



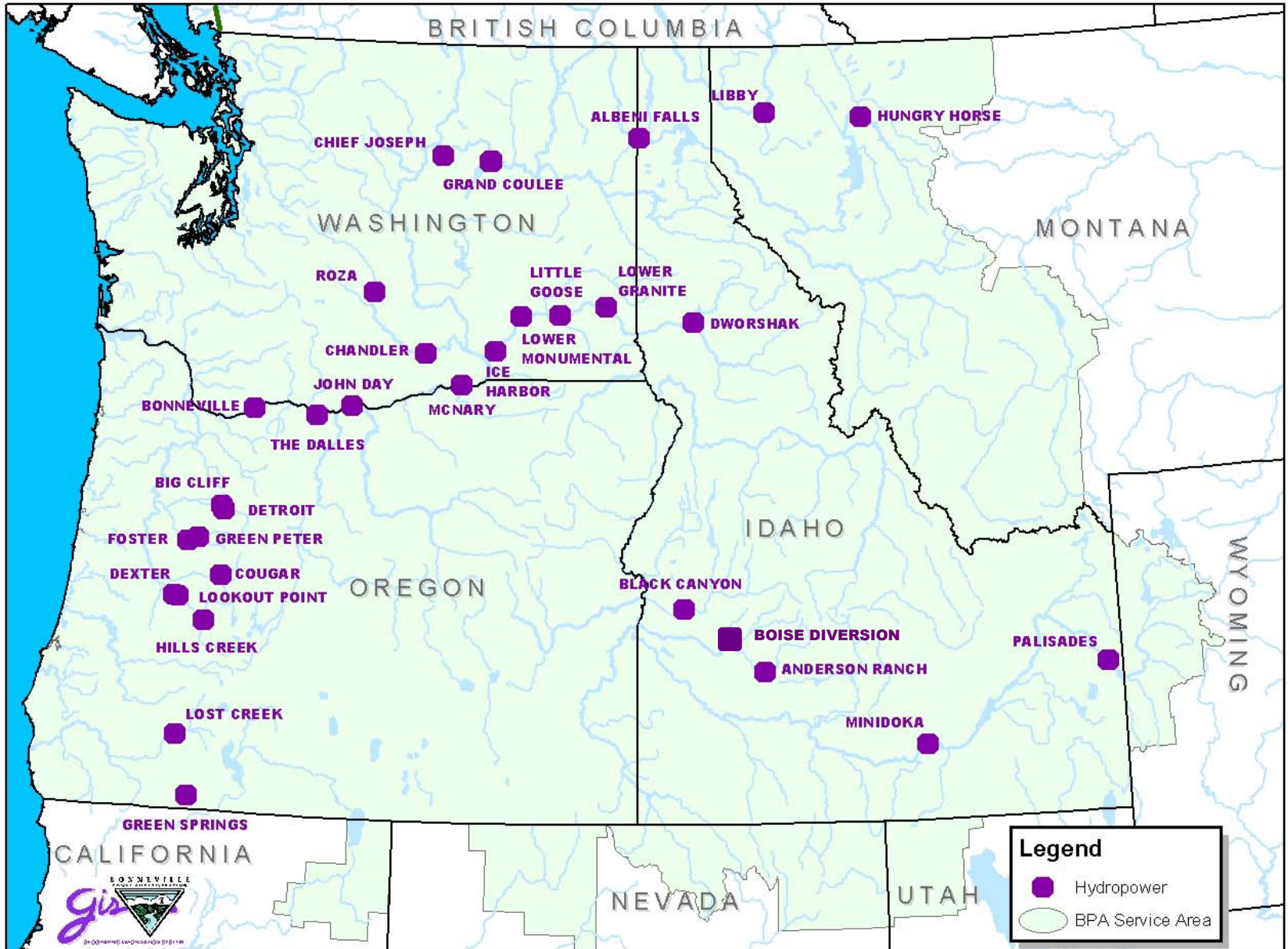
BPA SOUNDING BOARD MEETING Corps and Reclamation O&M

January 16, 2004

System Summary

- The Federal Columbia River Power System (FCRPS) consists of **31 hydroelectric plants with 209 turbine-generating units.**
- System generating capacity of **22,059 MW**; average generation of **78 TWh** (or 8,900 aMW).
- Average annual **revenue of \$2.5 billion.**
- The plants have as few as 1 unit and as many as 33 units (GCL).
- The individual generating units ranging in size from 3 MW to 805 MW.
- The oldest units were put into service in 1909; the youngest in 1999.
- Average cost of Corps/Reclamation O&M Program is **\$204 million** (2003-2006).
- Employs about **1,500 employees** working on:
 - Hydropower (power-specific and joint).
 - Fish & Wildlife O&M (joint).
 - Cultural Resources (joint).

Federal Columbia River Power System Generation



Program History, Development, and Drivers

- Corps, BOR, O&M funded through appropriations process:
 - Congressional control, funding decline and uncertainty, BPA repays U.S. Treasury.
- Direct funding (1998, 1999): Corps/BOR/BPA determine appropriate level of funding based on performance requirements:
 - Established Joint Operating Committees.
 - Began Benchmarking against industry.
 - Measure performance and report it.
 - Establish performance indicators, incentives, and accountabilities.
- Asset Management Strategy (1999) (Two objectives):
 - Establish level of investments necessary to restore reliability of the system to industry standards or better.
 - Assess the ability of the system to enhance revenues by **\$50 million** annually through efficiency gains or cost reductions.

Program History, Development, and Drivers

(continued)

Program developed because:

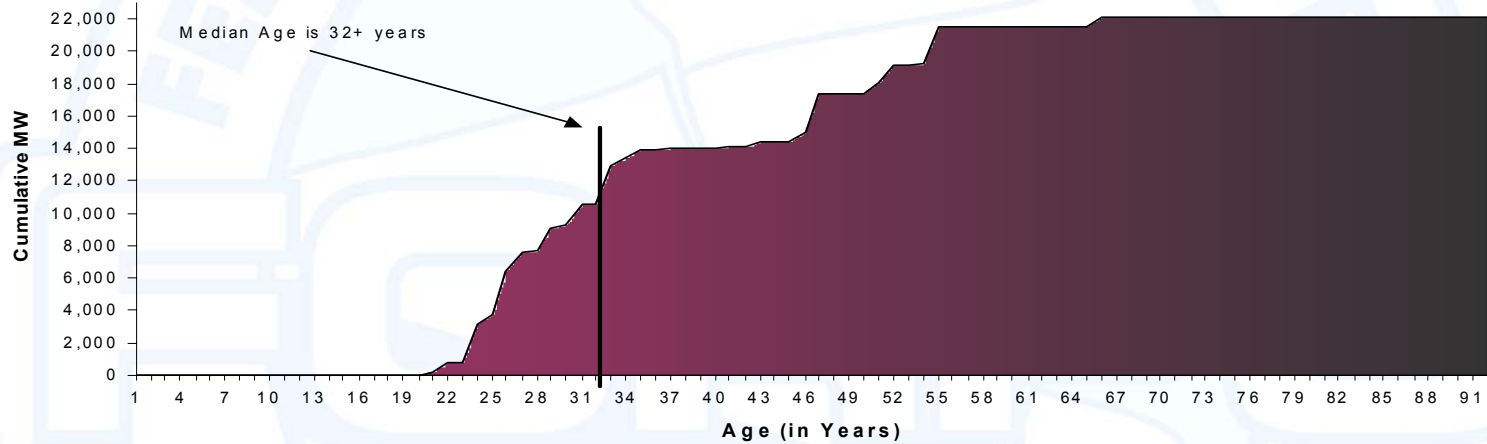
- System old and aging.
 - Material condition of the equipment poor.
 - Low levels of prior year investment.
 - System performance expectations.
 - Secure and stabilize funding for O&M.
 - Need for known forecasted expenditures for program.
 - Improved working/business relationship between agencies through the Joint Operating Committees, etc.
- O&M (and Capital activities) and priorities strategically guided through the coordinated budget and planning process (Integrated Business Management Model).
 - Seeking cost efficiencies through budgetary performance targets, incentives, and other program management initiatives. For example, by achieving an expenditure target of 97 percent of budget, O&M program costs could come in about \$6 million below forecast.

Age of the System

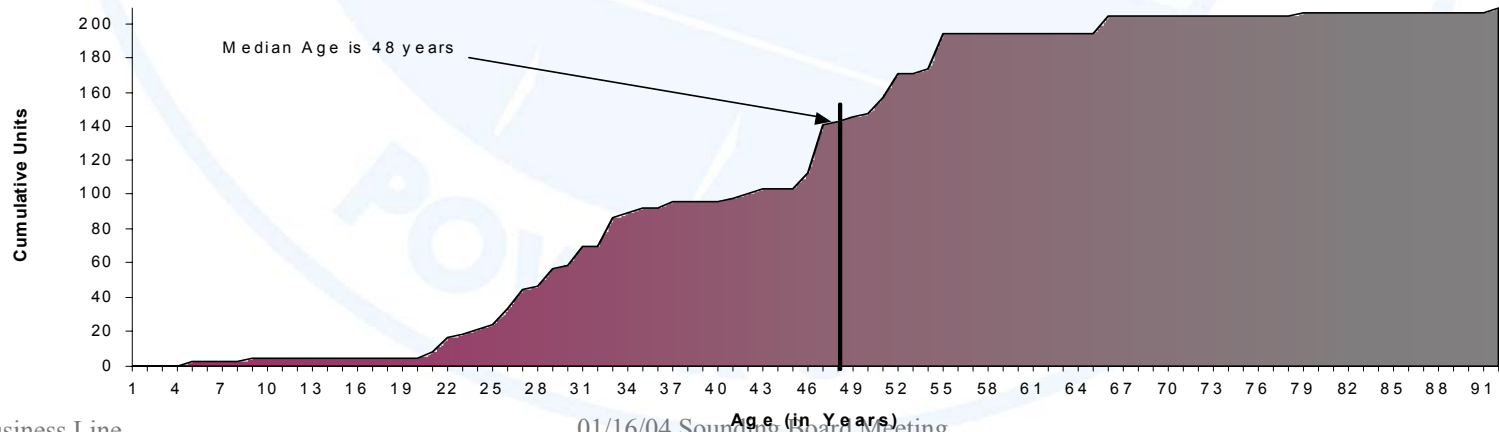
The system is old; the time for capital investment is at hand

AGE OF SYSTEM: The FCRPS is aging, with 50 percent of its MW being 32+ years old or older; the median unit age is 48 years.

Age of FCRPS Hydro Capacity (MW)
Cumulative Capacity is Age or Older

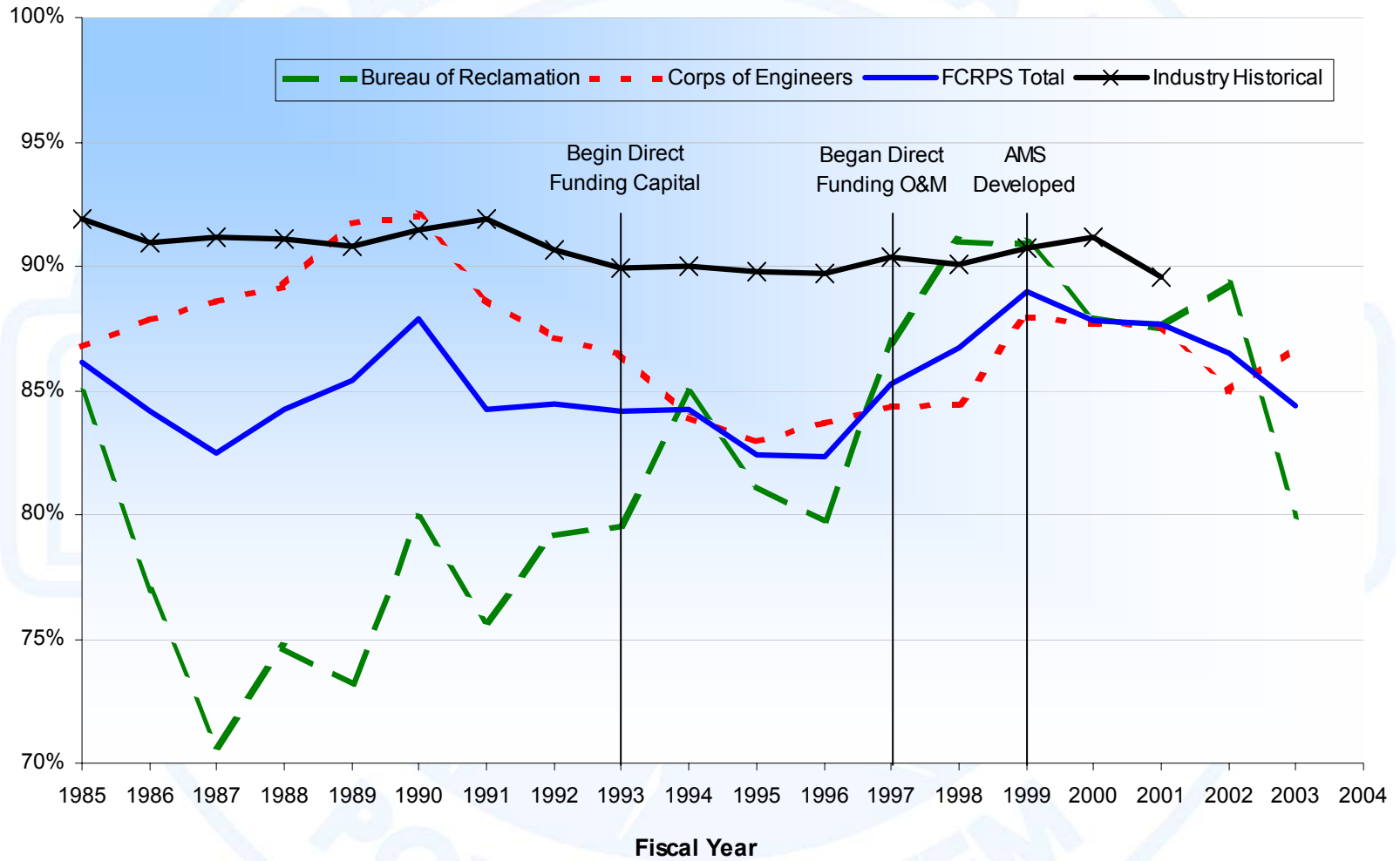


Age of FCRPS Hydro Units
Cumulative Units is Age or Older



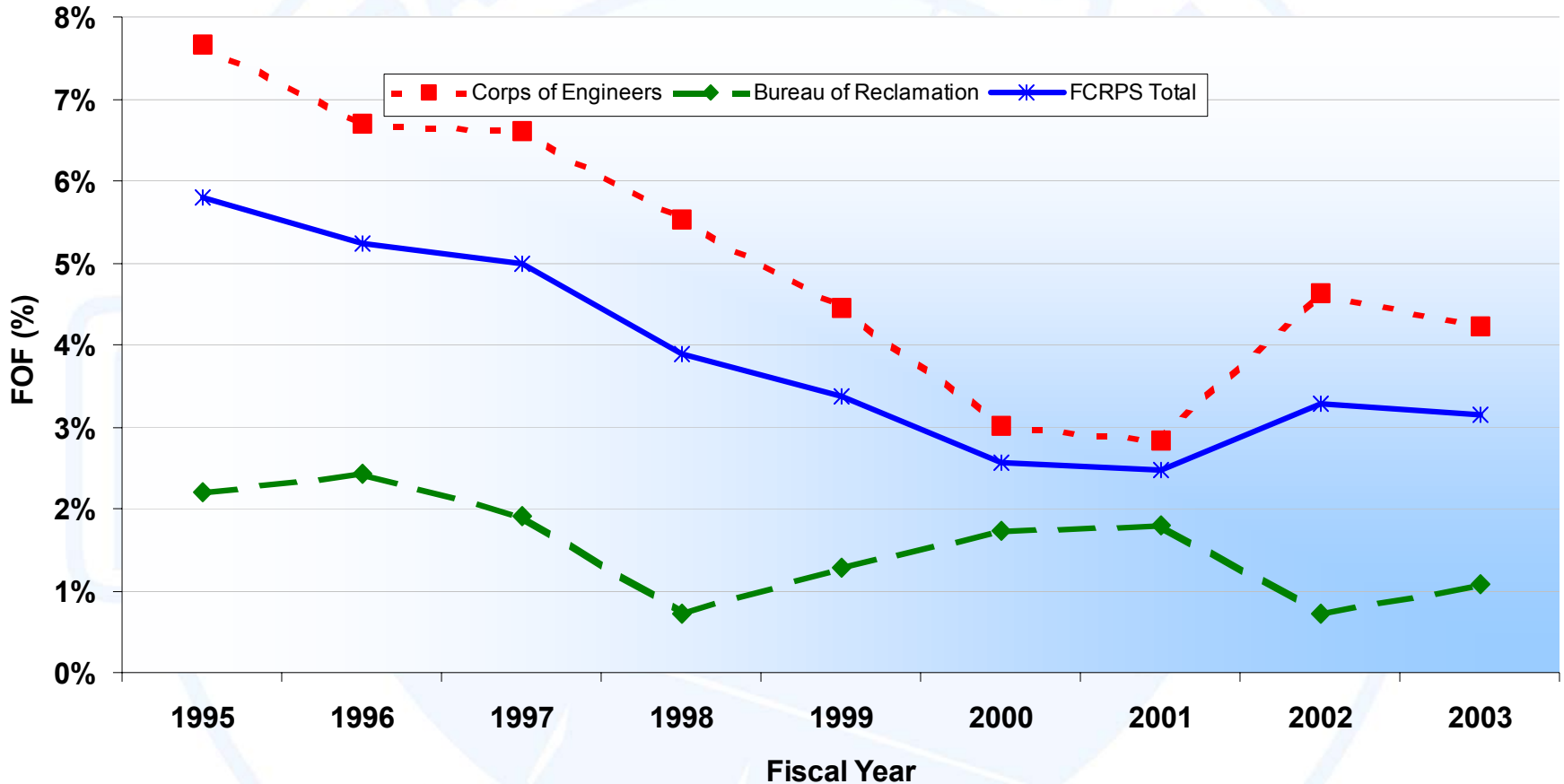
Unit Availability

History of degradation; maintenance and capital investment required



Forced Outage Factors

Costly Maintenance (reactive vs. preventative); capital investment required



Notes:

- In FY 2003, 3 of 21 Corps projects had FOFs at or above the system average. They were The Dalles, Bonneville Dam, and Lower Granite.
- One of 9 Reclamation projects had a FOF above the system average. It was Chandler. Note: Boise Diversion is still out of service.
- Most of the remaining projects (21 of remaining 26) had FOFs less than 1%.

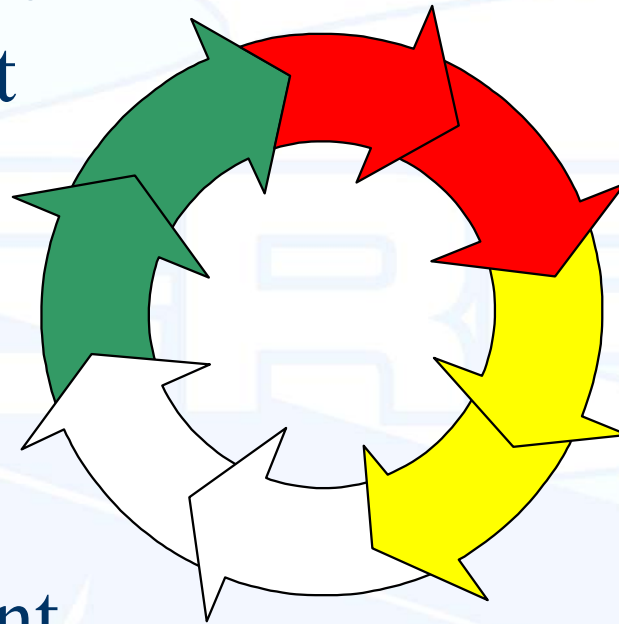
Integrated Business Management Process

Performance
Assessment
Evaluating Results

Strategic
Planning
Defining Direction

Resource
Management
Allocating Resources

Asset
Planning
Describing Actions



System Overview / FY 2003 FCRPS Performance Indicators

Final Year End Summary for FY 2003

	Status (YTD)	Indicator	Measure	Rating Thresholds		
				Stretch	Expected	Minimum
Production	97.1%	HLH Availability	Actual HLH MW available divided by HLH MW planned	100%	97%	94%
	99.2%	Thursday Call	Percentage of weekly calls attended	100%	95%	90%
Financial	90.9%	Base O&M Expenditure Rate	Actual expenditures divided by the sum of the latest Annual Power Budget plus FY02 unliquidated obligations	94%	96%	100%
	93.0%	Base O&M Obligation Rate	Actual obligations divided by latest Annual Power Budget	95%	97%	100%
	81.6%	Large Capital Expenditure Rate	Actual Large Capital expenditures and subagreement expenses divided by forecasted expenditures	85%	80%	75%
Safety	1.56	Lost Time Accident Rate	Lost time injuries per 200,000 hours	1.5	1.7	2.0
Transmission Support	100.0%	PSS/AVR Compliance	Number of units in compliance	N/A	100%	N/A
	Process in Place	WECC Requirements	Number of logs maintained	N/A	100%	N/A

Performance Indicators and Incentive Program

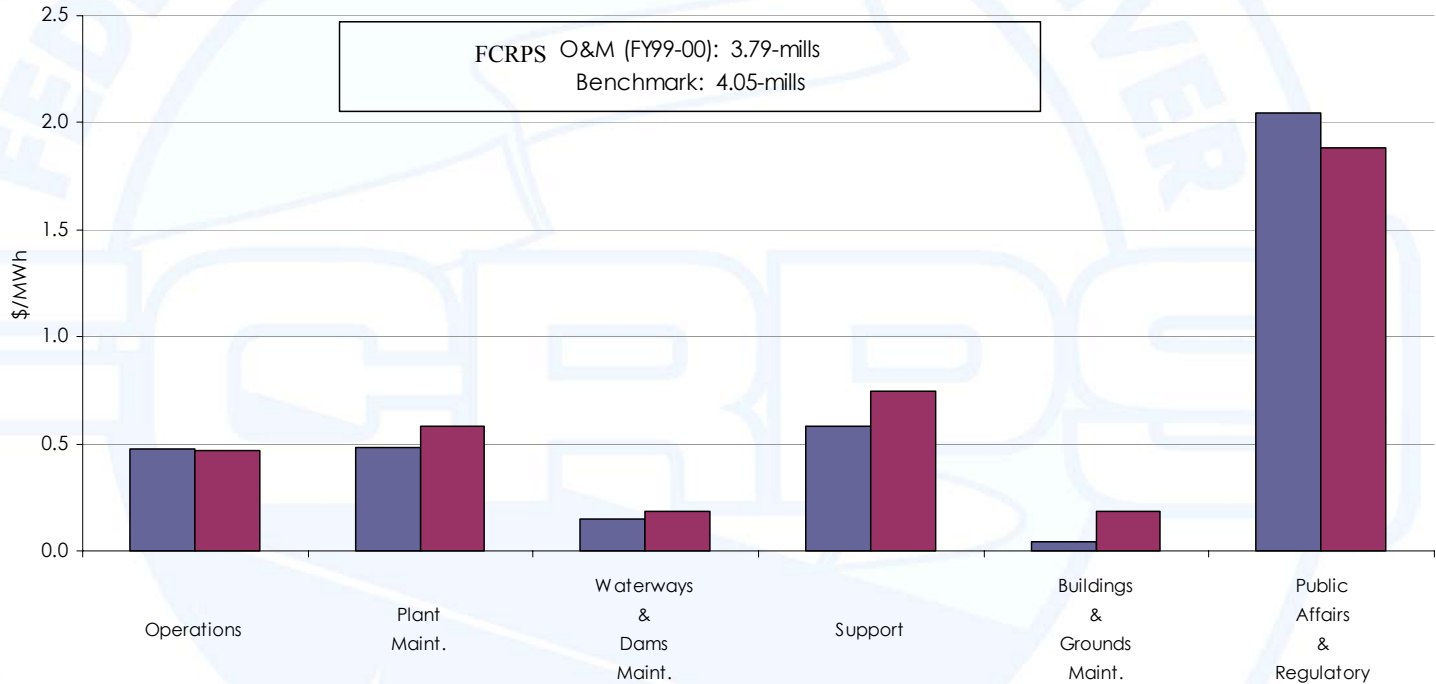
- Requirement of the Direct Funding Agreements.
- Way to motivate employees and measure effectiveness of O&M program in achieving performance goals.
- FY 03 (see previous slide): 8 performance indicators in 4 focus areas.

	Indicator	Current Estimated Performance Incentive Payment
Production	HLH Availability	\$418,156
	Thursday Call	\$185,000
Financial	Base O&M Execution Rate	\$130,000
	Base O&M Obligation Rate	\$240,000
	Large Capital Expenditure Rate	\$152,500
Safety	Lost Time Accident Rate	\$160,270
Transmission Support	PSS/AVR Compliance	\$107,503
	WECC Requirements	\$107,503
		\$1,500,932

O&M Cost Benchmarks

FCRPS Hydropower Program

* Includes Corps and Reclamation costs for hydropower, recreation and joint-use purposes, and BPA costs for coordination, planning, scheduling, dispatch, and fish & wildlife.



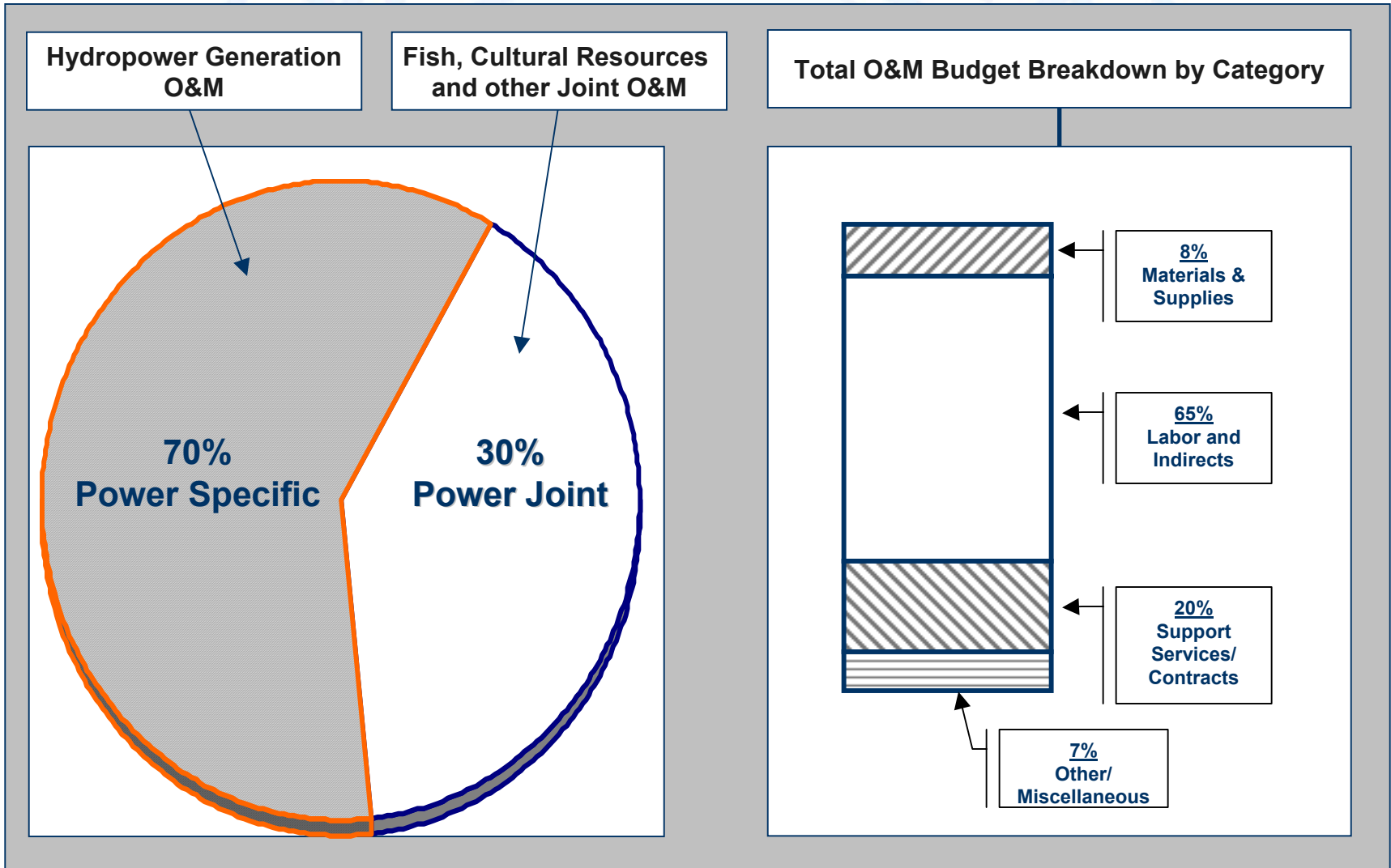
FCRPS Cost *	0.48	0.48	0.15	0.58	0.04	2.05
Benchmark	0.47	0.58	0.19	0.75	0.18	1.88
% of Benchmark	102%	83%	82%	78%	24%	109%
FCRPS Cost (\$000) *	37,187	37,628	11,883	45,461	3,449	159,353
% of Total O&M Cost	13%	13%	4%	15%	1%	54%

FCRPS Costs Direct-Funded by BPA	50%	99%	98%	100%	97%	20%
----------------------------------	-----	-----	-----	------	-----	-----

Summary of O&M Benchmarking Results

- Combined BPA/BOR/Corps cost benchmarks:
 - Operations costs are 102 percent of expected cost benchmark.
 - Public Affairs and Regulatory costs are 109 percent of expected benchmark (BPA Fish Program expenses (as well as BOR/Corps Fish and wildlife O&M) are included here).
- BOR/Corps generating plant cost benchmarks:
 - Maintenance costs are 83 percent of expected benchmark.
 - Waterways and Dams Maintenance costs are 82 percent of expected benchmark.
 - Support costs are 78 percent of expected benchmark.
 - Building and Grounds Maintenance costs are 24 percent of expected benchmark.
- BOR/Corps O&M cost = 2.12 mills and BPA cost = 1.67 mills, for total O&M benchmarked costs of 3.79 mills.
- Eighty-five percent (85%) of system is hydro-based at cost of \$204 million/year. Fifteen percent (15%) of the system is nuclear and has a cost of \$220 million plus per year for the '03-'06 rate period.

FY 2003 - 2006 Average Annual O&M Cost (\$204 million/year)



Reclamation O&M

Project: "Reclamation O&M" Operating Generation - Bureau of Reclamation (\$ in millions)	FY01	FY02	FY03	FY04	FY05	FY06	FY01-03 Average	FY03-FY06 Average	FY04-FY06 Average	FY03-FY06 Average Above (or Below) FY01	FY04-FY06 Average Above (or Below) FY01
	August 28, 2003 Rate Case Forecast	\$ 53.2	\$ 51.4	\$ 54.6	\$ 61.3	\$ 63.3	\$ 65.0	\$ 53.1	\$ 61.1	\$ 63.2	\$ 7.8
<i>Growth Rate</i>		-3.4%	6.3%	12.3%	3.3%	2.7%					
November 2003 Forecast	\$ 53.2	\$ 51.4	\$ 54.0	\$ 61.3	\$ 63.3	\$ 65.0	\$ 52.9	\$ 60.9	\$ 63.2	\$ 7.7	\$ 10.0
<i>Growth Rate</i>		-3.4%	5.1%	13.5%	3.3%	2.7%					
November 2003 Forecast Above (or Below)											
August 28, 2003 Rate Case Forecast	\$ -	\$ -	\$ (0.6)	\$ -	\$ -	\$ -	\$ (0.2)	\$ (0.1)	\$ -	\$ (0.1)	\$ -

Strategic Objective(s) of Program Area

Summary of Tier 2 strategic objective's that this program area is (are) linked to:

- PF F2 Strategic objectives are achieved at or below expense levels established in power rates.
- PF F1 Targeted TPP is maintained through rate setting, cost management, risk management, and operational performance of assets
- PF I1 Federal Columbia Power System performance and expansion meets availability, adequacy, reliability, and cost-effective standards.

What is the Tier 2 target's) for this program area for FY04?

- PF F2 \$61.3M
- PF F1 Achieve best practice operating cost levels at FCRPS hydro projects (delivery of generation and cost management)
- PF I1 Achieve best practice operating cost levels at FCRPS hydro projects (cost management)

Specific initiatives for FY04 relating to the specific program area.

- Established budgetary performance targets with the Reclamation to effectively manage costs to produce minimum O&M budgets to achieve strategic objectives
- Refine understanding of base material condition of hydrosystem (deploy Hydro AMP)
- Refine understanding of O&M resource requirements (perform rigorous cost analysis of budget)
- Continue to benchmark O&M functional cost categories against hydro industry and apply data to help determine resource allocations in budget
- Promote application of O&M best practices at FCRPS hydroplants (1st combined maintenance conference, training initiatives, benchmarking best practices)
- 3 agency strategic planning (2nd generation strategic guidance for FCRPS)
- Plant level deployment of NRT0

Drivers of Change

- FY03: Actuals v. Aug. 28, 2003 Forecast
- Established O&M budget performance target

Corps O&M

Project: "Corps of Engineers O&M" Operating Generation - Corps of Engineers (\$ in millions)	FY01	FY02	FY03	FY04	FY05	FY06	FY01-03 Average	FY03-FY06 Average	FY04-FY06 Average	FY03-FY06	FY04-FY06
										Average Above (or Below) FY01	Average Above (or Below) FY01
August 28, 2003 Rate Case Forecast	\$ 115.0	\$ 131.8	\$ 134.9	\$ 140.5	\$ 144.5	\$ 148.7	\$ 127.2	\$ 142.2	\$ 144.6	\$ 27.1	\$ 29.5
<i>Growth Rate</i>		14.5%	2.4%	4.2%	2.8%	2.9%					
November 2003 Forecast	\$ 115.0	\$ 131.8	\$ 129.4	\$ 140.5	\$ 144.5	\$ 148.7	\$ 125.4	\$ 140.8	\$ 144.6	\$ 25.7	\$ 29.5
<i>Growth Rate</i>		14.5%	-1.8%	8.6%	2.8%	2.9%					
November 2003 Forecast Above (or Below)											
August 28, 2003 Rate Case Forecast	\$ -	\$ -	\$ (5.5)	\$ -	\$ -	\$ -	\$ (1.8)	\$ (1.4)	\$ -	\$ (1.4)	\$ -

Strategic Objective's) of Program Area

Summary of Tier 2 strategic objective's) that this program area is (are) linked to:

- PF F2 Strategic objectives are achieved at or below expense levels established in power rates.
- PF F1 Targeted TPP is maintained through rate setting, cost management, risk management, and operational performance of assets
- PF I1 Federal Columbia Power System performance and expansion meets availability, adequacy, reliability, and cost-effective standards.

What is the Tier 2 target's) for this program area for FY04?

- PF F2 \$140.5M
- PF F1 Achieve best practice operating cost levels at FCRPS hydro projects (delivery of generation and cost management)
- PF I1 Achieve best practice operating cost levels at FCRPS hydro projects (cost management)

Specific initiatives for FY04 relating to the specific program area.

- Established budgetary performance targets with the Corps to effectively manage costs to produce minimum O&M budgets to achieve strategic objectives
- Refine understanding of base material condition of hydrosystem (deploy Hydro AMP)
- Refine understanding of O&M resource requirements (perform rigorous cost analysis of budget)
- Continue to benchmark O&M functional cost categories against hydro industry and apply data to help determine resource allocations in budget
- Promote application of O&M best practices at FCRPS hydroplants (1st combined maintenance conference, training initiatives, benchmarking best practices)
- 3 agency strategic planning (2nd generation strategic guidance for FCRPS)
- Plant level deployment of NRT0

Drivers of Change

- FY03: Actuals v. Aug. 28, 2003 Forecast
- Established O&M budget performance target

FY 03 O&M Budgetary Performance Summary

- Set performance goals for expenditures and obligations (stretch target = 94 percent of budget).
- Through program management structure communicated understanding of performance goals across agency organizations from craft to management:
 - Plant managers making smart decisions in carrying out maintenance and coordinating outages.
 - Refined contract requirements and timing.
 - Reduced maintenance and reliability with installation of new equipment (breakers, governors, exciters, pumps, protective relays, tools).
 - Save material and labor dollars by deferring/rescheduling maintenance (\$2 M).
 - Application of best practices (MCM, RCM) saving maintenance dollars.
 - Performed energy audits, replaced lighting, etc. saving dollars.
- Reclamation achieved stretch target, Corp achieved expected target.

Major Cost Drivers in O&M Budgets when compared to 2001 forecasts

- FY 2001 forecasts, based on the Cost Review, had not benefited from updated material condition information or benchmarking results.
- New Funding Requirements:
 - Grand Coulee cost reallocation: Increased costs allocated to power from 70 percent to 92 percent (**\$6.8M/yr**).
 - Reclamation indirects increased 4% in FY 2001 and will increase 2 percent in FY 2004 (**\$1.8M**).
 - O&M costs for new generation from Green Springs (**\$0.6M/yr**).
 - Internal reallocation of fish and wildlife O&M costs from separate line item to Corp/Bureau budget (**\$11.3M/yr**).
 - ▶ BiOp costs more than 2001 estimate in Rate Case.
 - Additional security (**\$6.6M/yr**).
- Existing Program Adjustments - Refined information on what it takes to run the system, given its condition:
 - Labor: Higher pay raises/benefits, overtime, training (**\$7.8M/yr**).
 - 2003-2006 budgets include 3 percent annual inflation adjustment.

Program Challenges, Risks, and Needs

- Preliminary Willamette BiOp costs were reconfigured to fit within base fish O&M program thru FY 2008 [note: no BiOp yet].
- Managed additional extraordinary maintenance expense costs within base O&M program thru FY 2006.
- Cost increases associated with security.
- Developing methods to routinely assess equipment material condition.
- Developing long-term asset plans for each plant (Asset Management Strategy II).
- Evaluating investment/risk tools [e.g., (HydroVantage) on Grand Coulee Transformers]:
 - 54 transformers, 6 age groups from 60 to 17 years old, recommendation - maintain 3 spares vs. replacement.

What is the Value of Availability?

- Recent improvements in availability could be lost:
 - Assuming 88 percent availability.
 - With an availability decline to 83 percent over a 4-year period, revenue loss under average water would be \$75 million.
- Escalating effect:
 - At 88 percent base, a 1 percent decline in availability is worth approximately \$5 million annually in revenue.
 - At 83 percent base, a 1 percent decline in availability is worth approximately \$6.4 million annually in revenue.
 - At 75 percent base, a 1 percent decline in availability is worth approximately \$10 million annually in revenue.
- Individual plants vary widely - for example, McNary has a higher plant capacity factor compared to The Dalles; also a Grand Coulee Third unit is worth over \$17 million versus an original Left/Right unit at about \$1 million.
- For example: the last unit at McNary is worth \$8.7 million per year in revenue compared to the last unit at Lower Granite at \$2.1 million.

Risks Associated With O&M Budget Reduction

- Less unit **availability** when water is available.
- Longer outage **durations**.
- **Reactive/corrective** maintenance only at high cost.
- Neglecting **preventive** maintenance activities.
- More **unscheduled outages** (forced outages).
- Failure to decrease the “**average**” **age** of the equipment.
- Reductions occur first in the **hydro portion** of the O&M program (i.e., fish and wildlife, cultural resources and security command higher priority).
- Jeopardize **BiOp compliance** activities.
- Reduced **transmission** system reliability support and ability to provide **ancillary services**.
- **Exposure** to higher future costs due to neglected activities.
- Failure to achieve long-term system **performance goals**.
- **Capable workforce** initiatives impacted.

O&M Program / Initiatives / Accomplishments

- Generated and transmitted over 20,000 MWs to meet load during recent cold snap (average is 16,000 MWs for this time of year) vs. buying in market at \$70 (drew down GC, and drafted DWR and Libby).
- Greater awareness and responsiveness have been achieved in expediting repairs. This results in shorter outages and increased availability of generation during HLH periods.
- Long-range reduction in labor costs by remoting plants (Libby, Albani Falls, Willamettes, John Day, Hungry Horse, and Southern Idaho).
- Facility improvements have been made to reduce operating costs and optimize maintenance practices resulting in labor costs savings, shorter outage periods, and improved equipment condition.
- Closer coordination and planning of work schedules to maximize potential power revenues.
- Investing in the future by investing in human capital now so we maintain a capable workforce to produce reliable, cost effective energy for the region.
- Enhanced communication and effective program management.
- Power Plant Efficiency Program has increased revenue by \$16 million per year through index testing, machine calibration, and NRTO.

Conclusion

- About 8,900 aMW of generation at an O&M cost of 2.62 mills for the FY 2003 - 2006 period.
- Corps and Reclamation O&M costs are at or below expected costs for the hydropower industry based on latest cycle of benchmarking results.
- FY 2003 - 2006 budgets are producing the desired production while enabling us to make O&M and capital investments to address the aging system and previous under-funding by appropriations.
- Performance indicators and employee incentives comprise the Program Management Tool for delivering maximum value in the most cost-effective way.
- With the investments we are making, we believe we're on the road to more cost effective and efficient system operations and maintenance. We are open to creative ideas/processes/etc. to produce the most cost effective electricity and promote a balanced environment for the Northwest.