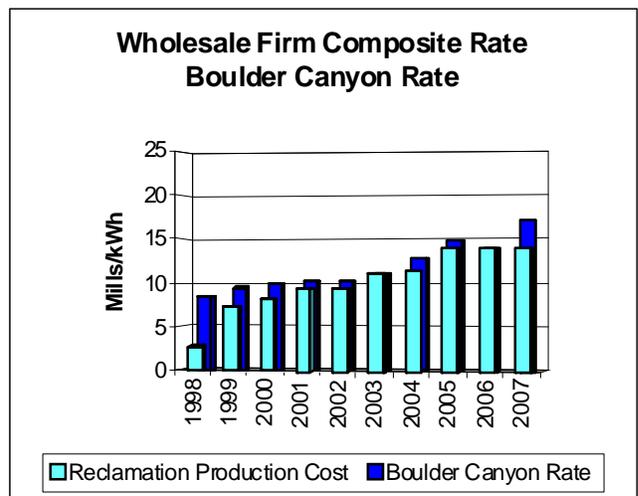
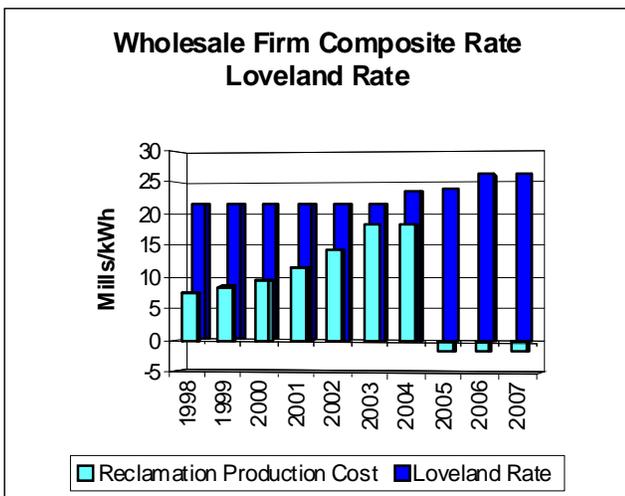
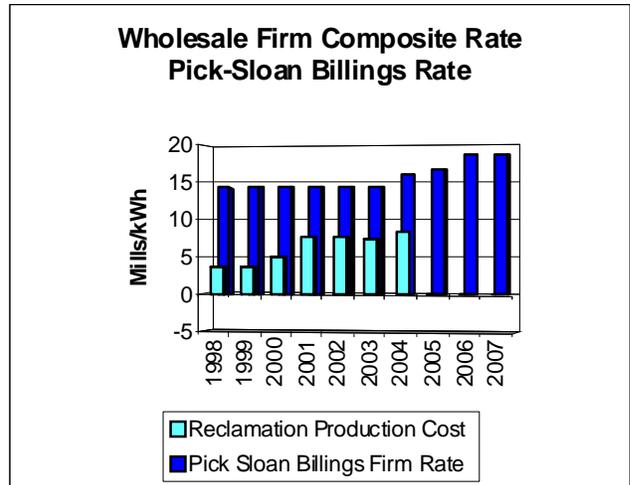
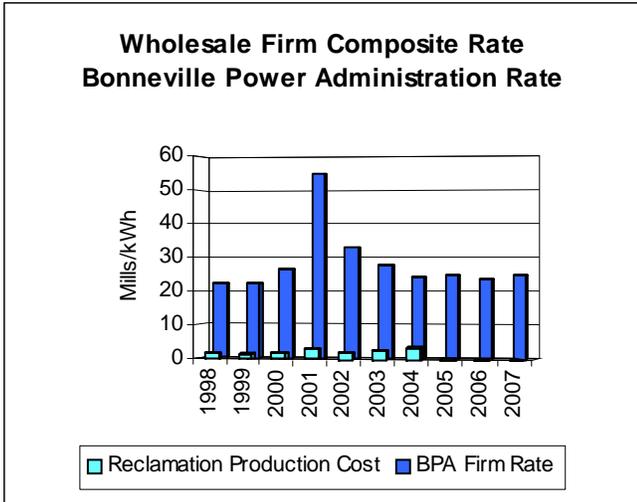
Region	Number of Powerplants	Number of Units	Installed Capacity (MW)	Net Generation (GWh)
PN	10	56	7,537.14	23,754.07
PN	12	40	2,031.82	4,465.80
PN	3	28	2,453.80	5,408.11
PN	12	26	1,832.36	4,618.29
PN	21	44	1,003.79	2,283.02
Reclamation Total	58	194	14,858.91	40,529.30

Generation

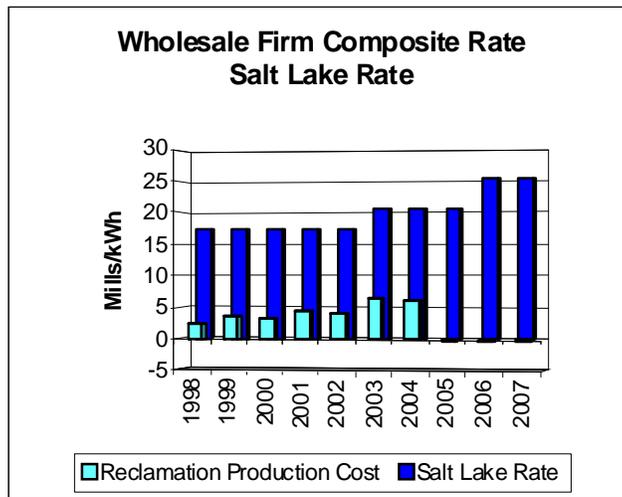
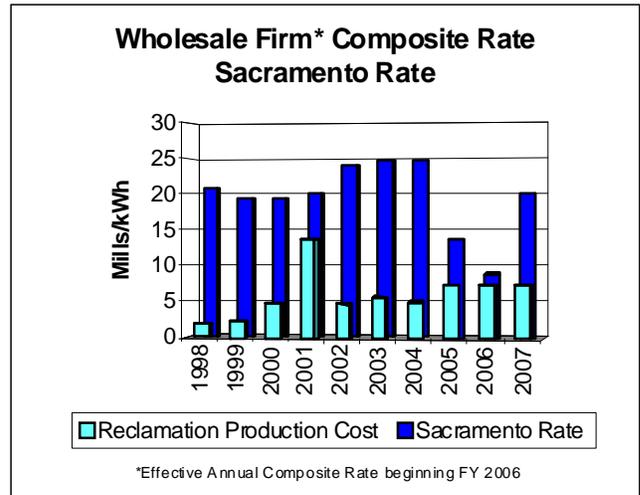
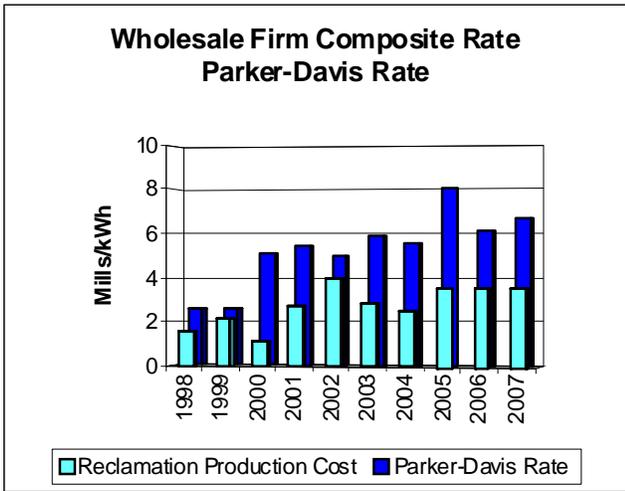


Prime Laboratory Benchmarks

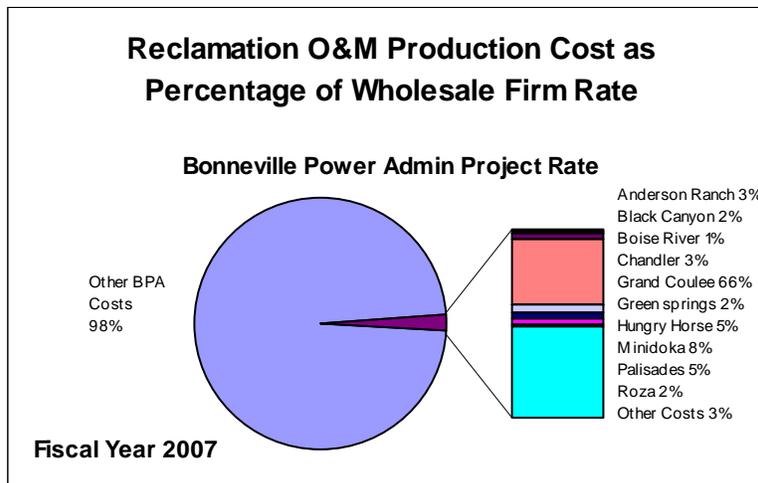
Benchmark 1
Wholesale Firm Rate



**Benchmark 1
Wholesale Firm Rate**

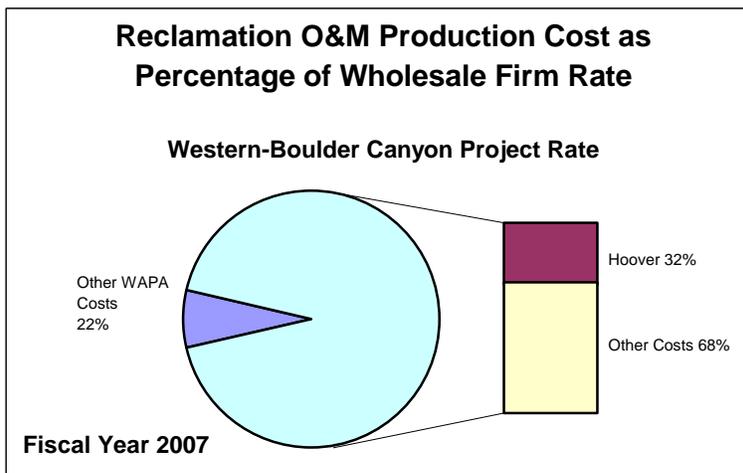
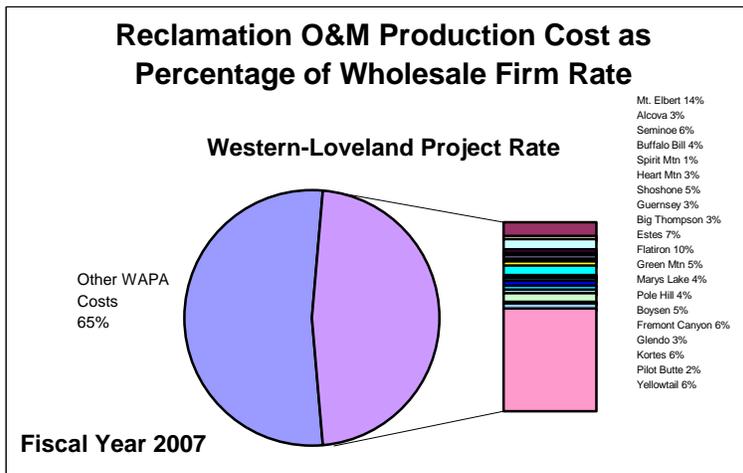
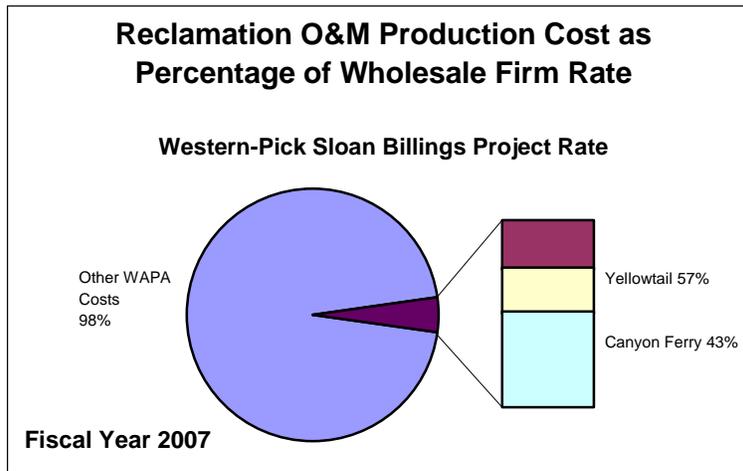


**Benchmark 2
Reclamation's Production Cost as Percentage of Wholesale Firm Rate**



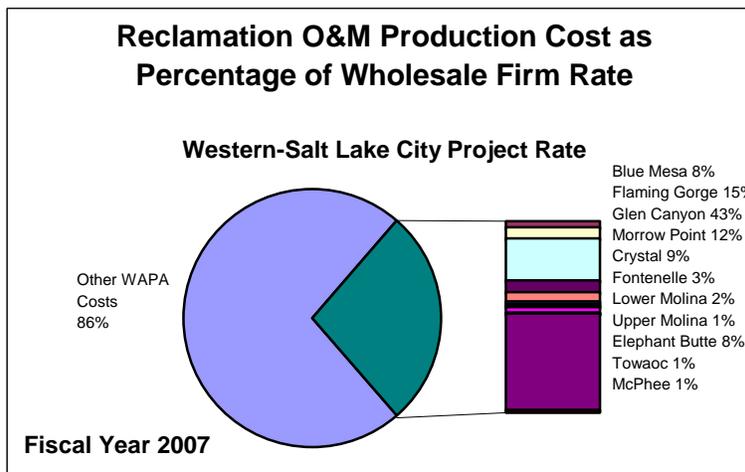
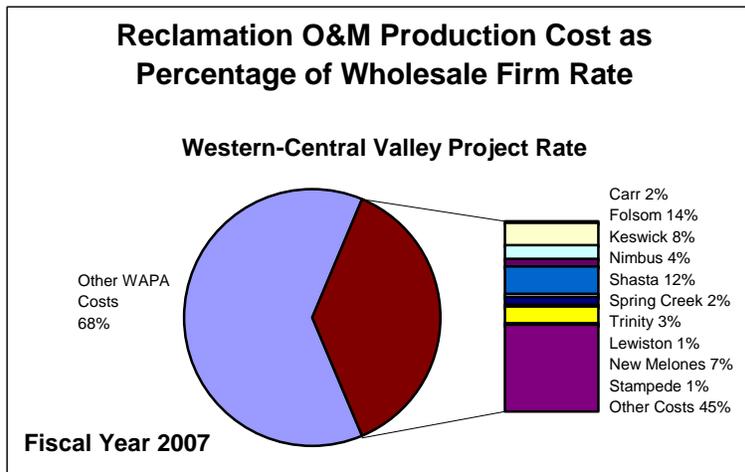
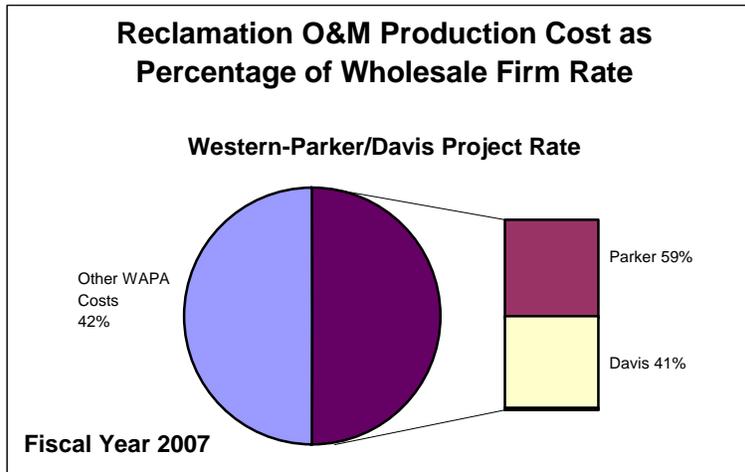
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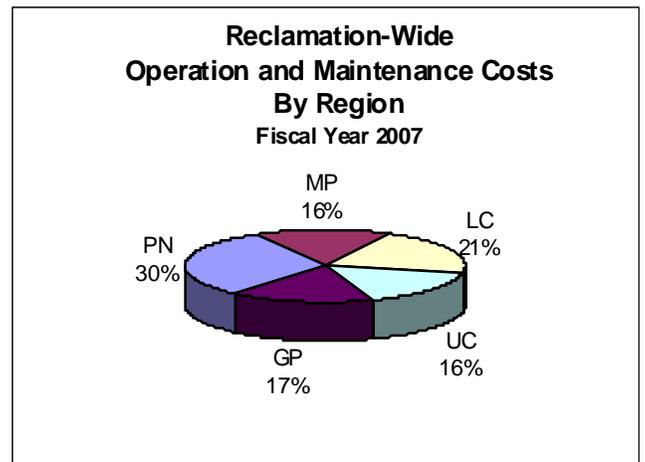
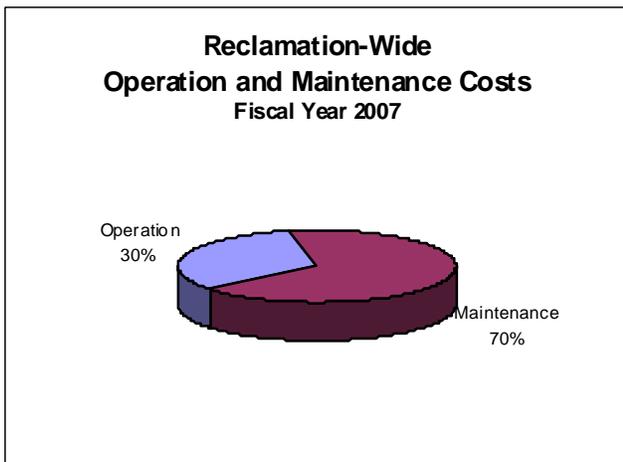
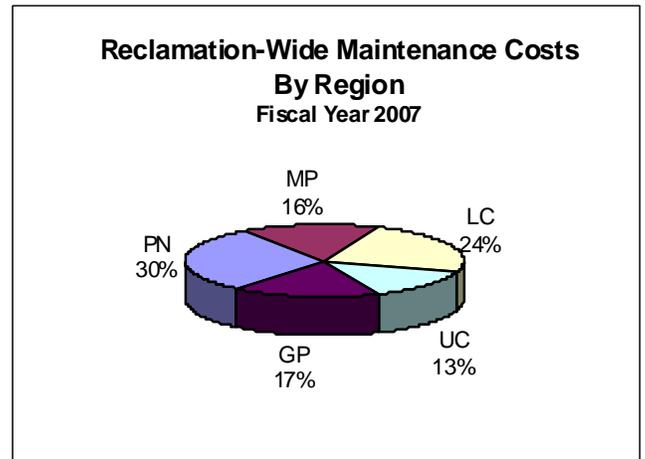
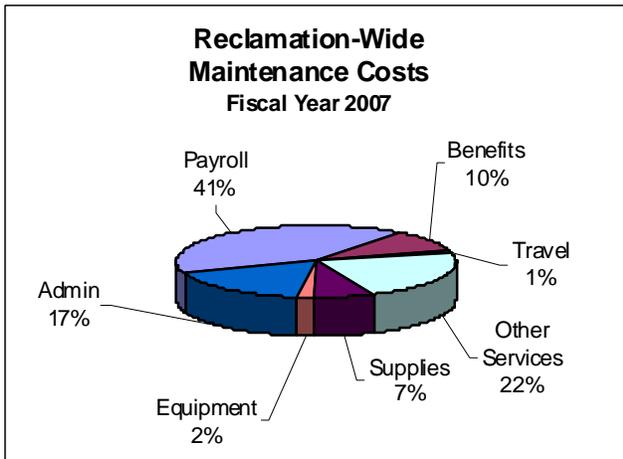
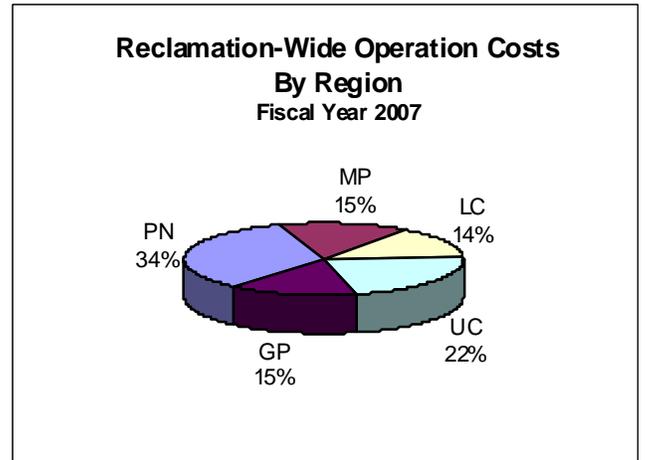
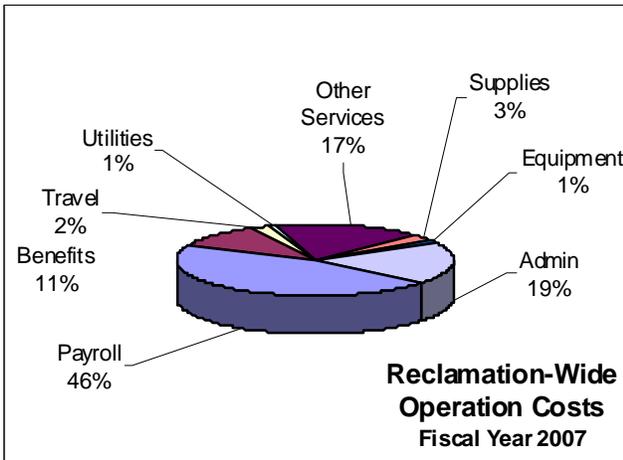


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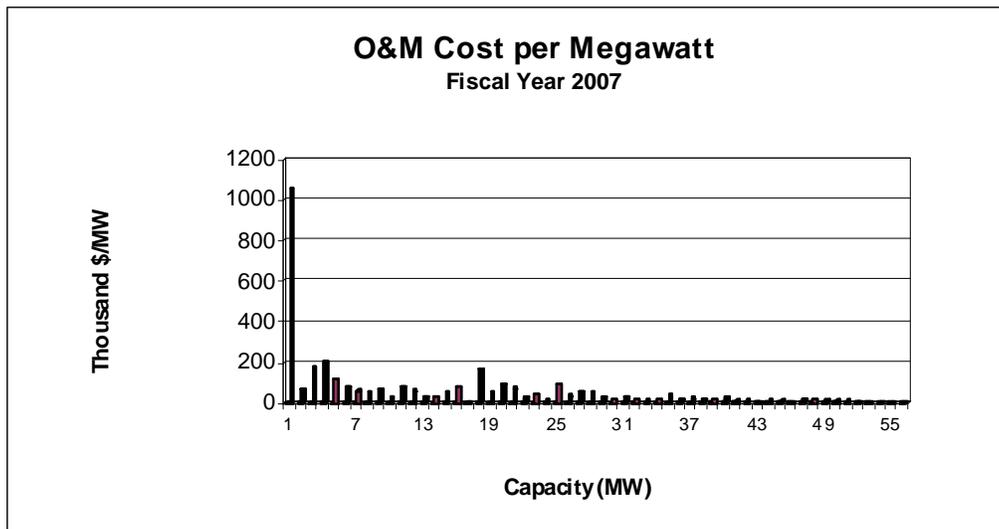
**Benchmark 3
Production Cost**



**Benchmark 3
Production Cost**

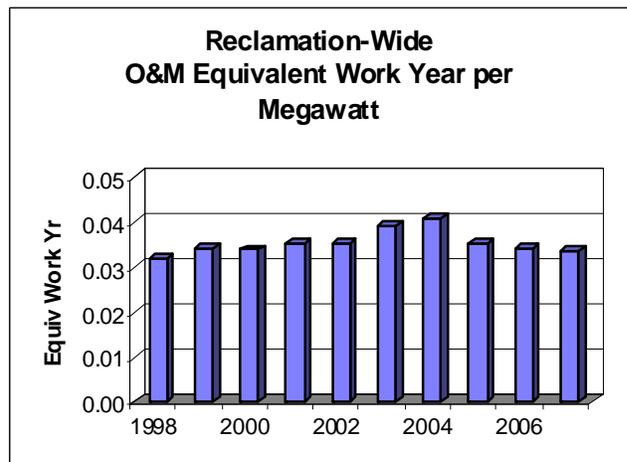
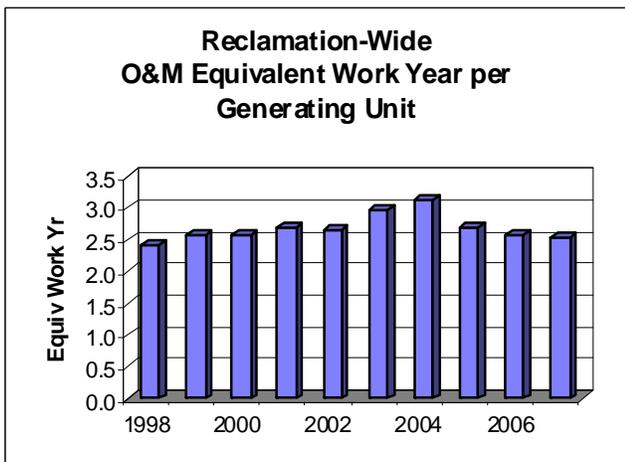
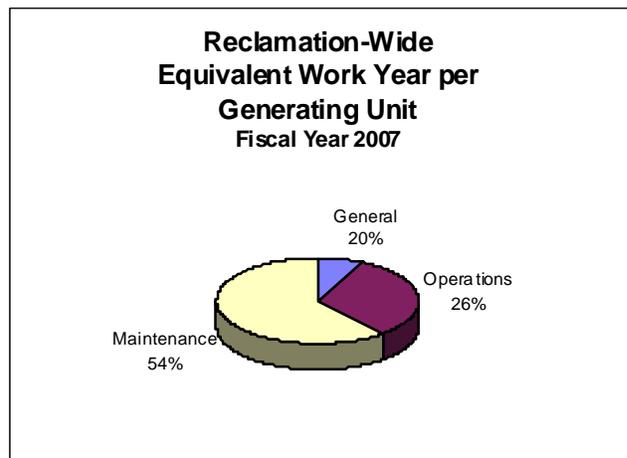
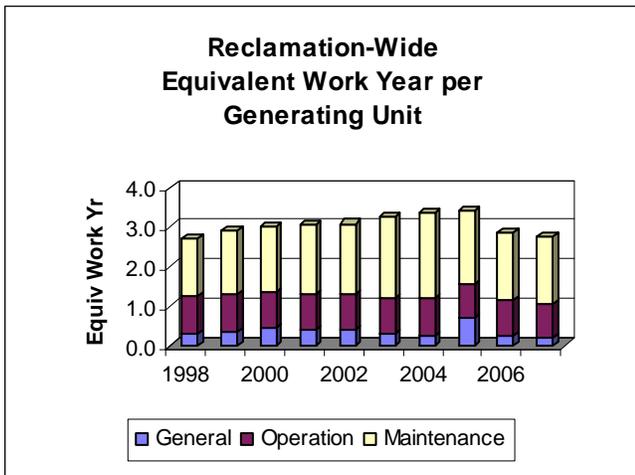
Plant	Capacity (MW)	O&M \$/MW		Plant	Capacity (MW)	O&M \$/MW
Lewiston	0.4	1,053,668		Glendo	38.0	21,285
McPhee	1.3	66,594		Pole Hill	38.2	13,037
Pilot Butte	1.6	176,449		Anderson Ranch	40.0	27,231
Shoshone	3.0	198,590		Alcova	41.4	18,745
Boise River Diversion	3.5	118,543		Estes	45.0	19,046
Stampede	3.7	74,902		Canyon Ferry	50.0	20,802
Big Thompson	4.5	60,739		Seminole	51.8	42,530
Spirit Mountain	4.5	51,068		Fremont Canyon	66.8	13,832
Lower Molina	4.9	68,514		Flatiron (Unit 1, 2)	86.0	24,628
Deer Creek	5.0	25,360		Blue Mesa	86.4	18,953
Heart Mountain	5.0	75,126		Keswick	117.0	19,878
Guernsey	6.4	60,458		Parker	120.0	24,288
Marys Lake	8.1	28,728		Trinity	140.0	8,941
Upper Molina	8.6	31,804		Flaming Gorge	152.0	14,171
Fontenelle	10.0	53,929		Judge Francis Carr	154.4	4,450
Black Canyon	10.2	76,928		Morrow Point	173.3	12,941
Towaoc	11.5	5,406		Palisades	176.6	11,362
Chandler	12.0	165,987		Spring Creek	180.0	2,897
Roza	12.9	55,950		Folsom	198.7	18,346
Nimbus	13.5	89,353		Mt. Elbert PS	200.0	17,932
Boysen	15.0	71,112		Yellowtail	250.0	9,536
Green Springs	17.3	23,610		Davis	255.0	10,574
Buffalo Bill	18.0	45,071		New Melones	300.0	9,020
Green Mountain	26.0	20,517		Hungry Horse	428.0	5,240
Minidoka	27.7	88,738		Shasta	682.8	6,576
Elephant Butte	27.9	36,484		Glen Canyon	1,320.0	6,043
Crystal	31.5	52,516		Hoover	2,078.8	8,224
Kortes	36.0	53,564		Grand Coulee	6,495.0	3,368

A plot of O&M cost per kilowatt-hour by plant capacity is shown below.

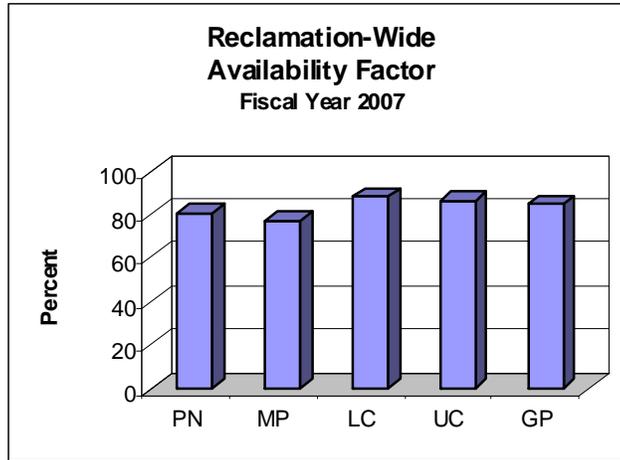


**Benchmark 4
Workforce Deployment**

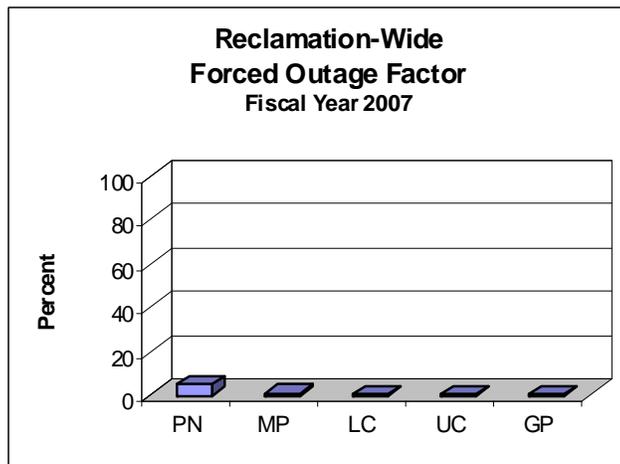
Reclamation-Wide FY 2007 Equivalent Work Staffing Year Levels					
	Equivalent Work Year Staffing Charged to Powerplant	Denver and Washington Equivalent Work Year Staffing Additive	Total Equivalent Work Year Allocated to Powerplant	Total Equivalent Staffing Work Year per Generating Unit	Total Equivalent Work Year Staffing per Megawatt
General	43.89	3.80	47.69	0.25	0.00
Operation	173.32	0.00	173.32	0.89	0.01
Maintenance	328.55	0.00	328.55	1.69	0.02
Total Staffing	545.76	3.80	549.56	2.83	0.04



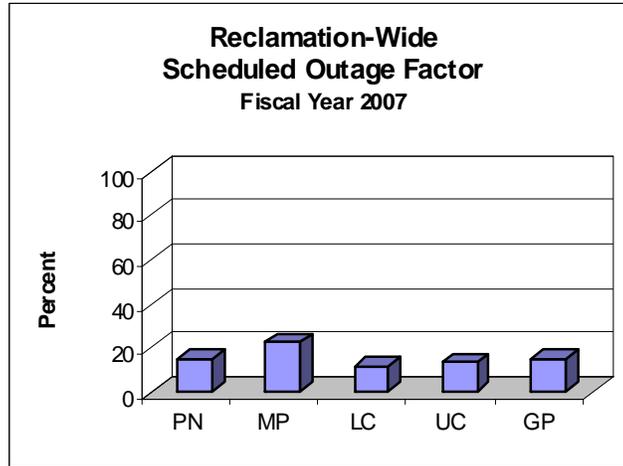
**Benchmark 5
Availability Factor**



**Benchmark 6
Forced Outage Factor**



**Benchmark 7
Scheduled Outage Factor**



Benchmark Data Comparison			
Fiscal Year 2007	Total Reclamation Average	Industry Average	Best Performers
Wholesale Firm Rate Mills/kWh	*22.45	Not Available	Not Available
Production Cost as Percentage of Wholesale Firm Rate	0.0%	Not Applicable	Not Applicable
O&M Cost \$/MWh	2.76	5.41	1.0
O&M Costs \$/MW	7,847	19,807	2,897
O&M Equiv Work Year per MW	0.03	Not Available	0
Availability Factor	82.3	**88.64	98.54
Forced Outage Factor	2.6	**2.61	0.0
Scheduled Outage Factor	15.1	**8.74	0.0

*Weighted by Net Generation

**2006 NERC Average

***Energy Information Administration Data

Reclamation-Wide Power Performance



Power Plants

- Bureau of Reclamation
- Bureau of Reclamation and State of California