



# Bonneville Power Administration

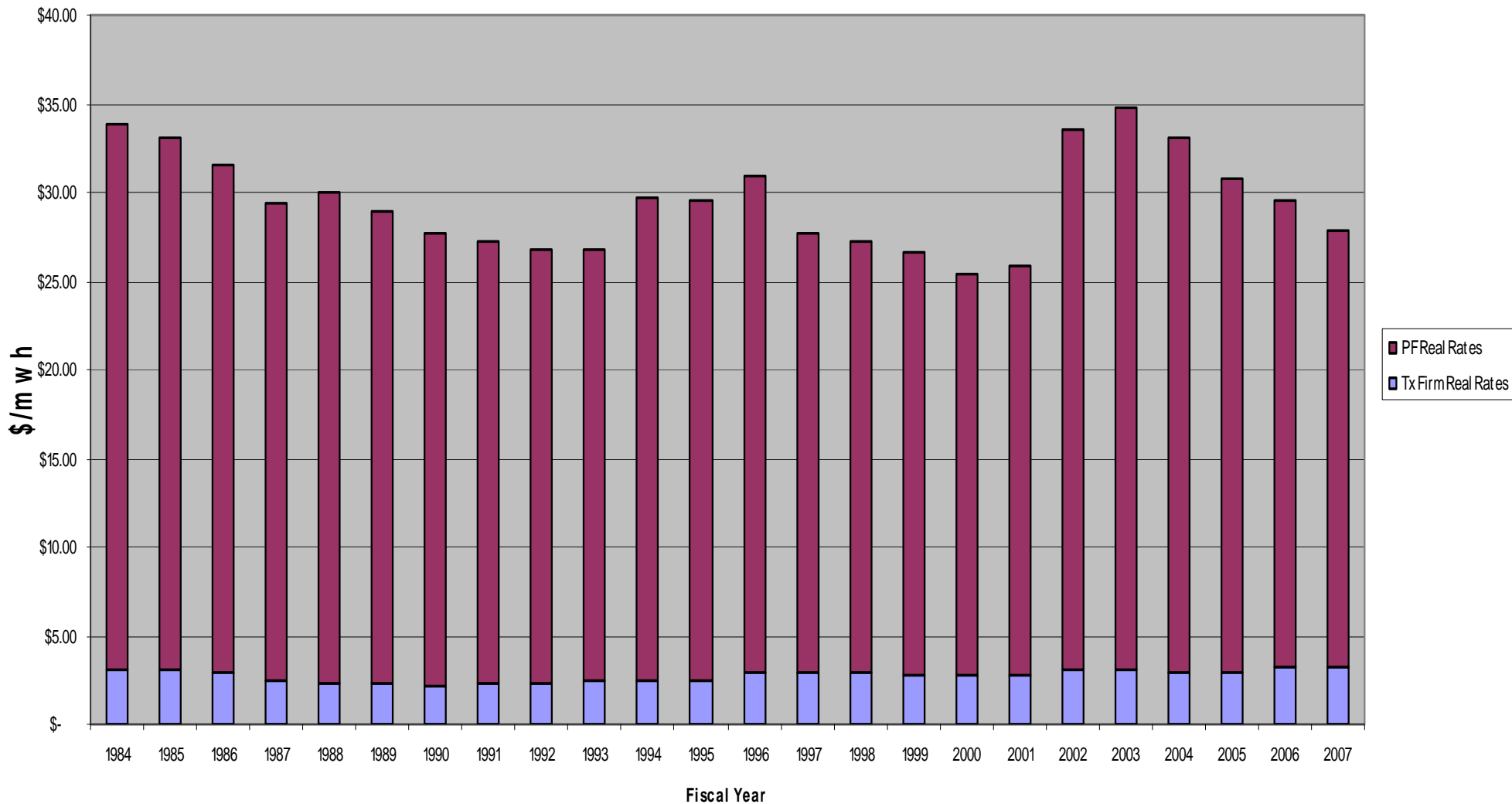
**Integrated Program Review  
(IPR)  
May 15<sup>th</sup> Overview Workshop  
June 26<sup>th</sup> Transmission Excerpts**



- This material is from the May 15<sup>th</sup> IPR Overview Workshop. The relevant Transmission material has been excerpted and duplicated in this summary to complement the June 26<sup>th</sup> material.
- The content of the May 15<sup>th</sup> material has not changed.
- Content table of contents:
  - Rate Charts - *pages 3-4*
  - Transmission Overview- *pages 5-13*
  - Capital overview- *pages 14-27*
  - Financial Disclosure- *page 28*



# FY 1984-2007 Wholesale Energy – Cost Components (\$/MWh)

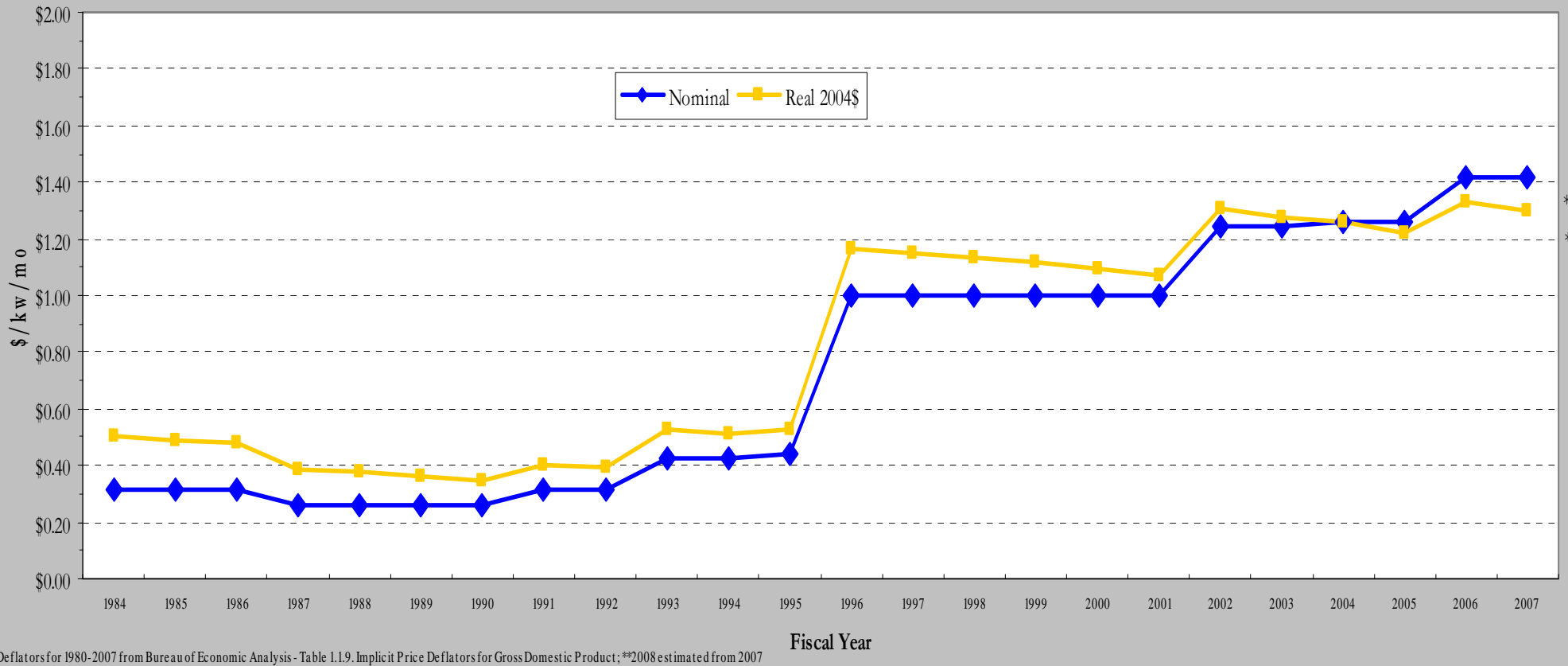


In 2004 dollars

In 2007, Transmission Firm rates are approximately 11% of the total



# 1984-2007 Firm Tx Rates- No Power- \$/kW/mo





# Transmission Overview for FY 2010-2011

- Although transmission operating costs are increasing at a faster rate than inflation, revenues are also accelerating due in part to a careful offering of Available Transfer Capability (ATC). With revenues exceeding projections, rate pressures are minimized.
  
- Why are operating costs exceeding inflation?
  - New mandatory requirements (reliability, environmental, tariff, etc.)
  - New wind resources need access to the BPA transmission system
  - Increased demand for transmission capacity
  - Need to sustain our aging transmission assets
  - Need to catch up where we have historically underinvested (control house buildings, access roads, etc.)
  - Global competition for material
  
- What trends are offsetting operating costs?
  - Lower than expected debt service
  - Higher than projected revenues and Treasury reserves
  - Favorable FERC ruling on reactive costs and generator withdrawal of current reactive rate
  - EPIP efficiencies with increased performance management rigor
  - Efficiency gains from business automation



# Key Program Drivers- Mandatory Requirements

## New Mandatory Requirements for Transmission

- Compliance -- Reliability, tariff and environmental
  - Mandatory Reliability Standards : WECC/ NERC documentation, support customer compliance, external and internal audits
  - Environmental stewardship: Clean Water Act, Toxic Substances Control Act
  
- Resource development: Renewable portfolio standards
  - Acquiring generation capacity to deal with wind variability
  - Expanding the grid to deliver remote wind resources
  
- FERC Order 890 Implementation and Tariff Compliance
  - File a new tariff in support of 890
  - Update numerous business practices, processes, and systems





# Key Program Drivers- Capacity Demands

## Increased Demands for Transmission Capacity

- Manage Existing Facilities
  - Increased need for staff and systems to manage congestion on the existing transmission system using more precise re-dispatch and curtailments
  - Implementing conditional firm to provide service in advance of new construction
  
- Expanding the system
  - Building business systems and processes to support commercial system expansion
  - Evaluate and develop plans for new facilities
  - Participate in Northwest and WECC planning forums



# Key Program Drivers- Aging Infrastructure

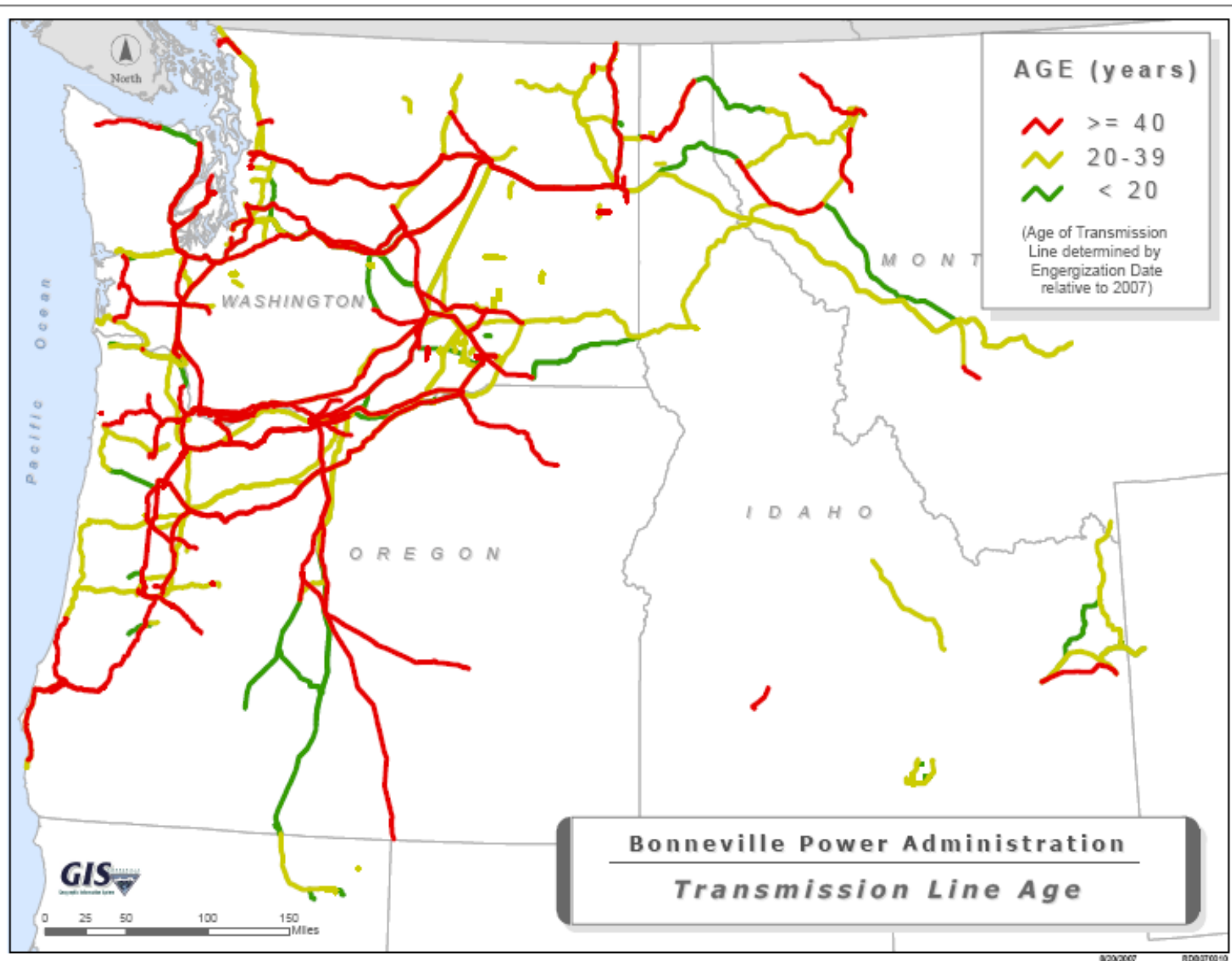
## Sustaining the health of existing aging infrastructure

- A portion of BPA's electrical substation, line, and communication assets exceed both BPA's depreciable life as well as typical industry metrics for electrical equipment lifespan.
- Corrective and preventative maintenance requirements are increasing as infrastructure ages.
- New replacement/refurbishment programs needed to manage end-of-life assets. These investments are needed to maintain a reliable and available transmission system.
- Base workload and expanding infrastructure program drive FTE need.





# Key Program Drivers- Aging Infrastructure- Transmission Lines



- 15,300 circuit mile
- >70,000 cable miles
- ~90k structures
- ~5.3M insulators
- Average age
  - 45 years
- 50% built
  - Prior 1962
- Age legend
  - $\geq 40$  yrs red
  - 20-39 yrs yellow
  - $< 20$  yrs green

Note- This map is a high level overview and when there are multiple lines in a corridor, the age of the lines is averaged.



# Key Program Drivers- Material Prices

**30-70 percent of Transmission's capital program dollars are for material, depending on the type of project.**

Raw material price escalations and the dramatic escalation in fuel prices continue to impact all commodities. Here are some sample price increases that we have experienced.

- Wood poles, +15 percent (2007 to 2008)
- Steel structures / lattice, +21 percent (2007 to 2008)
- 500kV Power transformers, +7 percent (2006 to 2007)
- 230kV Power circuit breakers, +6 percent (2006 to 2007)
- Diesel fuel, +35 percent increase within a 5 month period (2008)



# Key Program Drivers- Non-Electric Plant

**Over the past year, condition assessments were conducted on all buildings at 118 of the 430 Transmission sites.**

- Determined the current condition of each building and its associated components (facility systems).
- Identified facility system deficiencies and the actions to correct them.
- Focused on critical deficiencies linked to critical facility systems at highest priority assets.

**Review concluded with the following priorities:**

- FY 2009: Focus on highest priority life safety and facility system reliability issues at assets most critical to personnel and transmission system
- FY 2010 and 2011: Continued focus on addressing issues related to the reliability of facility systems across sites



# Key Program Drivers- EPIP

## EPIP efficiencies & Performance Management

### ▪ Performance Management

- Increased rigor applied to development of performance measures and metrics through application of measure standards.
- Incorporation of an automated performance management system.
- Improvements in target achievement overall for Transmission's Balanced Scorecard (BSC). In 2006 Transmission met 78 percent of their BSC targets improving to a 96 percent success rate in 2007.

### ▪ Plan, Design, Build (PDB)

- Implemented 40 detailed performance metrics
- Improved Planning through a Two Year work plan and involving Project Managers earlier in the planning process
- Improved Capital Project Risk Management through funding and prioritization process
- Implemented a Standards group
- Deployed new technology:
  - Complete-- Lidar, digitization of drawings, Softcopy, etc.
  - Forthcoming-- Work Planning and Scheduling System and Transmission Asset System
- Enhanced employee cross training

### ▪ Supply Chain

- Increased use of Strategic Sourcing for purchasing materials and developing strategic partnerships with vendors to ensure we can get materials at the best cost.
- Analysis and Optimization of inventory to reduce our inventory levels and ensure we have the right materials.



# Key Program Drivers- Business Automation

- The Commercial Business Process Improvement initiative brought on industry standard OASIS functionality.
- OASIS functionality processes Transmission transactions with more volume and speed.
- During implementation of the automation there was resolution of some long standing policy issues, resulting in additional offers of Transmission service.
- Staff required to support Transmission transactions was reduced due to automation.
- ATC (available transfer capability) is more dynamic and transparent, resulting in offers being made more expeditiously.
- Automation has reduced the potential for errors in manual processes, thereby reducing the risk of disputes.



# Transmission Function Capital Expenditures

## Actuals FY 2006-2007, Proposed FY 2009-2013

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-2009	FY 2009	FY 2010	FY 2011	FY 2012	FY2013
<b>Main Grid</b>	\$ 7,278	\$ 17,258	\$ 31,777	\$ 76,477	\$ 71,832	\$ 155,904	\$ 221,346	\$ 199,945	\$ 184,258
<b>Area &amp; Customer Service</b>	\$ 326	\$ 1,240	\$ 6,099	\$ 16,893	\$ 19,681	\$ 31,714	\$ 6,256	\$ 6,322	\$ 7,516
<b>Upgrades &amp; Additions</b>	\$ 38,033	\$ 36,398	\$ 60,947	\$ 41,854	\$ 59,881	\$ 91,108	\$ 107,471	\$ 69,009	\$ 55,807
<b>System Replacements</b>	\$ 47,599	\$ 63,728	\$ 62,285	\$ 63,168	\$ 102,717	\$ 134,494	\$ 138,423	\$ 109,335	\$ 114,660
<b>Customer Financed/Credits <u>1/</u></b>	\$ 23,674	\$ 61,336	\$ 71,775	\$ 61,923	\$ 84,427	\$ 90,165	\$ 102,287	\$ 83,904	\$ 72,742
<b>Environment</b>	\$ 2,602	\$ 3,904	\$ 3,705	\$ 5,290	\$ 5,213	\$ 5,530	\$ 5,752	\$ 5,869	\$ 5,984
<b>Total Direct Capital</b>	\$ 119,512	\$ 183,864	\$ 236,588	\$ 265,605	\$ 343,751	\$ 508,915	\$ 581,535	\$ 474,384	\$ 440,967
<b>Total Indirect Capital <u>2/</u></b>	\$ 66,944	\$ 64,435	\$ 70,895	\$ 77,550	\$ 81,246	\$ 86,100	\$ 88,696	\$ 93,126	\$ 95,894
<b>Total Capital Sub-Total</b>	\$ 186,456	\$ 248,299	\$ 307,483	\$ 343,155	\$ 424,997	\$ 595,015	\$ 670,231	\$ 567,510	\$ 536,861
<b>15% Lapse Factor</b>	\$ -	\$ -	\$ -	\$ -	\$ (64,021)	\$ (89,551)	\$ (101,324)	\$ (85,736)	\$ (80,299)
<b>Total</b>	\$ 186,456	\$ 248,299	\$ 307,483.0	\$ 343,155	\$ 360,976	\$ 505,464	\$ 568,907	\$ 481,774	\$ 456,562
<b>Total Increase/Decrease From Prior Year</b>		\$ 61,843	\$ 59,184.0		\$ 53,493	\$ 144,488	\$ 63,443	\$ (87,133)	\$ (25,212)

Note 1/ Includes Radio Spectrum and PFIA projects

Note 2/ Includes AFUDC



# Strategy to Achieve Strategic Objectives

Transmission Services will prioritize projects and programs by the following criteria:

1. On-going assessment of Transmission system against system performance metrics
2. Assess current condition of assets
3. Identify risks to Transmission Services' long term outcomes from identified asset performance/condition gaps
4. Identify projects/programs with associated costs, to mitigate risks to long term outcomes
5. Analyze and update critical system spares



# Transmission Capital Overview

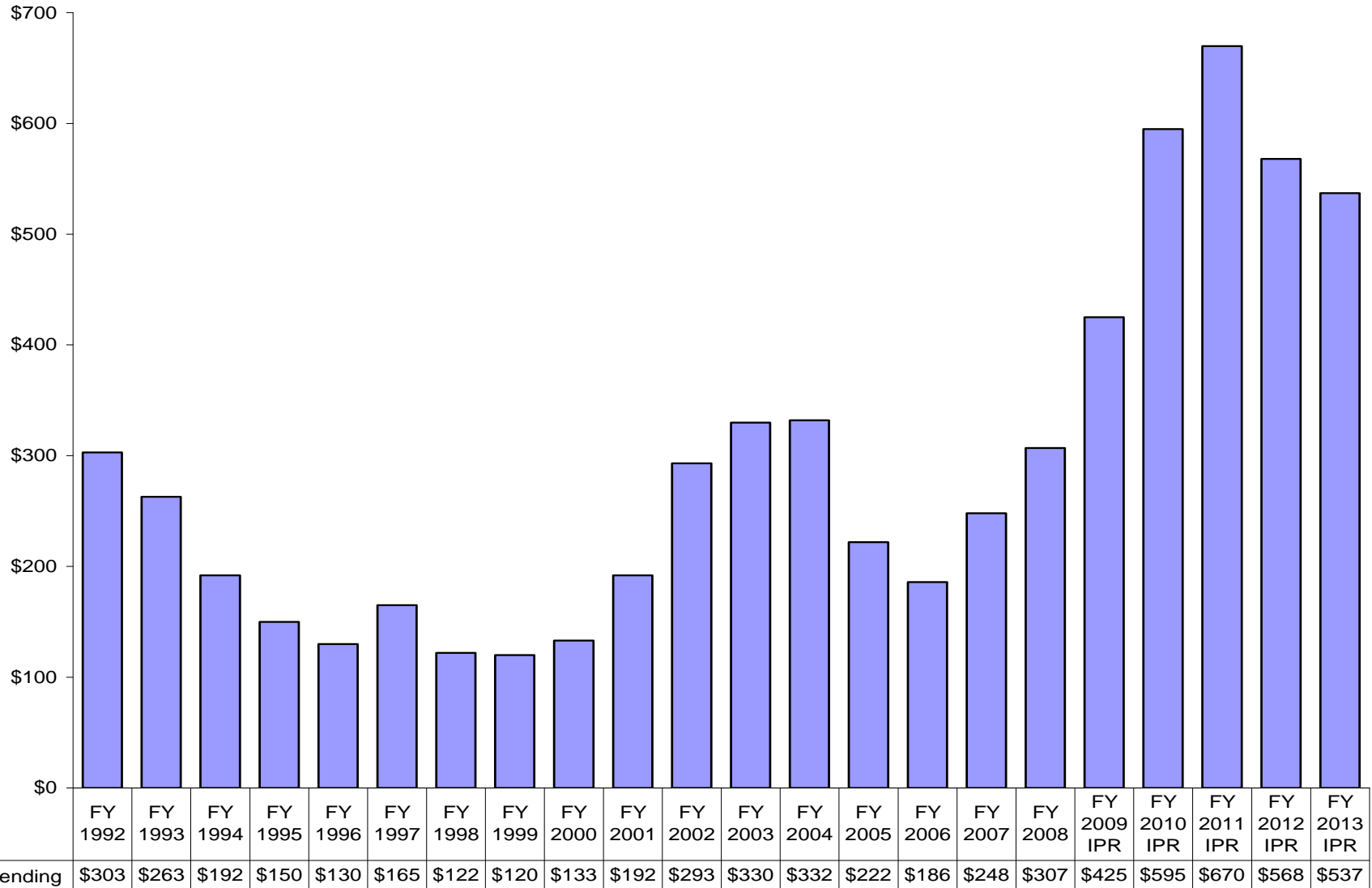
- Key Drivers
  - Network Reinforcements
    - Integrating and delivering renewable resources
    - Reliability to loads
  - Sustaining health of aging assets based on the Asset Plan
- Trend FY 1992 – 2013 (see next slide)
  - FY 2010-2011 Capital Program largest in BPA history
  - Compare to FY 1992 (3rd AC construction)
    - Adjust \$303 million in FY 1992 to 2008 \$ -> \$552 million
  - We have accomplished this size program before
    - But with much more staff
  - Challenges: Meeting schedules for design, environmental analysis, procurement, construction





# Transmission Capital: FY 1992 – FY 2013

\$ in millions



FY 1992 – 2007 Actuals

FY 2008 Start of Year Budget

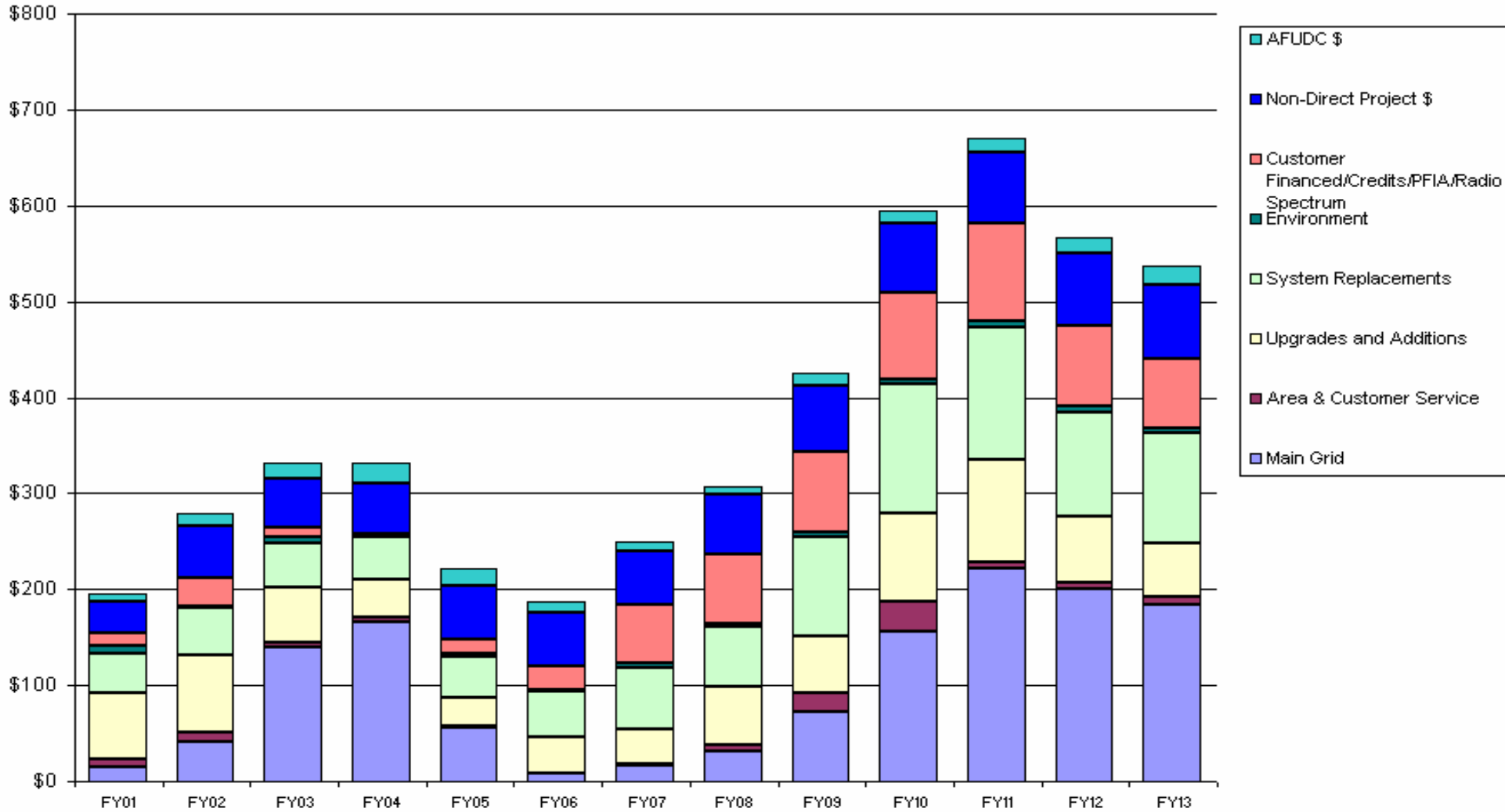
FY 2009 – 2013 IPR Proposed Capital Levels

Excludes 15% lapse factor



# Transmission Capital Programs

\$ in Millions



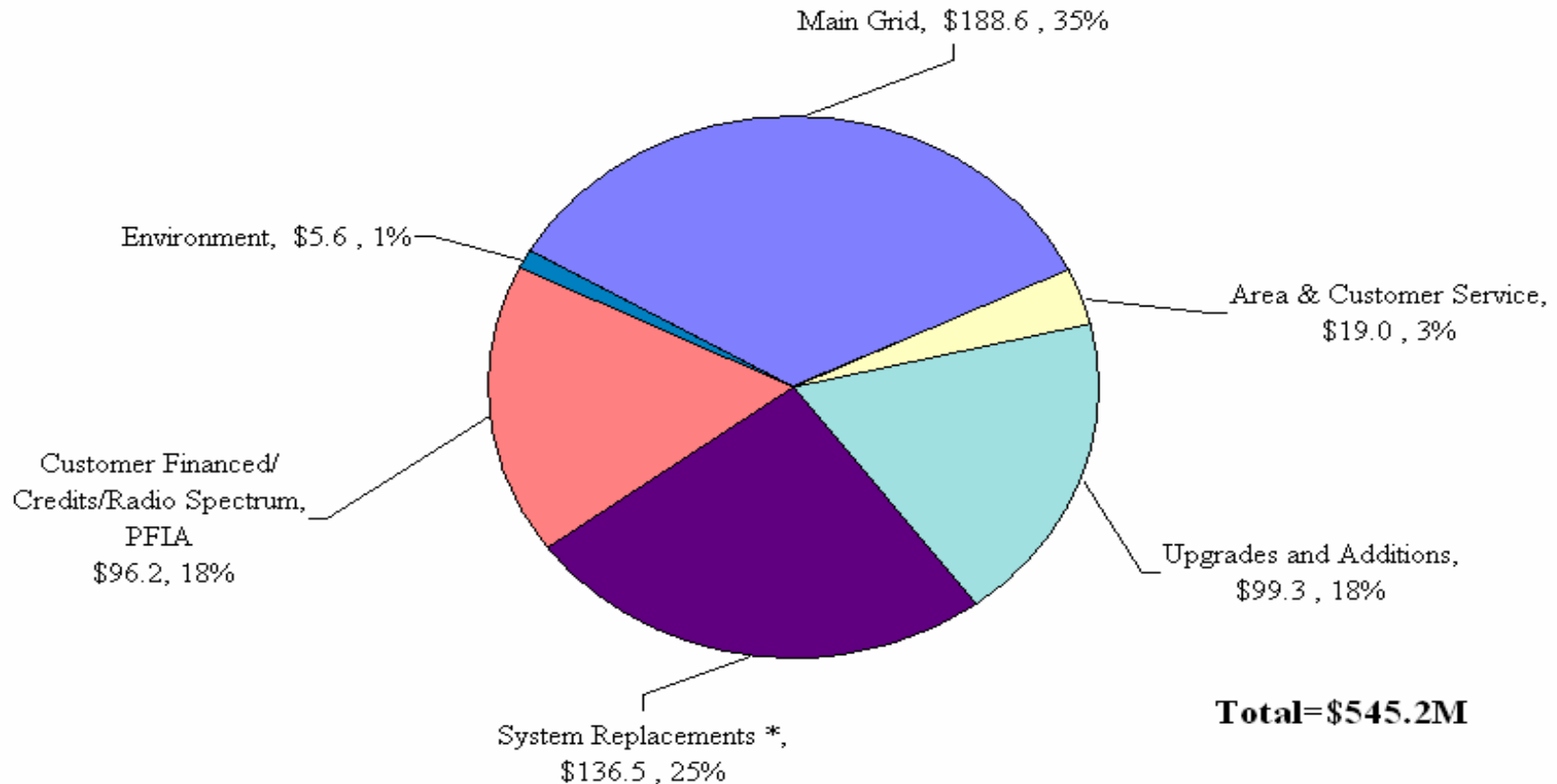
Excludes 15% lapse factor



# Direct Capital FY 2010-2011 Average (\$ Millions)

**Direct Capital Expenditures  
FY 10-11 Avg  
(\$ in Millions)**

Excludes 15% lapse factor



**Total=\$545.2M**

- FY 2009 – 2013 Portfolios summarized on next slide

\*Includes Corporate Facilities Capital



# Summary by Portfolio (\$ in Thousands)

TRANSMISSION CAPITAL PORTFOLIOS	Rate Case Average FY08-09	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MAIN GRID	76,477	71,832	155,905	221,346	199,945	184,258
AREA & CUSTOMER SERVICE	16,893	19,681	31,714	6,256	6,322	7,516
UPGRADES & ADDITIONS	41,854	59,880	91,108	107,471	69,009	55,807
SYSTEM REPLACEMENTS <u>Note 1/</u>	63,168	102,717	134,494	138,423	109,335	114,659
ENVIRONMENT	5,290	5,213	5,530	5,752	5,869	5,984
<b>CUSTOMER FINANCED/CREDITS</b>						
Generator Interconnection	40,450	49,000	49,984	51,009	52,044	53,065
Line and Load Interconnection	0	13,552	13,825	14,109	14,395	14,677
COI Addition Project	2,137	5,004	12,762	23,442	10,630	0
Radio Spectrum	0	11,871	8,592	8,726	1,834	0
Projects Funded in Advance (PFIA)	19,336	5,000	5,000	5,000	5,000	5,000
<b>SUB TOTAL TBL CAPITAL (DIRECT)</b>	<b>265,604</b>	<b>343,750</b>	<b>508,915</b>	<b>581,535</b>	<b>474,384</b>	<b>440,967</b>
TS INDIRECTS	41,726	40,438	41,251	42,097	42,951	43,793
AFUDC	10,547	11,906	13,645	15,179	17,865	18,821
CORPORATE OVERHEAD	25,278	28,902	31,204	31,420	32,310	33,280
<b>SUB TOTAL TBL CAPITAL (INDIRECT)</b>	<b>77,551</b>	<b>81,246</b>	<b>86,100</b>	<b>88,696</b>	<b>93,126</b>	<b>95,894</b>
15% Lapse Factor	0	(64,021)	(89,551)	(101,324)	(85,736)	(80,299)
<b>TOTAL TRANSMISSION CAPITAL</b>	<b>343,155</b>	<b>360,976</b>	<b>505,464</b>	<b>568,907</b>	<b>481,774</b>	<b>456,562</b>

Note 1/ - System replacements includes Corporate Facilities capital for Transmission projects



# Program Discussion- Main Grid

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-09	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
<b>Program Level Spending</b>	\$7,278	\$17,258	\$31,777	\$76,477	\$71,832	\$155,904	\$221,346	\$199,945	\$184,258
<b>Total Increase/Decrease From Prior Year</b>		\$9,980	\$14,519		\$40,055	\$84,072	\$65,442	(\$21,401)	(\$15,687)

- Major Network Reinforcements - \$800 million
  - McNary-John Day FY 2012
  - Big Eddy – Station Z – FY 2013
  - I-5 Corridor – FY 2014
  
- Reliability to loads
  - Olympic Peninsula Reinforcement – FY 2009
  - Libby-Troy – FY 2009
  - Seattle area transformer – FY 2013
  - Cross Cascades – FY 2013



# Area & Customer Service

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-09	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
<b>Program Level Spending</b>	\$326	\$1,240	\$6,099	\$16,893	\$19,681	\$31,714	\$6,256	\$6,322	\$7,516
<b>Total Increase/Decrease From Prior Year</b>		\$914	\$4,859		\$13,582	\$12,033	(\$25,458)	\$66	\$1,194

- Projects that assure Bonneville meets reliability standards and contractual obligations to our customers for serving load.
  - City of Centralia – 2009
  - South Oregon Coast – Rogue Static Var Compensator (SVC) – 2009
  - Lower Valley – 2010



# Upgrades and Additions

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-2009	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Program Level Spending	\$38,033	\$36,398	\$60,947	\$41,854	\$59,881	\$91,108	\$107,471	\$69,009	\$55,807
Total Increase/Decrease From Prior Year		(\$1,635)	\$24,549		(\$1,066)	\$31,227	\$16,363	(\$38,462)	(\$13,202)

- Driven by reliable service to loads and Asset Plan
- Replacement of older communications and controls with newer technology.
- Albany – Eugene rebuild – \$10 million in 2010
- Celilo Upgrades – transformers, etc – \$24 million in 2010 and 2011
- Control Center (CC) Systems – modernization, congestion mgmt, RAS automation, training facility, cyber security, etc
- Fiber– SONET rings, getting off analog microwave: \$10-20 million per year
- Critical spare transformers at 5 locations
- Maintaining access roads: \$10-15 million per year



# System Replacements

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-2009	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
<b>Program Level Spending</b>	\$47,599	\$63,728	\$62,285	\$63,168	\$102,717	\$134,494	\$138,423	\$109,335	\$114,660
<b>Total Increase/Decrease From Prior Year</b>		\$16,129	(\$1,443)		\$40,432	\$31,777	\$3,929	(\$29,088)	\$5,325

- Replacement of high-risk, obsolete and maintenance-intensive facilities and equipment to reduce the chance of equipment failure affecting the safety and reliability of the transmission system.
- Based on Asset Plan findings and recommendations
- Includes:
  - Sacajawea transformer (failed) - \$10 million in FY 2009
  - Spacer/Dampers - \$10 million per year
  - Wood poles - \$7 million per year
  - Substation equipment spares
  - Transformer system spares
  - Celilo Control Replacements: FY 2010 – 2012
  - Non-electric plant (control houses, etc.): FY 2009 \$10.3M, FY 2010 \$55.6M, FY 2011 \$18.3M, FY 2012 \$18.4M, and FY 2013 \$18.5M





# Customer-Financed/Credits/Radio Spectrum/PFIA

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-2009	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
<b>Program Level Spending</b>	\$23,674	\$61,336	\$71,775	\$61,923	\$84,427	\$90,165	\$102,287	\$83,904	\$72,742
<b>Total Increase/Decrease From Prior Year</b>		\$37,662	\$10,439		\$12,652	\$5,738	\$12,122	(\$18,383)	(\$11,162)

- Customer-Financed/ Credits/ Radio Spectrum/PFIA
  - Facilities and/or equipment where BPA retains control or ownership, but which are funded by a third party or with credits, either in total or in part.
  - Wind Integration – three new 500/230-kV stations
  - California-Oregon Intertie additions
  - Radio Spectrum Relocation projects



# Environment

\$ in Thousands	Actuals		SOY	Rate Case Average	IPR				
	FY 2006	FY 2007	FY 2008	FY 2008-2009	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
<b>Program Level Spending</b>	\$2,602	\$3,904	\$3,705	\$5,290	\$5,213	\$5,530	\$5,752	\$5,869	\$5,984
<b>Total Increase/Decrease From Prior Year</b>		\$1,302	(\$199)		\$1,508	\$317	\$222	\$117	\$115

- Addresses regulatory and liability issues at facilities likely to adversely affect water and environmental resources.
- Continues the replacement of polychlorinated biphenyl (PCB) containing equipment to reduce environmental risks.
- Reduces storm water discharges and PCB reduction.
- \$5 million per year with inflation applied.



# Can it be Done?

- Strategy Team
  - Supply Chain and Transmission Services are reviewing experiences from BPA's 2001-04 Infrastructure Program and other utility strategies.
  - Alternative approaches:
    - Furnish & Install contracts
    - Engineer/Procure/Construct contracts (turn-key)
- Telecommunications on the Critical Path
  - Will now be managed as a coordinated program
    - Maintenance, upgrades & additions and expansion
  - Exploring new ways of accomplishing the work
  - Reduced program by \$4 million/ year in both FY 2009 and 2010 until new practices in place
- IPR Capital Proposal
  - Based on recent capital program lapse rates, the Total Transmission Capital will show a *15% lapse factor* for 2009 – 2013. The adjustments have not been made to any specific program.



# BPA's Financial Disclosure Information

1. All FY 2008-2013 information was provided in May 2008 and cannot be found in BPA-approved Agency Financial Information, but is provided for discussion or exploratory purposes only as projections of program activity levels, etc. This information is a derived estimate for presentation purposes and cannot be found in BPA-approved Agency Financial Information but is provided for discussion or exploratory purposes only as “projections of program activity levels, etc.”
2. All FY 2007 and earlier information was provided in May 2008 and is consistent with audited actuals that contain BPA-approved Agency Financial Information.