

Re-balancing BPA's Investment Portfolio

Prioritization Cycle 3

Quarterly Business Review

November 2014

On-line access to Investment Summaries

The nature, purpose, costs, and benefits of the investments in play have been summarized as a convenient reference

The investment summaries are available at

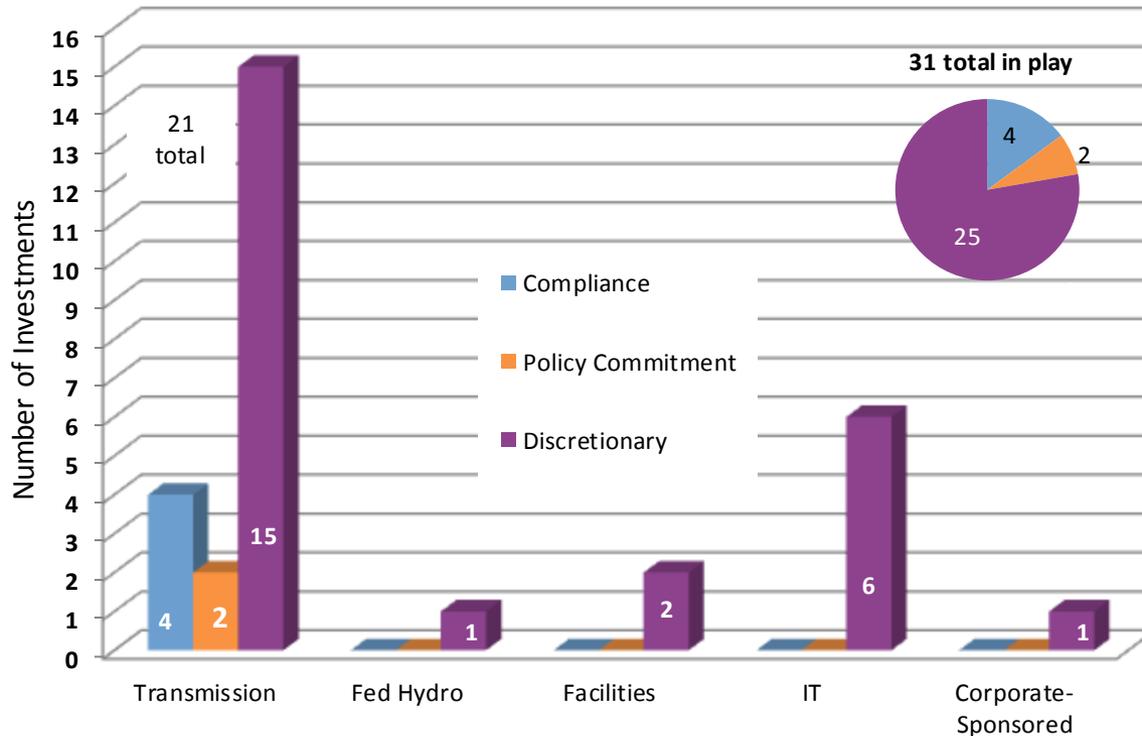
<http://www.bpa.gov/Finance/FinancialPublicProcesses/CapitalInvestmentReview/Pages/CIR-2014.aspx>



Investments in play

Prioritization Cycle 3

“Investments in play” Includes expansion-type investments >\$3m that have been nominated as new starts for FY 2015-2017



In Cycles 1 and 2, 40 nominated expansion investments were put into play

Of the 40 that were in play, 16 were given a “green light”

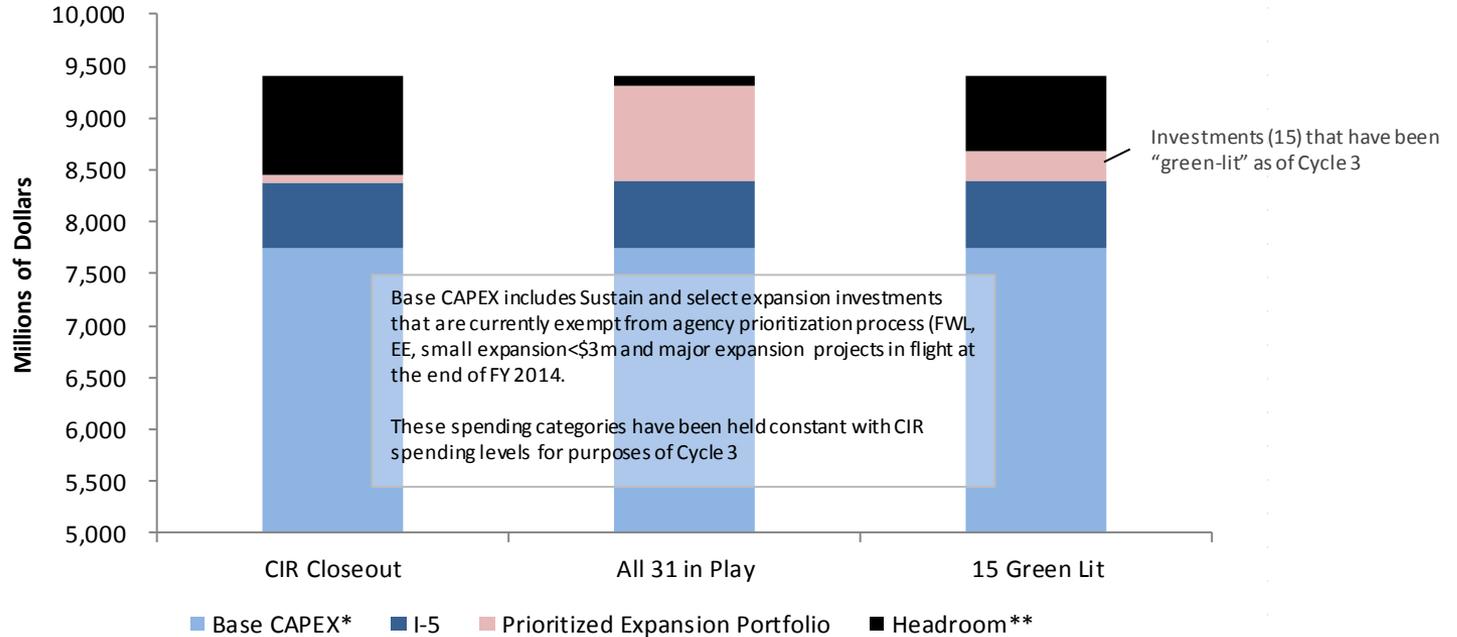
- The remaining 24 investments were either sent back for more work, tabled, or cancelled
- The status of the 16 that were green-lit is summarized in Appendix slides 18-19

In Cycle 3, 31 nominated investments are in play

- The 31 is the net effect of 12 new nominations and 21 withdrawals (deferrals, cancellations, or reclassifications) since Cycles 1/2
- Investment costs (base estimates for capital expenditures and expenses) for the 31 in play: \$1,447 million

Portfolio Comparisons

Capital expenditures including overheads and AFUDC
 Millions of Dollars for the 10-Year Period FY2014-2023



	Cycles 1/2 <u>CIR Closeout</u>	Cycle 3 <u>All 31 in Play</u>	Cycle 3 <u>15 Green Lit</u>
Base CAPEX*	7,741	7,741	7,741
I-5	641	662	662
Prioritized Expansion Portfolio	69	913	273
Headroom**	960	95	735
Total	9,410	9,410	9,410

*Sustain requests reduced for FY18-23 from the original submissions

Federal Hydro	600
Transmission	142

**Calculated at the upper cap (\$940 million average per year)

Notes on some key investments

(\$000)

I-5 Corridor project. The costs and completion dates have been updated and are shown below. The costs and dates will be reviewed again in the few months, and they are likely to change, with costs potentially increasing above the range shown. The benefits of this investment will be assessed in Cycle 4.



Timing of investment				Range of investment costs (Direct Capital Cost)			Base + Indirects (excl. AFUDC)
Start	Complete			Low	Base	High	Total
	Early	Base	Late				
Oct-08	Sep-18	Sep-18	Sep-20	\$440,000	\$459,607	\$528,000	\$574,509

Two-year delay in project dates, with no change project costs (real 2014 dollars)



Timing of investment				Range of investment costs (Direct Capital Cost)			Base + Indirects (excl. AFUDC)
Start	Complete			Low	Base	High	Total
	Early	Base	Late				
Oct-10	Jun-18	Jun-21	Jun-22	\$429,000	\$459,607	\$559,000	\$574,509

Montana to Washington Transmission System Upgrade project. The likelihood of this project moving forward is deemed to be very low -- the project was prompted largely by a transmission service request to integrate a project that is believed to have a low chance of progressing. The estimated capital cost of the investment was \$182.5 million, excluding AFUDC.

Lower Valley Upgrade project. This is a newly nominated compliance project for which the NEPA process is anticipated to conclude in the next few months. Approximately \$20 million of the projected investment cost has been expended to date.

Timing of investment				Range of investment costs (Direct Capital Cost)			Base + Indirects (excl. AFUDC)
Start	Complete			Low	Base	High	Total
	Early	Base	Late				
Feb-15	Nov-16	Nov-16	Nov-17	\$64,450	\$78,300	\$91,025	\$97,800

Notes on some key investments

(\$000)

Grand Coulee Units 19-21 Uprate. Federal Hydro’s original path was to overhaul (expense) Units 19-21 and defer any capital investments. This nominated investment would not only refurbish the units (capital), including shaft replacement to maintain unit capability, but also replace/uprate the runners (capital) at the same time. Although the vast majority of the expenditures would occur after the current FY 2015 -2017 prioritization window, a decision on which path to take is needed in the near term since turbine design development will take at least 5 years.

Timing of Investment				Range of Investment Costs			Fiscal year flow of investment expenditures (Base)										
Start	Complete			Low	Base	High	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Post 2024
	Early	Base	Late														
Oct-14	Apr-24	Apr-27	Oct-28	\$372,938	\$414,375	\$559,407	\$900	\$2,257	\$2,704	\$2,374	\$5,621	\$20,946	\$62,371	\$48,210	\$51,229	\$50,197	\$194,773

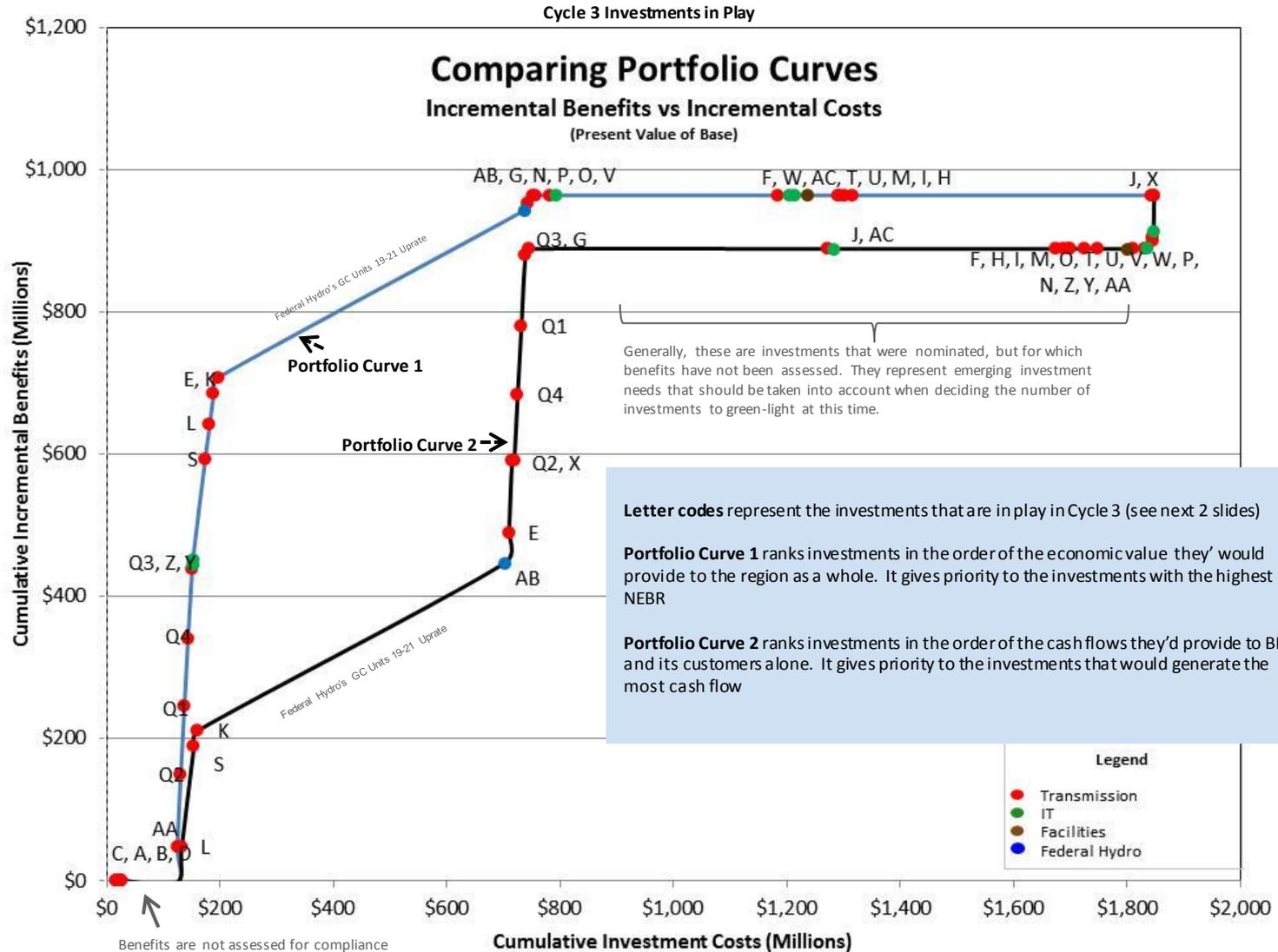
As shown, the total project cost is estimated to be \$414.4 million, however, a large share of this cost is not incremental in budgets. An estimated \$126.6 million of the total is associated with expansion and the remainder is classified as sustain capital with \$19M in expense.

Maintenance Headquarters. In Cycles 1/2, three maintenance headquarters were in play to start during the FY 2015-2017 period: Redmond MHQ, Snohomish MHQ, and Lewiston MHQ. None of these three were given the green light, however, largely because costs exceeded benefits. Facilities has reset the start dates for these projects to post 2017, and it will be re-scoping the projects to reduce costs and improve the economics. Meanwhile, Facilities has nominated several new investments, all involving facility upgrades at the Ross complex. Assessments for three of the new nominations are targeted for Cycle 4.

Northwest Power Pool Security-constrained Economic Dispatch – Potential BPA Technology Enhancements. The assessment of this investment’s benefits will begin later this quarter for consideration in Cycle 4.

Portfolio funding Curves

- The three slides that follow include a rank-ordering of the 31 investments that are in play in Cycle 3
- The rankings are presented as two portfolio curves
 - Curve 1 ranks the investments based on the net economic benefits ratio (NEBR) metric (net benefits from a regional/BPA perspective)
 - Curve 2 rank orders based on a net cash flow benefits ratio (net benefits from a BPA only perspective)
 - The two metrics that are used are defined in the last slide of this presentation
- Investments that are classified as compliance investments are assigned highest priority
 - Placed at the front-end of the curve; benefits typically are not assessed for compliance investments
- Investments that are classified as discretionary or policy commitment are subject to a full assessment of benefits
 - These investments become candidates for a “green light” only if they have been fully assessed and ranked
- What is meant by a “green light”?
 - Simply put, a green light means that BPA has chosen to pursue the investment as part of its investment portfolio in this Cycle. The portfolio will be refreshed on a 6-month cycle, and the set of investments that are green-lit will evolve over time
 - A green light does not confer authorization of the investment -- that’s an additional approval step involving a business case and authorization



Letter codes represent the investments that are in play in Cycle 3 (see next 2 slides)

Portfolio Curve 1 ranks investments in the order of the economic value they would provide to the region as a whole. It gives priority to the investments with the highest NEBR

Portfolio Curve 2 ranks investments in the order of the cash flows they'd provide to BPA and its customers alone. It gives priority to the investments that would generate the most cash flow

Benefits are not assessed for compliance investments (A,B,C,D). Compliance investments are given priority over policy commitment and discretionary investments

Cycle 3 Investments in Play

Analytical results and rankings

<input checked="" type="checkbox"/> = Investment was in play in Cycles 1/2 Green shading = investments selected for the portfolio				Cycles 1/2	Cycle 3					
				CIR	Order on funding curve		Present values		\$000	
Investment	#	Asset Category	Classification	Selected Portfolio	Portfolio Curve 1	Portfolio Curve 2	NEBR	Net BPA Cashflow Ratio	Investment cost*	Remarks
PMUs FY 2015-2017 (Phasor Measurement Units)	A	TX	Compliance	<input checked="" type="checkbox"/>	1	1	-1.0	-1.0	6,738	Project has been authorized
DeMoss-Fossi Shunt Reactive Project	B	TX	Compliance	<input checked="" type="checkbox"/>	1	1	-1.0	-1.0	2,528	Project has been authorized
FY 2015 Fault Duty Program	C	TX	Compliance		1	1	-1.0	-1.0	16,314	New nomination. Assessment complete
Lower Valley Upgrade	D	TX	Compliance		1	1	-1.0	-1.0	97,800	New nomination. Assessment complete
Anaconda_Dixon_Silver Bow Transformer/Area Improvements	E	TX	Discretionary		10	7	5.4	0.9	6,558	New nomination. Assessment complete
Boardman to Hemingway	F	TX	Discretionary	<input checked="" type="checkbox"/>			-1.0	-1.0	375,000	Benefits not yet assessed
O&M Flex Project - Carlton Substation Sectionalization	G	TX	Discretionary	<input checked="" type="checkbox"/>	14	13	0.5	-0.8	6,126	Assessment complete
DATS System Replacement	H	TX	Discretionary				-1.0	-1.0	13,625	New nomination. Benefits not yet assessed
Hot Springs to Garrison Fiber Optic Cable Upgrade	I	TX	Discretionary				-1.0	-1.0	8,488	New nomination. Benefits not yet assessed
I-5 Corridor	J	TX	Policy Commitment	<input checked="" type="checkbox"/>			-1.0	-1.0	574,509	Benefits not yet assessed
Kalispell to Kerr to Hotsprings Fiber Optic Cable Installation	K	TX	Discretionary		12	5	2.3	1.6	7,238	New nomination. Assessment complete
Monroe 500kV Line Retermination	L	TX	Discretionary	<input checked="" type="checkbox"/>	11	3	5.0	5.2	8,474	Project has been authorized
Northern Intertie Separation RAS	M	TX	Policy Commitment				-1.0	-1.0	3,125	New nomination. Benefits not yet assessed

* Investment costs include both capital and expense costs, with transmission indirects and corporate overheads. AFUDC excluded

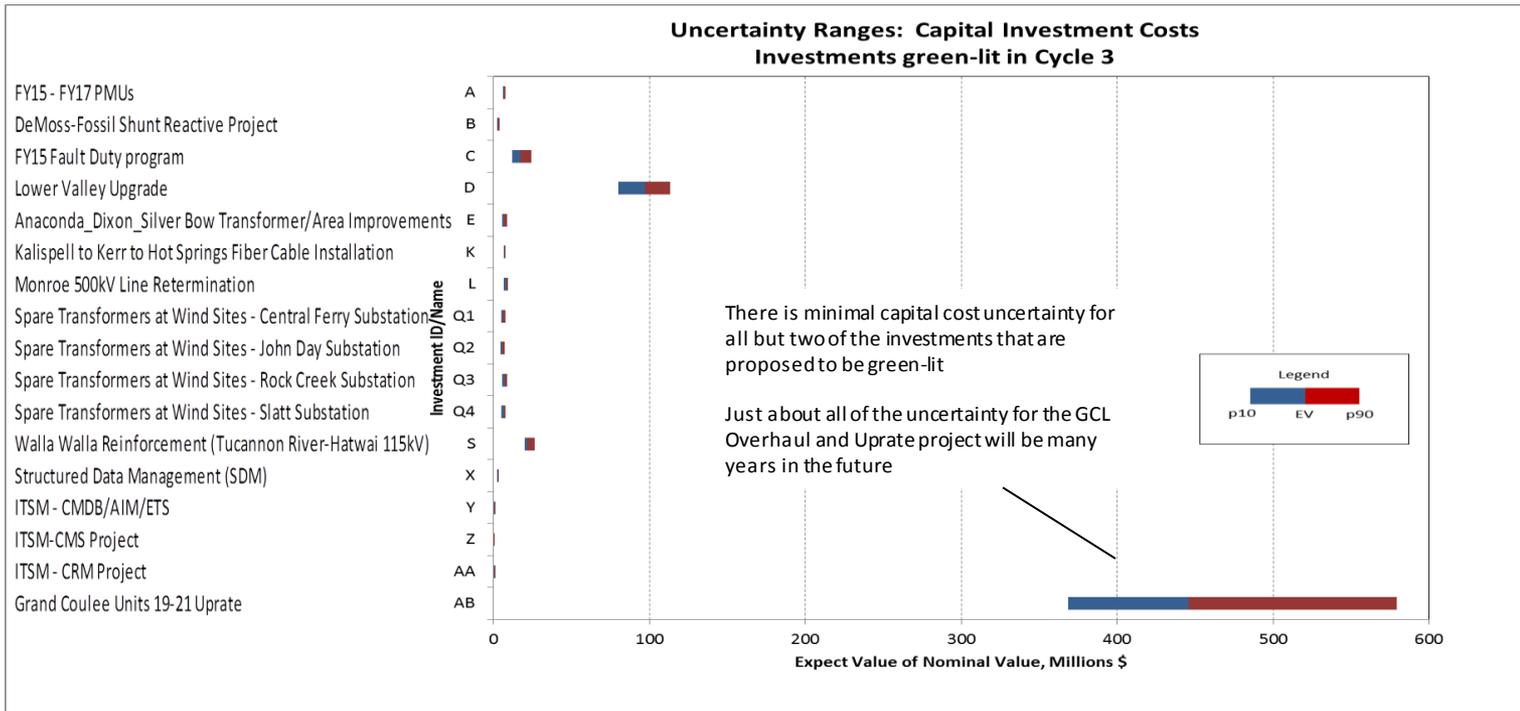
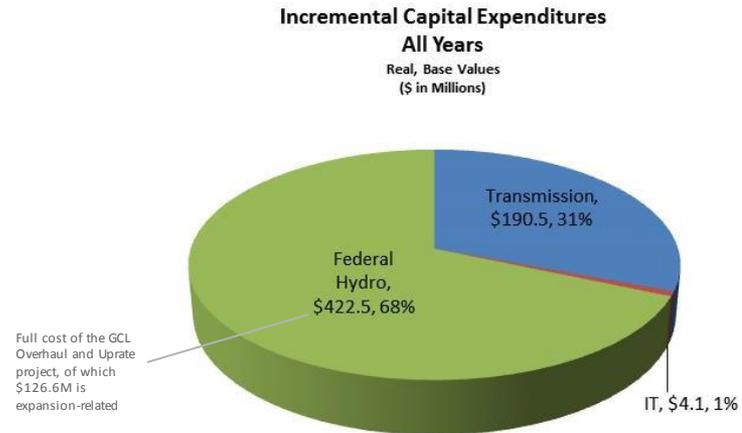
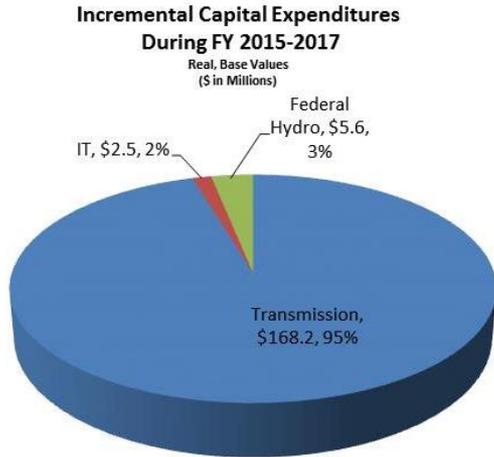
Cycle 3 Investments in Play

Analytical results and rankings

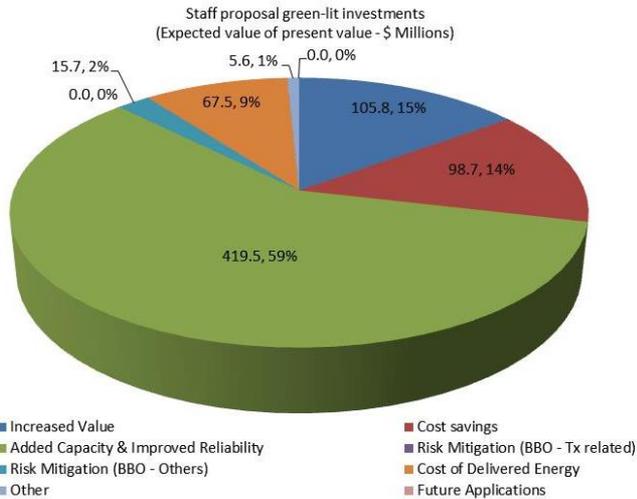
<input checked="" type="checkbox"/> = Investment was in play in Cycles 1/2 Green shading = investments selected for the portfolio				Cycles 1/2	Cycle 3					
Investment	#	Asset Category	Classification	Selected Portfolio	Order on funding curve		Present values		\$000	Remarks
					Portfolio Curve 1	Portfolio Curve 2	NEBR	Net BPA Cashflow Ratio	Investment cost*	
Ross Station Service (SS) Upgrade	N	TX	Discretionary	<input checked="" type="checkbox"/>			-1.0	-1.0	8,750	New nomination. <input checked="" type="checkbox"/> Benefits not yet assessed
Shultz to Monroe Fiber Upgrade	O	TX	Discretionary				-1.0	-1.0	25,100	New nomination. Benefits not yet assessed
Southern Idaho Communications Upgrade	P	TX	Discretionary	<input checked="" type="checkbox"/>	15	14	-0.7	-1.4	4,375	Assessment complete
Spare Transformers at Hub Wind Sites (4 projects)	Q1-Q4	TX	Discretionary	<input checked="" type="checkbox"/>	3,4,5,6	8,9,10,11	16.4 to 13.2	-0.09 to -0.3	26,250	The 4 projects have been authorized
Walla Walla Reinforcement (Tucannon River-Hatwai 115 kV)	S	TX	Discretionary	<input checked="" type="checkbox"/>	9	4	6.1	3.8	20,304	Assessment complete
Ross Complex HMEM Garage	T	FAC	Discretionary				-1.0	-1.0	18,800	New nomination. Benefits not yet assessed
Ross Complex Infill Office	U	FAC	Discretionary				-1.0	-1.0	42,800	New nomination. Benefits not yet assessed
Billing Information System Upgrade	V	IT	Discretionary	<input checked="" type="checkbox"/>			-1.0	-1.0	10,800	Benefits not yet assessed
Capability Upgrades for Planning and Operations in Power Services (CUPO)	W	IT	Discretionary	<input checked="" type="checkbox"/>			-1.0	-1.0	20,004	Benefits not yet assessed
Structured Data Management (SDM)	X	IT	Discretionary	<input checked="" type="checkbox"/>	16	12	-1.1	-0.1	3,500	Project has compliance aspects
IT Service Management (CMDB, AIM, ETS)	Y	IT	Discretionary	<input checked="" type="checkbox"/>	8	2	8.8	139.5	724	Assessment complete
IT Service Management (CMS)	Z	IT	Discretionary	<input checked="" type="checkbox"/>	7	15	8.9	-8.9	465	Assessment complete
IT Service Management (CRM)	AA	IT	Discretionary	<input checked="" type="checkbox"/>	2	16	81.0	-81.9	639	Assessment complete
Grand Coulee Units 19-21 Uprate	AB	FH	Discretionary		13	6	1.9	1.2	126,600	New nomination. Benefits assessed. Investment cost shown reflects expansion portion of total project
NWPP SCED Initiative - BPA Technology Enhancements	AC	Corp	Discretionary				-1.0	-1.0	11,000	Benefits not yet assessed

* Investment costs include both capital and expense costs, with transmission indirects and corporate overheads. AFUDC excluded

Capital costs for the investments proposed to be green-lit

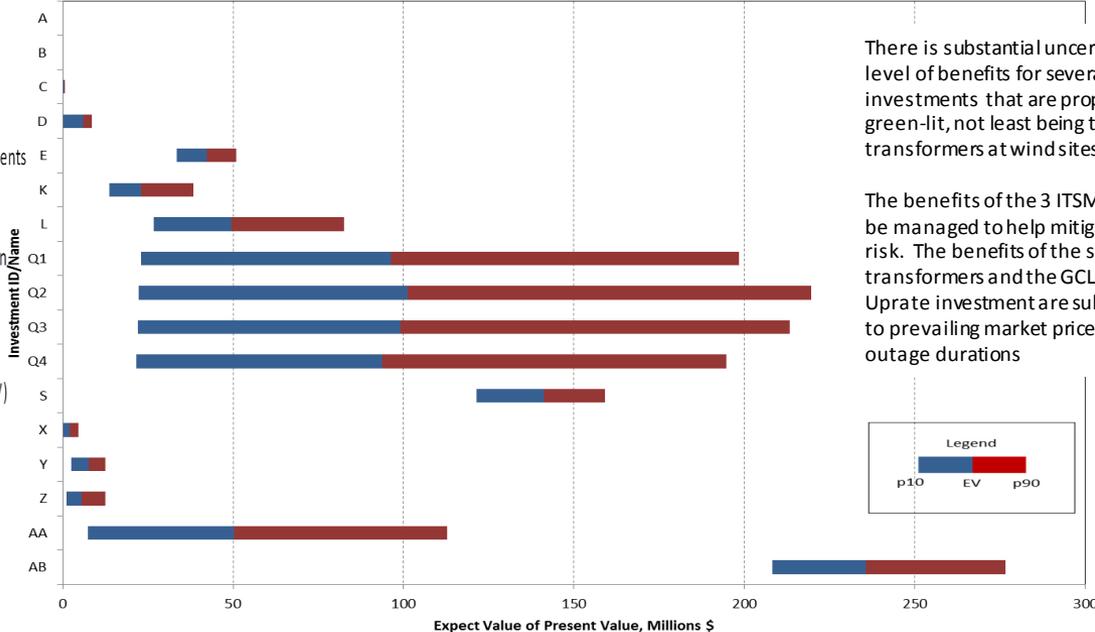


Incremental benefits by Type



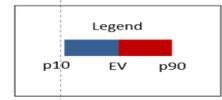
Uncertainty Ranges: Total Economic Benefit

- FY15- FY17 PMUs
- DeMoss-Fossil Shunt Reactive Project
- FY15 Fault Duty program
- Lower Valley Upgrade
- Anaconda_Dixon_Silver Bow Transformer/Area Improvements
- Kalispell to Kerr to Hot Springs Fiber Cable Installation
- Monroe 500kV Line Retermination
- Spare Transformers at Wind Sites - Central Ferry Substation
- Spare Transformers at Wind Sites - John Day Substation
- Spare Transformers at Wind Sites - Rock Creek Substation
- Spare Transformers at Wind Sites - Slatt Substation
- Walla Walla Reinforcement (Tucannon River-Hatwai 115kV)
- Structured Data Management (SDM)
- ITSM - CMDB/AIM/ETS
- ITSM-CMS Project
- ITSM - CRMProject
- Grand Coulee Units 19-21 Uprate



There is substantial uncertainty about the level of benefits for several of the investments that are proposed to be green-lit, not least being the spare transformers at wind sites.

The benefits of the 3 ITSM investments can be managed to help mitigate downside risk. The benefits of the spare transformers and the GCL Overhaul and Uprate investment are subject in large part to prevailing market price conditions and outage durations



Cycle 3
Prioritized Expansion Portfolio

Investment Name	#	Selected Portfolio Cycle 3	Asset Category	Investment Classification	Net Economic Benefit Ratio	Capital spending (base amounts; without AFUDC)							Total
						2015	2016	2017	2018	2019	2020	Later Years	
Compliance Investments (Costs only assessed)													
FY15 - FY17 PMUs	A		Transmission	Compliance		0.3	3.0	1.8	1.5	0.0	0.0	0.0	6.7
DeMoss-Fossil Shunt Reactive Project	B		Transmission	Compliance		0.6	1.9	0.0	0.0	0.0	0.0	0.0	2.5
FY15 Fault Duty program	C		Transmission	Compliance		3.3	13.1	0.0	0.0	0.0	0.0	0.0	16.3
Lower Valley Upgrade	D		Transmission	Compliance		9.8	58.5	29.3	0.0	0.0	0.0	0.0	97.5
Subtotal						14.0	76.5	31.1	1.5	0.0	0.0	0.0	123.1
Discretionary/Policy Commitment Investments													
Anaconda_Dixon_Silver Bow Transformer/Area Improvements	E		Transmission	Discretionary	5.4	0.6	1.9	3.9	0.0	0.0	0.0	0.0	6.4
Boardman to Hemingway	F		Transmission	Discretionary	-1.0	0.0	0.0	0.0	0.0	112.5	112.5	150.0	375.0
O&M Flex Project - Carlton Substation Sectionalization Project	G		Transmission	Discretionary	0.5	1.8	4.3	0.0	0.0	0.0	0.0	0.0	6.1
DATS System replacement	H		Transmission	Discretionary	-1.0	0.0	0.0	1.3	1.3	1.3	2.6	6.6	13.1
Hot Springs to Garrison Fiber Optic Cable Upgrade	I		Transmission	Discretionary	-1.0	1.3	0.1	0.1	0.1	3.5	3.5	0.0	8.4
I-5 Corridor	J		Transmission	Policy Commitment	-1.0	41.5	50.0	92.5	100.0	100.0	100.0	25.7	509.7
Kalispell to Kerr to Hot Springs Fiber Cable Installation	K		Transmission	Discretionary	2.3	2.0	4.2	1.0	0.0	0.0	0.0	0.0	7.2
Monroe 500kV Line Retermination	L		Transmission	Discretionary	5.5	0.0	1.3	3.8	2.5	0.8	0.0	0.0	8.5
Northern Intertie Separations RAS	M		Transmission	Policy Commitment	-1.0	0.6	0.8	0.8	0.9	0.0	0.0	0.0	3.1
Ross Station Service (SS) Upgrade	N		Transmission	Discretionary	0.2	0.0	0.4	0.9	1.8	5.7	0.0	0.0	8.8
Schultz to Monroe Fiber Upgrade	O		Transmission	Discretionary	-1.0	0.0	0.0	0.0	0.0	12.5	12.5	0.0	25.0
Southern Idaho Communications Upgrade	P		Transmission	Discretionary	-0.7	0.0	0.2	0.2	0.2	1.5	1.5	0.7	4.4
Spare Transformers at Wind Sites - Central Ferry Substation	Q1		Transmission	Discretionary	15.4	0.0	0.0	1.1	5.1	0.0	0.0	0.0	6.3
Spare Transformers at Wind Sites - John Day Substation	Q2		Transmission	Discretionary	16.4	5.6	0.0	0.0	0.0	0.0	0.0	0.0	5.6
Spare Transformers at Wind Sites - Rock Creek Substation	Q3		Transmission	Discretionary	13.2	1.2	5.6	0.0	0.0	0.0	0.0	0.0	6.9
Spare Transformers at Wind Sites - Slatt Substation	Q4		Transmission	Discretionary	14.4	0.0	1.1	5.1	0.0	0.0	0.0	0.0	6.3
Walla Walla Reinforcement (Tucannon River-Hatwai 115kV)	S		Transmission	Discretionary	6.1	1.2	1.2	5.7	5.9	4.3	2.0	0.0	20.3
Ross Complex: HMEM Garage	T		Facilities	Discretionary	-1.0	0.0	0.0	7.8	14.5	0.0	0.0	0.0	22.3
Ross Complex Infill Office	U		Facilities	Discretionary	-1.0	0.0	0.0	0.0	0.0	33.3	17.9	0.0	51.3
Billing Information System Upgrade	V		IT	Discretionary	-1.0	0.0	0.0	0.0	0.0	8.0	2.0	0.0	10.0
Capability Upgrades for Planning and Operations in PS (CUPO)	W		IT	Discretionary	-1.0	1.5	4.6	4.6	4.6	4.6	0.0	0.0	20.0
Structured Data Management (SDM)	X		IT	Discretionary	-1.1	0.0	0.0	1.1	1.6	0.0	0.0	0.0	2.7
ITSM - CMDB/AIM/ETS	Y		IT	Discretionary	8.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
ITSM-CMS Project	Z		IT	Discretionary	8.9	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3
ITSM - CRM Project	AA		IT	Discretionary	81.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6
Grand Coulee Units 19-21 Uprate 1/	AB		Federal Hydro	Discretionary	1.9	0.9	2.2	2.6	2.3	5.4	20.0	389.3	422.5
NWPP SCED Initiative - BPA Technology Enhancements	AC		IT	Discretionary	-1.0	0.9	0.9	2.1	4.3	0.4	0.0	0.0	8.5
Subtotal						59.2	79.3	135.5	145.1	293.8	274.6	572.2	1,559.7
Total Prioritized Portfolio						73.2	155.8	166.6	146.6	293.8	274.6	572.2	1,682.8
Investments Green Lit						26.2	96.3	46.8	10.6	5.4	20.0	389.3	594.5
Other Nominated Investments						47.0	59.5	119.8	136.1	288.5	254.6	183.0	1,088.3
Total Investments In Play						73.2	155.8	166.6	146.6	293.8	274.6	572.2	1,682.8

1/ Costs for GCL Units 19-21 Uprate shown on this table include the full costs of the investment. Only \$126,000 of the total shown is associated with expansion capital; the remainder is classified as sustain capital and expense.

What are the ingredients of NEBR and the Net BPA Cash Flow metrics?

$$\text{Net Economic Benefit Ratio} = \frac{\text{PV Economic Benefits} - \text{PV Project Investment} - \text{PV Post-Project Costs}}{\text{PV Project Investment}}$$

“Bang for the buck” ratio

“PV Economic Benefits” includes the present value of (examples):

- Avoided congestion costs (avoided fuel and other production costs that are enabled by adding capacity on constrained transmission paths)
- Avoided power purchase costs or increased power sales
- Incremental revenue (i.e., revenue beyond that needed to recover project investment and post project costs)
- Labor cost savings through process efficiencies
- Avoided customer value losses from outages
- Avoided CO2 or other environmental costs (monetized)

“PV Project Investment” includes the present value of:

- Upfront project costs (project planning, environmental review (NEPA), land/land rights acquisition, procurement, construction/installation)

“PV Post-Project Costs” includes the present value of:

- Maintenance and operations costs that would be incurred to sustain the asset after it is in service, e.g., maintenance, repairs, component replacements, monitoring, licensing (IT), other support

The Net BPA Cash Flow metric is constructed in the same way, but it only counts the costs and benefits that would impact BPA cash

Financial Disclosure

This information has been made publicly available by BPA on October 30, 2014 and contains information not reported in agency financial statements.