

Power Services

(Federal Hydro, Fish & Wildlife and Conservation)

Long Term Capital Investment Strategy

September 19, 2011
1:00pm – 2:30pm

Rates Hearing Room
911 N.E. 11th Ave, Portland, OR 97232

Participants may participate via phone by dialing 503-230-5566, after the double beep enter 0124#



Federal Hydro

This discussion focuses on strategic review of Federal Hydro's Long Term Asset Strategy and the following components:

- Long-term Objectives & Strategic Initiatives
- Program Prioritization
- Recommended Funding Levels and Strategic Reductions; Risk Consequences
- Long-Term Forecasted Spending Levels (Sept 2010 IPR vs. 2011 Strategy Update)
- New Strategic Initiative: John W. Keys III Pump-Generating Plant

FCRPS Hydro Asset Strategy

BPA will invest in, maintain and operate assets to:

- Meet reliability standards, availability requirements, regional adequacy guidelines, efficiency needs, environmental requirements, safety and security standards, and other requirements; and
- Minimize the life cycle costs of assets when practical.

Long Term Goals & Strategic Initiatives

The FCRPS Hydro Strategy focuses on three goals:

- Low Cost Power
- Power Reliability
- Trusted Stewardship

The strategy is implemented through a set of Direct Funding Agreements to:

- Ensure that life safety and environmental requirements are met.
- Meet FCRPS commitments for fish and wildlife and cultural resource programs.
- Provide reliable low-cost generation by ensuring assets are operated, inspected, and maintained properly.
- Mitigate the risk of equipment failures by replacing or refurbishing equipment and purchasing spares when warranted.
- Increase the efficiency and/or capability of power facilities where economically feasible
- Fund a portion of high priority multi-purpose projects.

Objectives of Strategy

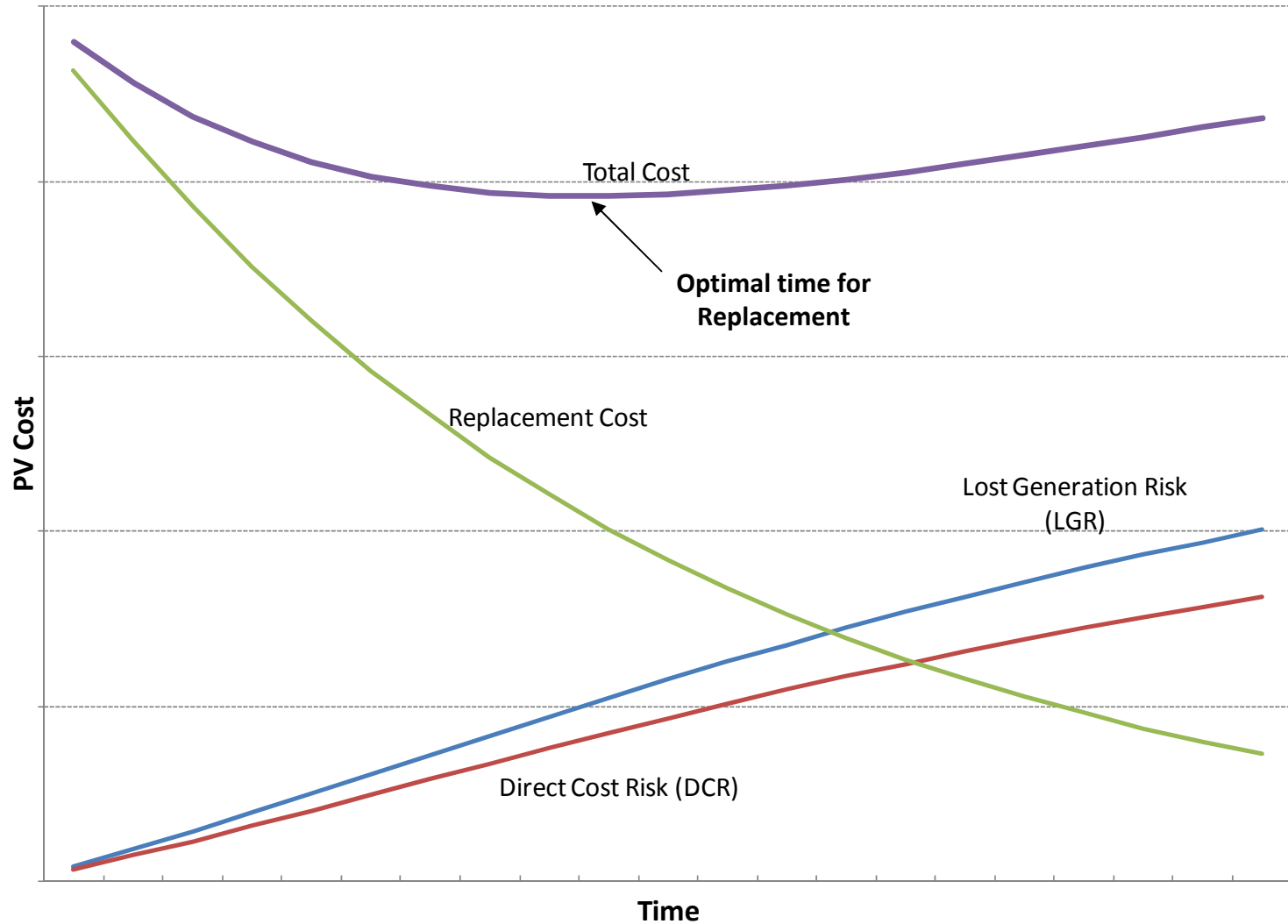
Target investments that address hydro strategic goals and achieve the following results by 2022:

Strategic Goal	FCRPS Hydro Partnership Objective	Bonneville Agency Long-term Outcome	Targeted Plan Result (Draft)
Low Cost Power	Provide a cost effective power supply	Meet environmental and reliability goals at the least lifecycle cost	UNDER DEVELOPMENT
			UNDER DEVELOPMENT
Power Reliability	Provide a reliable power supply	Meet availability requirements	UNDER DEVELOPMENT
	Support a reliable transmission system	Meet reliability standards	UNDER DEVELOPMENT
Trusted Stewardship	Optimize the multiple benefits of the river for the region	Meet hydro system environmental requirements	UNDER DEVELOPMENT
	Maintain a safe work environment	Meet safety and security standards	UNDER DEVELOPMENT

Prioritization and Risk Intervention

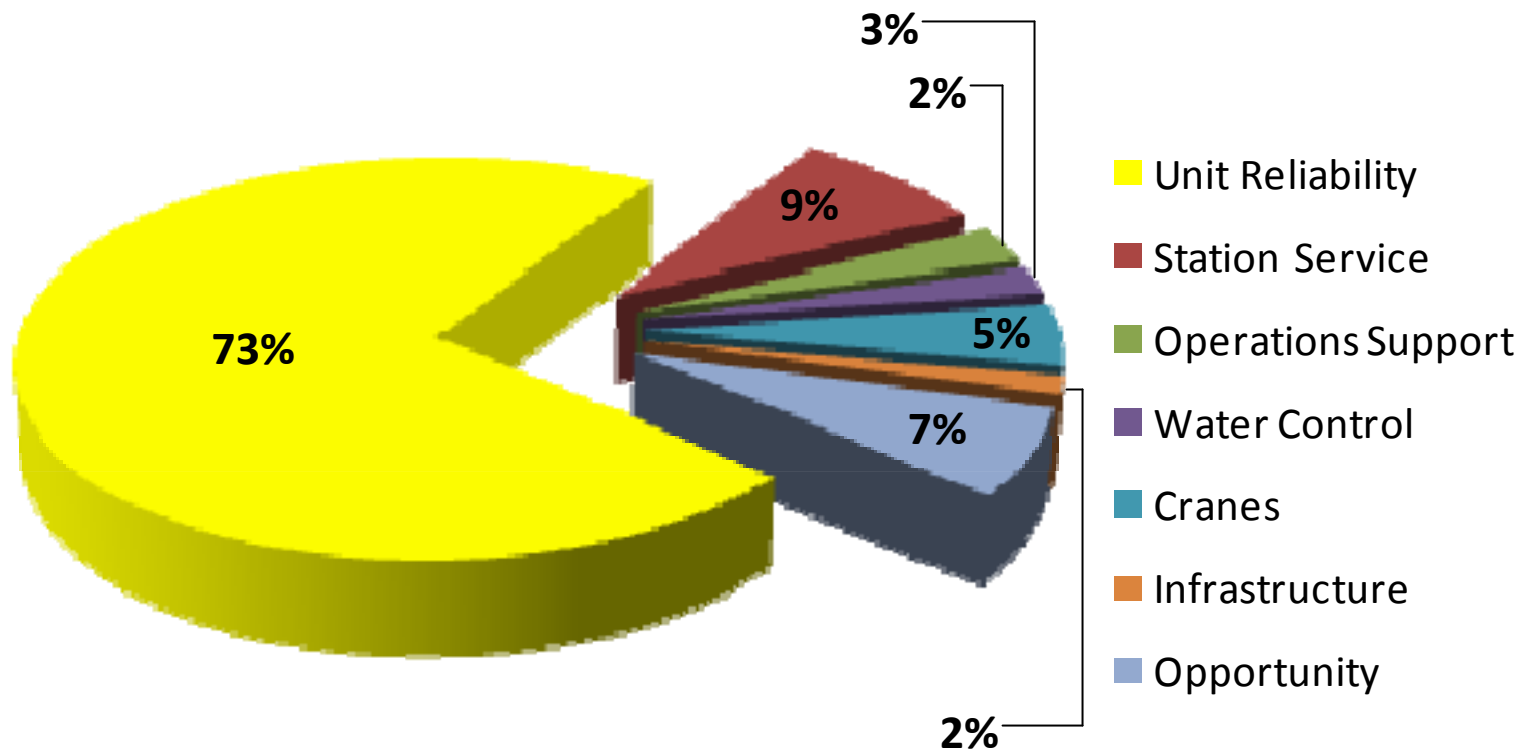
- Without corrective action, equipment condition degrades over time. As equipment condition degrades, the likelihood of equipment failing to perform increases.
- Three factors influence the economics of risk intervention
 - **Replacement Cost** – Typically, the longer the replacement can be deferred, the lower the present value of its cost.
 - **Direct Cost Risk (DCR)** – If equipment fails during the deferral period, intervention costs may be incrementally higher for collateral damage and planning, procurement, and scheduling inefficiencies.
 - **Lost Generation Risk (LGR)** – Equipment failure may also result in longer outages and, thus, more lost generation than if replaced on a planned basis.
- The Total Cost is the present value sum of replacement and financial risk costs. The cost minima is the point at which risk is growing faster than the benefit of investment deferral and represents the optimum time for replacement to minimize lifecycle cost.
- This objective function is applied to each of the 5,500 equipment items, resulting in the optimal investment plan. Constraints are then taken into account to create an achievable and sustainable program level over the planning period.

Cost of Intervention at Different Points in Time



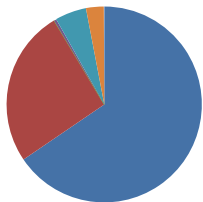
Recommended Capital Investments by Category

Distribution of Capital through 2025

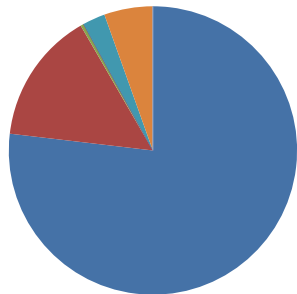


Recommended Capital Investments by Category and Plant (thru 2019)

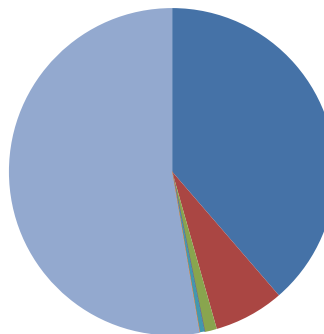
Bonneville:
\$139 million,
\$133/installed kW



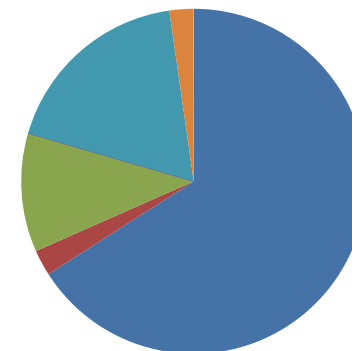
McNary:
\$221 million,
\$225/installed kW



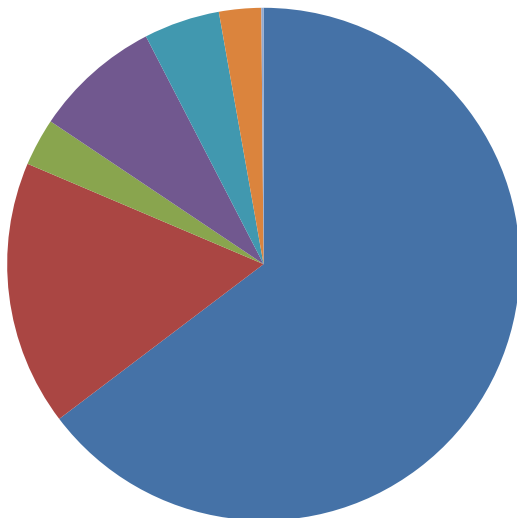
Chief Joseph:
\$273 million,
\$111/installed kW



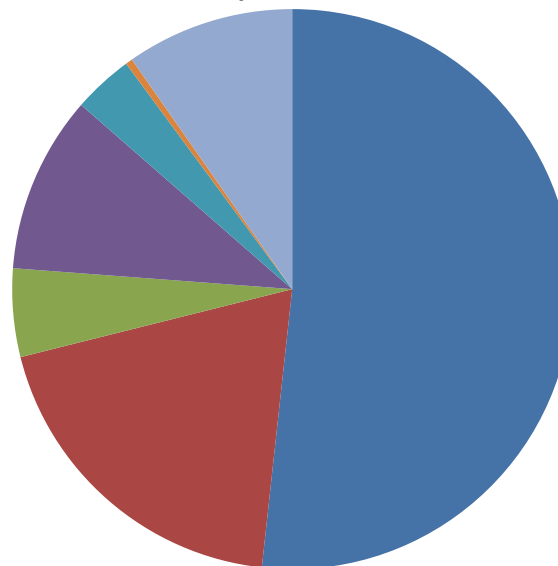
Grand Coulee:
\$279 million,
\$43/installed kW



Rest of "Big 11":
\$502 million,
\$68/installed kW



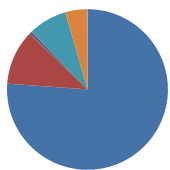
Remaining System:
\$561 million,
\$260/installed kW



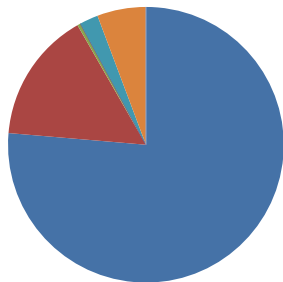
- Unit Reliability
- Station Service
- Operations Support
- Water Control
- Cranes
- Infrastructure
- Opportunity

Recommended Capital Investments minus 10% (thru 2019)

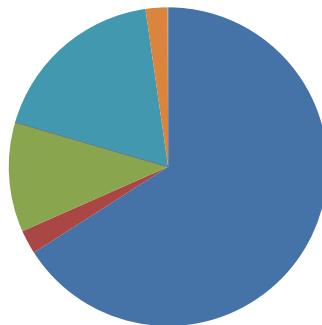
Bonneville:
\$93 million,
\$89/installed kW



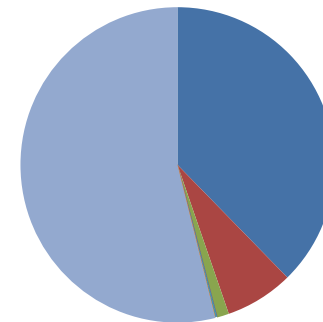
McNary:
\$211 million,
\$215/installed kW



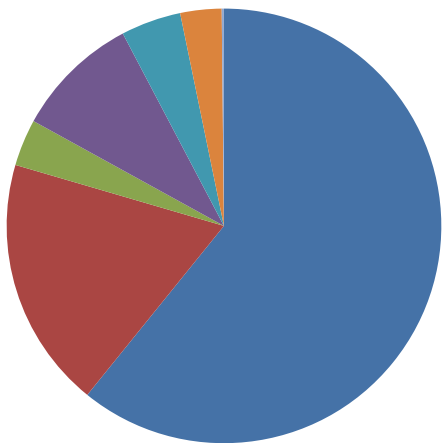
Grand Coulee:
\$266 million,
\$41/installed kW



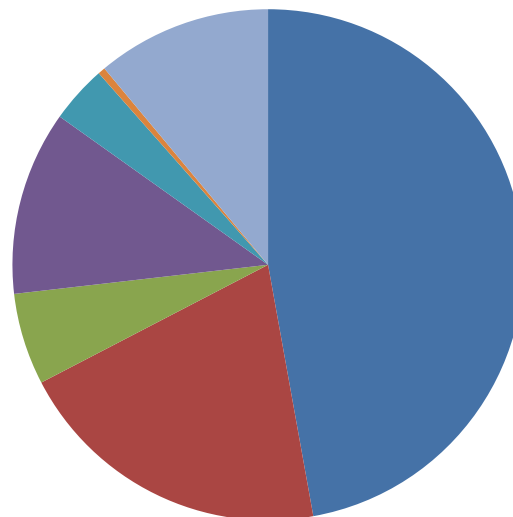
Chief Joseph:
\$267 million,
\$109/installed kW



Rest of "Big 11":
\$433 million,
\$59/installed kW



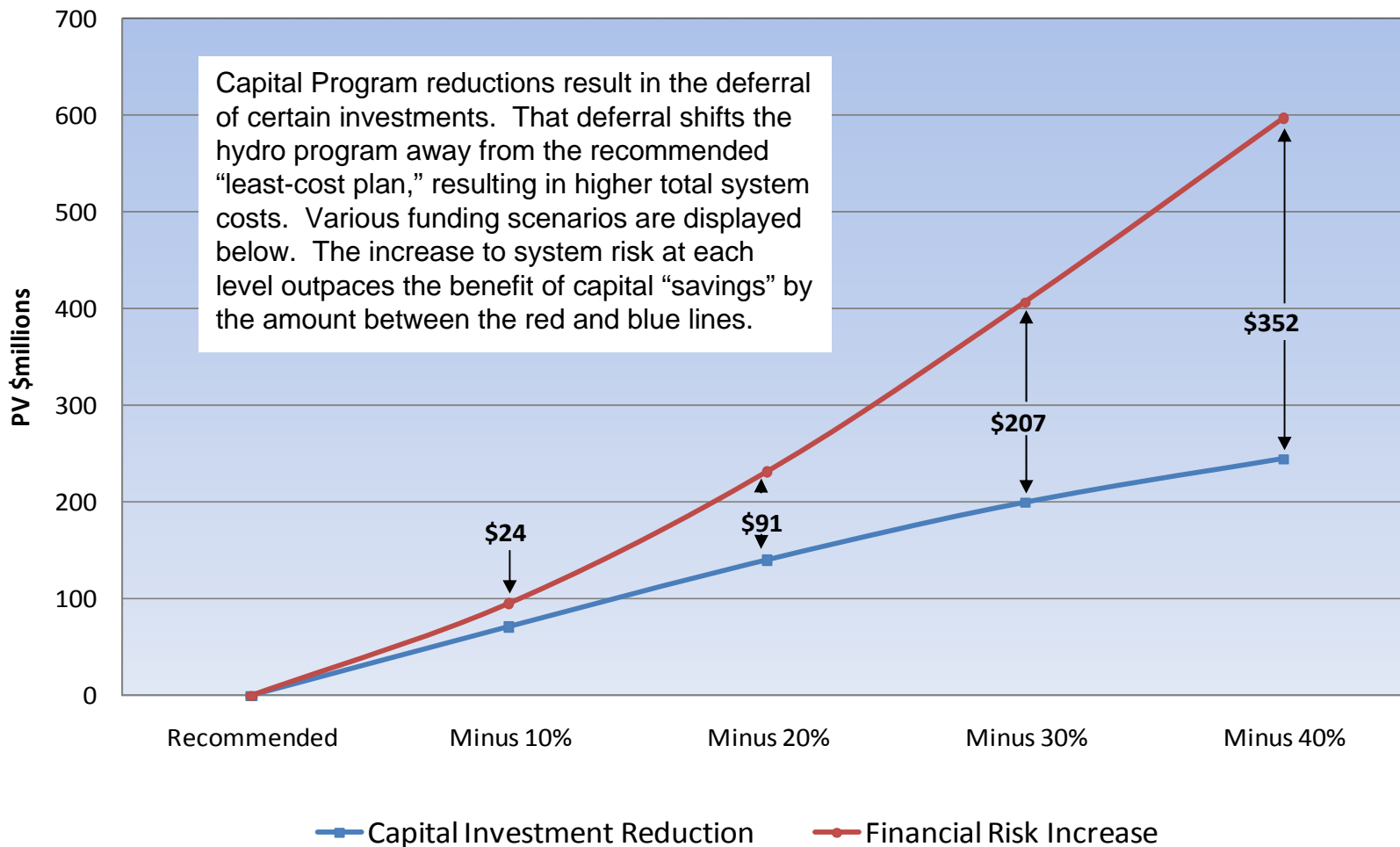
Remaining System:
\$493 million,
\$228/installed kW



- Unit Reliability
- Station Service
- Operations Support
- Water Control
- Cranes
- Infrastructure
- Opportunity

Impact to Program

Capital Reduction Scenarios & Corresponding Cost Increases



Strategic Reductions in Long Term Capital Spending

- Projects with risk increasing the least from year-to-year are deferred in favor of projects with higher risk slopes
 - At 10%, Chief Joseph Exciters are delayed
 - At 20%, winding and transformer replacements at Chief Joseph, as well as exciter and governor replacements at Grand Coulee, are deferred

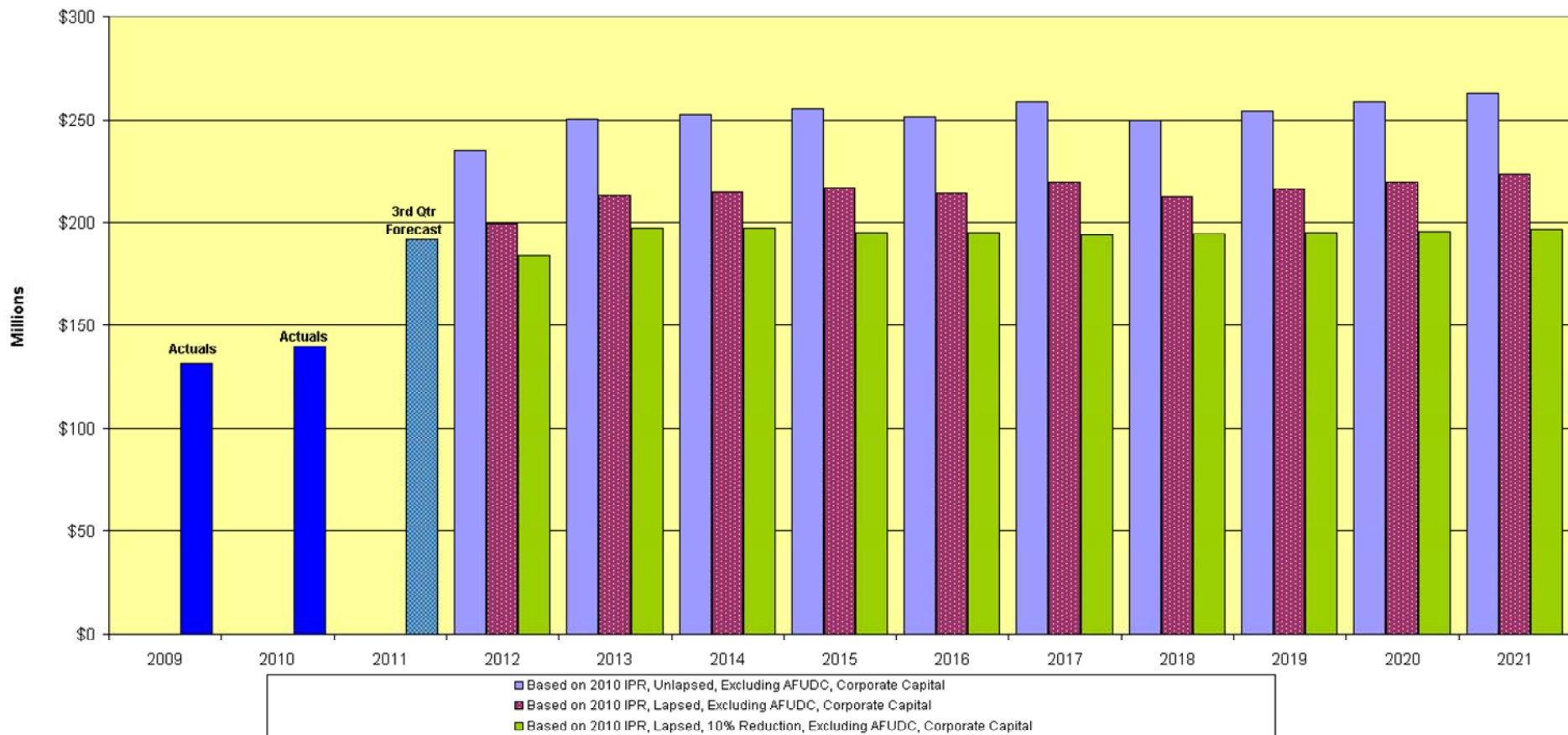
- Impacts on Programs/Projects
 - Cuts primarily impact Unit Reliability investments—Safety & Environmental risk is mitigated first with remaining funds applied to projects with Financial Risk components
 - Reduced Capital Investments ultimately result in increased O&M expense, from both increased extraordinary maintenance needs and additional need for manpower to maintain unit condition
 - Forced outages eventually increase as funding declines, leading to revenue loss

Fiscal Year	2012	2013	2014	2015	2016	2017
Total, Corps and Bureau (Lapsed), Base Scenario	199,566	213,115	214,674	216,987	213,942	219,824
Total, Corps and Bureau (Lapsed), 10% Scenario	184,313	197,523	197,515	194,949	195,012	194,159
Net Increase (Decrease) in Capital Spending	(15,253)	(15,592)	(17,159)	(22,038)	(18,930)	(25,665)

Fiscal Year	2018	2019	2020	2021	10 yr % Reduction	10 yr % Reduction before IT Respread
Total, Corps and Bureau (Lapsed), Base Scenario	212,500	216,113	219,786	223,523	2,150,030	2,150,030
Total, Corps and Bureau (Lapsed), 10% Scenario	194,780	195,159	195,577	196,861	1,945,849	1,955,880
Net Increase (Decrease) in Capital Spending	(17,720)	(20,954)	(24,209)	(26,662)	9.5%	9.0%

Forecasted Spending through 2021

Recommended Budget, Lapsed and 10% Budget-Reduction Scenarios



New Strategic Initiatives

The John W. Keys III Pump-Generating Plant (at Grand Coulee)

- Pumps water uphill from FDR Lake to Banks Lake for use by Columbia Basin Project Irrigators
- Between 1951 and 1953, six pumping units were installed
- Three pump-generators came online in 1973; three more between 1983-84
- 314 MW of generating capacity; 614 MW of pumping capacity
- If in good condition, Keys would also be capable of providing significant balancing services for variable generation resources
- Plant is near end-of-life; reliability and availability issues are surfacing
- Some refurbishment of pumping units is underway to maintain irrigation reliability
- Modernization and upgrade of P1-P6 & PG7-PG12 is under consideration
- Total cost will range between \$140 million and \$300 million
- Keys is not currently accounted for in the Capital Budget; if incorporated, the project would displace roughly an additional 10% of the recommended program

In Summary, Trade-offs

- Asset Strategy identified the optimal Capital Program level
 - Hydro Program will allocate any level of funding available as optimally as possible to meet strategic goals and long-term objectives

- Spending cuts from recommended levels increase the Total Cost of managing the system and jeopardize our ability to meet strategic goals
 - A 10% cut increases Total Costs by PV \$24 million over the planning period
 - A 20% cut increases Total Costs by PV \$91 million over the planning period

- O & M Costs increase as Capital Investment declines
 - Additional Extraordinary Maintenance costs are anticipated during a budget reduction period in response to increased unit failure repairs
 - Increased maintenance can delay forced outages in the short term but cannot prevent them when replacement is the appropriate action

- Higher total system costs, particularly expense costs, contribute to upward rate pressure

Fish & Wildlife

- This discussion focuses on strategic review of the Fish & Wildlife Long Term Investment Strategy and the following components:
 - Long-term Goals & Strategic Initiatives
 - New Strategic Initiatives and Drivers
 - Program Prioritization
 - Strategic Reductions to Capital Projects
 - Long-Term Forecasted Spending Levels (Sept 2010 IPR vs. 2011 Strategy Update)

Fish & Wildlife Asset Strategy

- **BPA's Integrated Fish and Wildlife Program (Integrated Program) implements projects that meet BPA's fish and wildlife mitigation objectives under the Northwest Power Act, consistent with the Program adopted by the Northwest Power and Conservation Council. The projects also meet BPA's Endangered Species Act (ESA) offsite fish and wildlife requirements under biological opinions from the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration (NOAA Fisheries), and the commitments encompassed within the Columbia Basin Fish Accords.**
 - BPA meets its Power Act and ESA objectives in the Fish and Wildlife Program primarily through the negotiation and award of mitigation contracts to state, federal, and tribal entities. These contracts implement projects that meet BPA's objectives in the following categories: tributary and estuary habitat improvement, hatcheries, harvest, research, monitoring and evaluation, and predator control. Project outcomes are credited and accounted for as contributions toward the recovery and mitigation obligations of BPA.
 - The Fish and Wildlife Program is carried out in partnership with the Northwest Power and Conservation Council. The Council in cooperation with BPA reviews and updates the Program and makes funding recommendations to BPA for projects to implement in support of the program objectives.

Long Term Goals & Strategic Initiatives

Goals

Hatchery/Major Construction

Fund construction on numerous hatchery facilities in accordance with Accord agreements and BiOp commitments

Land Acquisitions

Continue to fulfill wildlife mitigation requirements and resident fish agreement for habitat improvements

Tributary Passage Improvements

Supports the implementation objectives of the BiOp for reducing limiting factors or removing barriers that impede listed populations access to upstream spawning or rearing habitat.

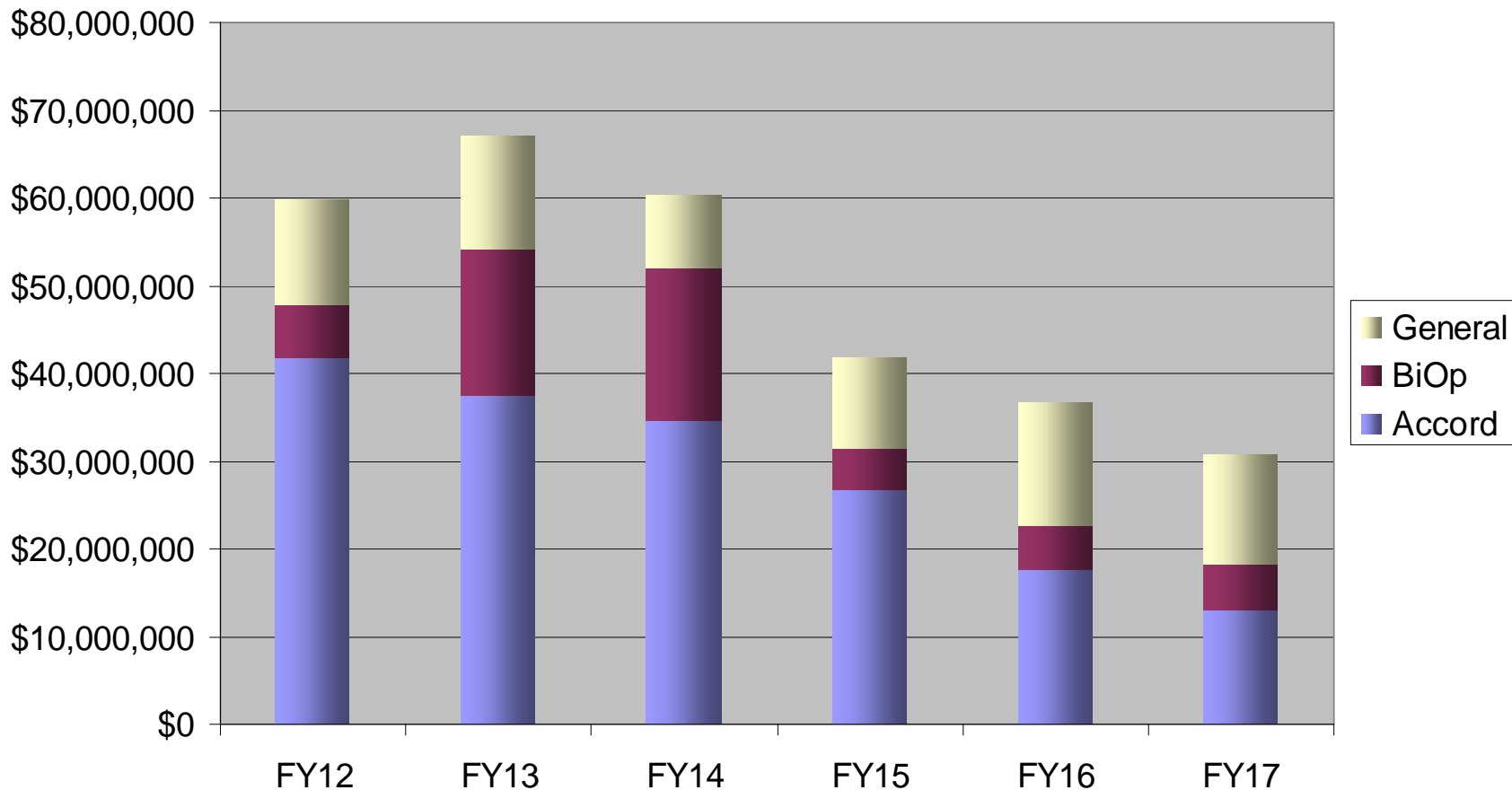
Strategic Initiatives

→ F&W management will work with Accord partners to develop a comprehensive hatchery construction schedule. Timeslots with fiscal year spending bounds will be developed for each hatchery.

→ Strengthen coordination with sponsors and Realty Services to optimize opportunities to make acquisitions in the fiscal years desired to align with budgets. Settlement agreements are being pursued to define remaining obligations and financial commitments.

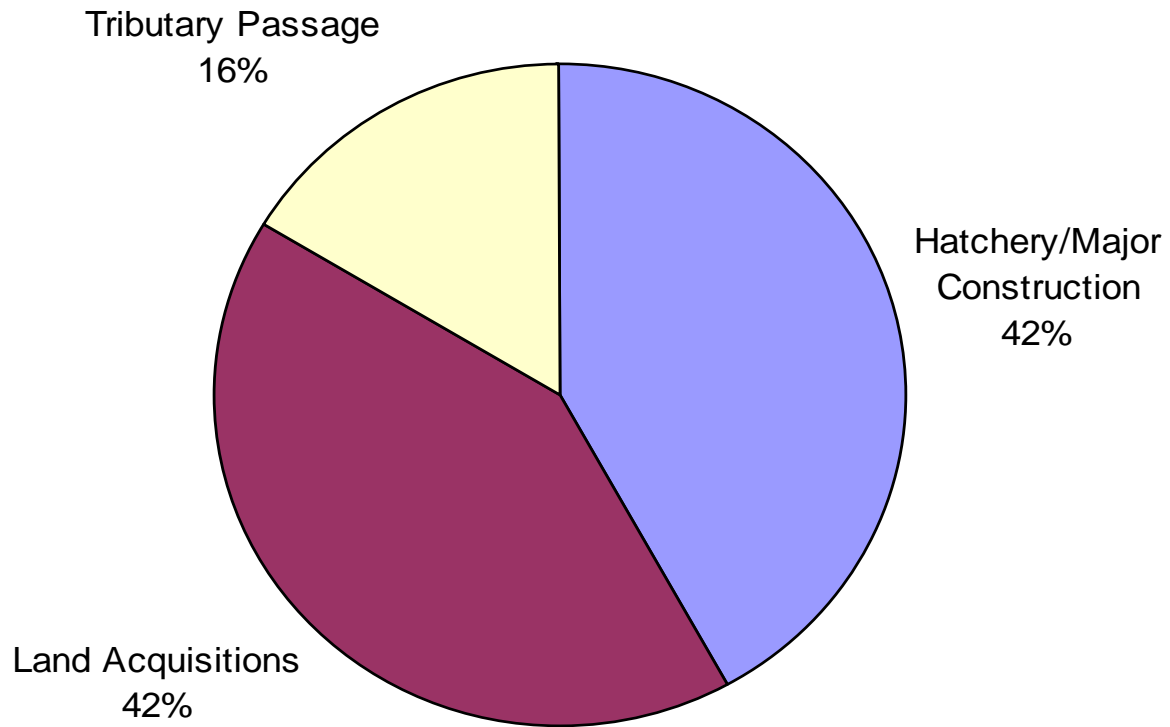
→ Continue working with willing land owners for access and coordination throughout drainage sub-basins.

F&W Capital Spending by Funding Source FY12-17 Forecast



Distribution of Investments

**F&W Capital Spending by Category
FY12-17 Forecast**



New Strategic Initiatives

The following projects support new initiatives and are not included in the current capital spending forecasts:

- Idaho wildlife settlements (IDFG, Shoshone Bannock, Shoshone Paiute, Albeni Falls)
- Montana resident fish settlements (Montana, Salish Kootenai)
- Hatchery upgrades (pressure)
- Uncertain results in the BiOp litigation

Project Prioritization

- Projects within the Fish & Wildlife program are prioritized by:
 - BiOp
 - Accords
 - Land Settlements
- Fish and Wildlife evaluates capital projects based on BiOp requirements, Accord commitments and budget availability.
- Hatchery/major construction that support the BiOp and Land transactions that are part of a settlement are high priority projects and considered critical to BPA's capital investment strategy.

Reductions in Long Term Capital Spending

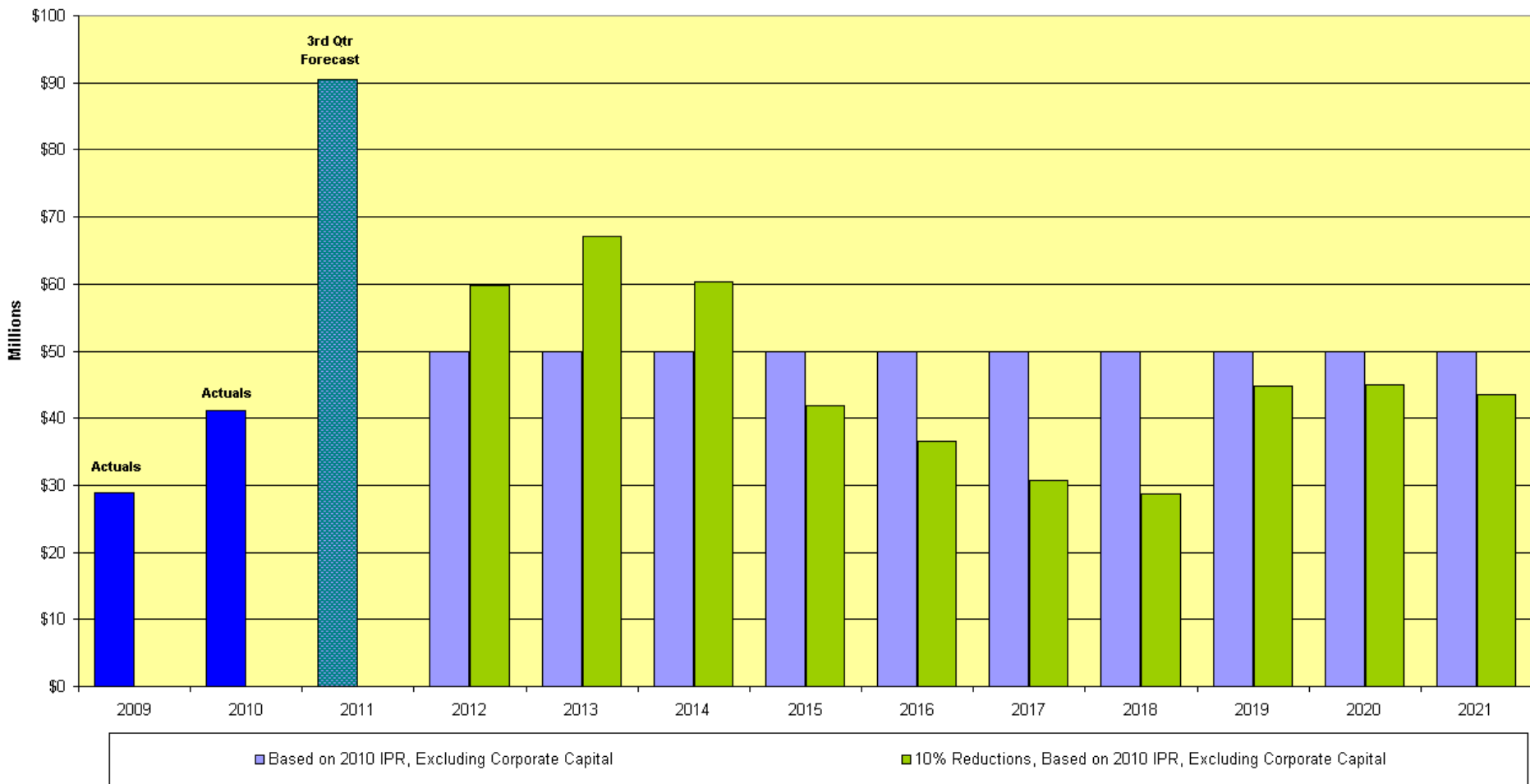
Strategic Reductions to Capital Projects have resulted in:

- Program funding being front loaded to accommodate committed hatchery construction
 - Accord funded hatcheries are expected to start or continue construction in FY 2012-2014. These include Chief Joseph and Snake River Sockeye among others.
- Capital reductions were taken in out years
 - Large program reductions were taken in FY 2016-2018. The results of these reductions both constrain flexibility in the near years and limit new commitments in the out years.

Fiscal Year	2012	2013	2014	2015	2016	2017
Fish and Wildlife, Base Scenario	50,000	50,000	50,000	50,000	50,000	50,000
Fish and Wildlife, 10% Scenario	59,785	67,145	60,275	41,807	36,650	30,795
Net Increase (Decrease) in Capital Spending	9,785	17,145	10,275	(8,193)	(13,350)	(19,205)

Fiscal Year	2018	2019	2020	2021	10 yr % Reduction	10 yr % Reduction before IT Respread
Fish and Wildlife, Base Scenario	50,000	50,000	50,000	50,000	500,000	500,000
Fish and Wildlife, 10% Scenario	28,646	44,806	45,033	43,599	458,541	460,850
Net Increase (Decrease) in Capital Spending	(21,354)	(5,194)	(4,967)	(6,401)	8.3%	7.8%

Fish & Wildlife Capital Spending and Forecasted Levels



In Summary

- The entire capital budget essentially supports meeting the Accord, BiOp, or wildlife mitigation commitments. Adjustments may be necessary since Judge Redden has remanded the existing BiOp and requested additional detail for the post 2013 period.
- Anticipated spending reductions begin in 2015 in order to allocate adequate funding to meet the existing near term commitments.
- Out year reductions may be impacted by the drivers previously described or an adverse outcome to the BiOp litigation.

Conservation

Strategic Capital Objective and Goals

Strategic Objective:

- BPA and public power cooperatively accomplish public power's share of regionally cost-effective energy efficiency/demand management.
- Under the Northwest Power Act, the Northwest Power and Conservation Council identifies regionally cost-effective energy efficiency in its 5-year power plans.

Conservation Goals:

- Under the 6th Power Plan, the Public Power target was set at 504 aMW (up from 260 aMW in the 5th Power Plan).
- Over the long-term the 6th Power Plan calls for the region to achieve 80% of load growth through energy efficiency.

Conservation Goals: 6th Power Plan Targets

BPA and Public Power will achieve the 504 aMW target by acquiring savings from three categories:

- **Non-Programmatic Savings (Expense):** BPA anticipates that ~15% of the 6th Power Plan target can be met through non-programmatic measures such as market-induced savings, tax credits, codes and standards, and non-BPA ARRA funding.
 - BPA will track and account for these savings, but will not offer incentives for achieving them.
- **Market Transformation (Expense):** BPA anticipates that ~15% of this target will be achieved through market transformation activities undertaken by the Northwest Energy Efficiency Alliance (NEEA).
 - BPA, along with other public utilities, currently supports NEEA with expense funding.
- **Programmatic Savings (Capital):** The remaining ~70% of the 6th Power Plan target will be met through BPA and utility-funded programs in all sectors of the economy.
 - Consistent with BPA's Energy Efficiency Post 2011 Policy, BPA will set capital spending to fund 75% of this target and assumes that 25% will be achieved through utility-self funding.
 - 33 aMW of carryover savings already achieved will be applied to FY 2012, FY 2013 and FY 2014

Other Goals & Strategic Initiatives

In addition to overall conservation (aMW) and cost goals, BPA is working to:

- Continue to improve and maintain our portfolio of conservation options and obtaining savings at the lowest possible cost.
- Improve capital management and reporting through two new systems:
 - **EE Central** – Improves savings reporting and results in more standardized data.
 - **EE Tracker (expense)** – Improves BPA ability to manage, track and report on budgets, expenditures, and conservation savings. This system will also enable internal management of EEI Budgets and the Large Project Fund.
- Improve integration of conservation information and decisions across BPA (e.g., Non-Wires, load forecasts, Smart Grid, etc).

Capital Drivers

BPA establishes conservation capital spending to help achieve the programmatic savings targets. Several factors drive program levels.

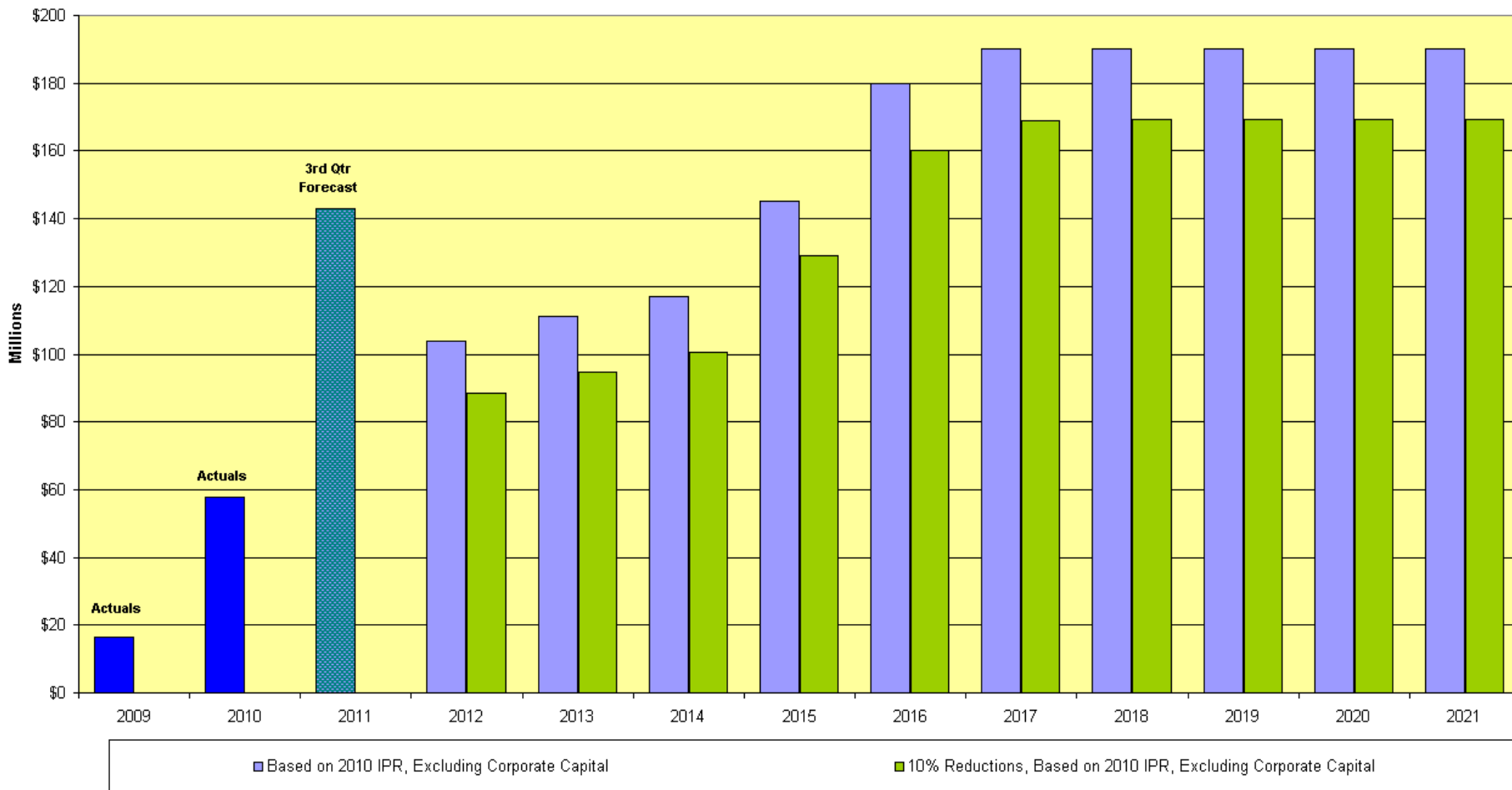
- **Programmatic Targets:** The 5-year programmatic savings target is equal to the public power share of the council's target (~42%), minus expected non-programmatic and market transformation savings. The annual target varies based on expected changes in the mix of available conservation measures. Programmatic targets are updated in each year's EE Plan.
- **Cost of Savings:** BPA's conservation proposed spending is also based on the expected cost/aMW of programmatic savings. Each year in its EE Plan, BPA updates cost/aMW assumptions based on the expected mix of measures that are expected to be implemented.
- **Self-Funding:** As part of the Post 2011 process, BPA has agreed to assume that utilities will self-fund 25% of the programmatic savings target and review this assumption on a rate-period basis. Therefore, BPA sets capital spending to acquire 75% of the programmatic savings target.

Capital Drivers

There is a risk of overspending capital in FY 2011. A collaborative process has been initiated to address the situation with customer utilities and other stakeholders.

- **IPR Forecasted Spending Levels:** BPA's 2010 IPR process discussed capital spending levels for BPA's programmatic energy efficiency achievements. Total capital spending between 2010-2014 was estimated to be \$459 million.
- **FY 2011 Budget:** BPA's energy efficiency department began FY 2011 with \$80 million in authorized capital budget. That amount was increased by \$35 million to \$115 million in May.
- **3rd Quarter Forecast 2011:** Recent forecasting activities have shown there is significant risk of BPA spending beyond the authorized \$115 million energy efficiency capital budget for FY 2011.
- **Out Year Capital Spending:** FY 2011 totals are not yet final. FY 2012 proposed capital spending is \$89 million. Spending in 2013 and 2014 are yet to be determined.

Forecasted Conservation Spending



Distribution of Investment and Decision Making

Under the Post 2011 Policy, BPA will allocate its capital budget to two primary activities:

- **Energy Efficiency Incentives (EEI):** At least 70% of the rate period amount will be allocated to utilities to fund conservation incentives for approved measures and customer projects. Consistent with tiered rates, this EEI budget will be made available to BPA's customers based on their Tier One Cost Allocator (TOCA).
 - **Implementation Management:** Use of the utility's EEI budget is guided by the Implementation Manual that BPA updates every 6 months.
 - **Measure Approval/Cost Effectiveness:** With funds from its expense budget, BPA works with the Regional Technical Forum to review measures and ensure that they are cost-effective.
 - **Reimbursement Level:** BPA establishes a reimbursement level for each measure based on levels that are necessary to move the market.

Distribution of Investment and Decision Making (cont.)

BPA managed programs: Up to 30% of BPA's capital spending will go to fund BPA managed programs.

- **Regional Programs:** The bulk of these dollars will fund regional conservation programs that implement energy efficiency measures in niche markets (e.g., Energy Smart Grocer and Energy Smart Industrial). BPA works to design regional programs in collaboration with its utility customers.
- **Direct Serve Federal:** In addition to standard utility programs this spending may provide support for conservation at facilities with no serving utility.
- **EE Central:** In FY 2012, this spending will also support completion of the reporting system (EE Central).

Other Initiatives

In addition to the strategic initiatives described earlier, BPA is working to:

- Ensure that regional programs have a stable source of funding. BPA's access to capital issues could make stable funding more difficult in the coming years. To alleviate pressures on BPA's treasury borrowing authority, staff are working to move EE capital funding to 3rd Party financing.
 - 3rd Party Conservation Financing will be described in the upcoming Funding Tools workshop. BPA is working to make this change have minimal impact on how external parties engage in BPA's conservation program.
- Since the 2010 IPR, BPA has worked with the region to refine its Post 2011 Policy. This policy has tightened how BPA will manage its incentive budget in collaboration with its utility customers.

Financial Disclosure

This information has been made publicly available by BPA on September 12, 2011 and contains information not reported in agency financial statements.