

# Federal Hydro Workshop Follow-ups

## 3<sup>rd</sup> Powerplant Expected Generation from G19-21 Unit Uprate and Modernization

Modeling results for the proposed work indicate that turbine efficiency improvements and 80 MW of additional capacity per unit will result in an incremental generation of 388 GWh (44 aMW). The P5 (low) and P95 (high) estimates from the modeling are 292 GWh (33 aMW) and 476 GWh (54 aMW) respectively.

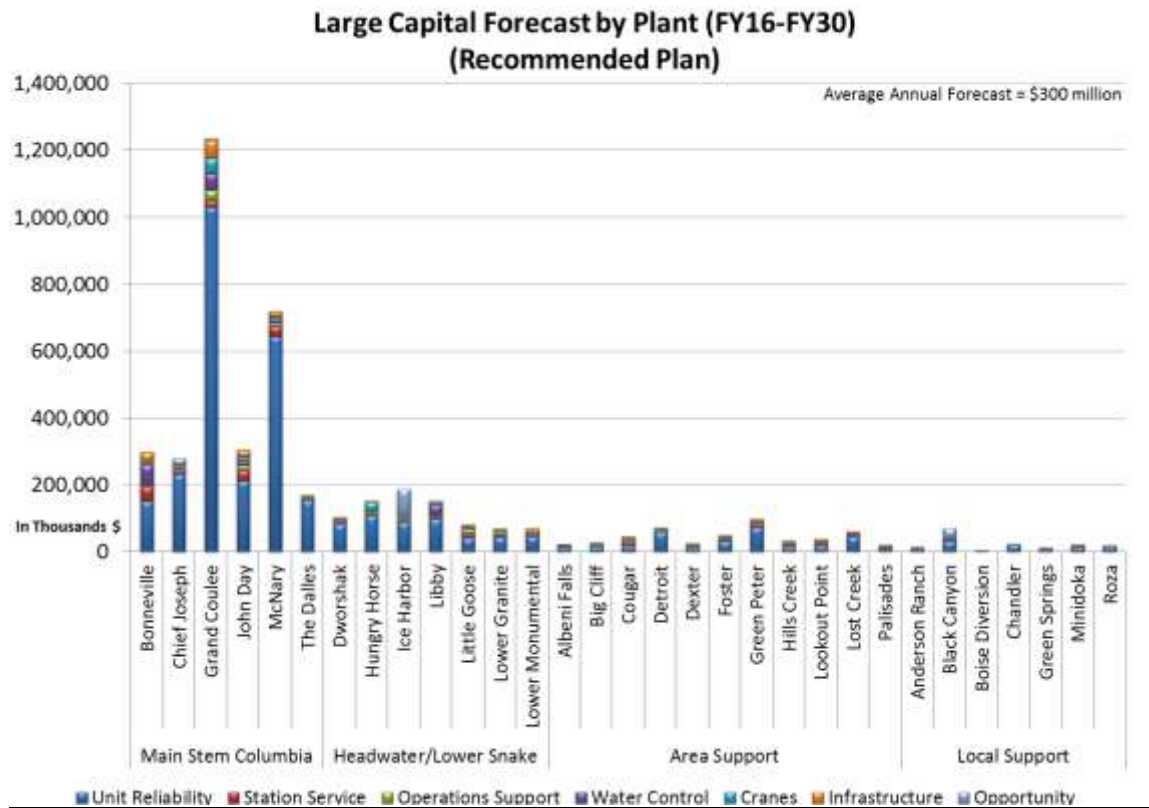
It should be noted that the current Asset Plan and this IPR/CIR include the uprate scenarios, but the final decisions on whether to uprate have not yet been made and will be determined by an evaluation of the business case and associated NEPA (and other environmental compliance requirements) if proposing to proceed. Based on condition and criticality Units 19-21 are clearly high priority for modernization with or without an uprate.

## Further Review of Work Papers/Documentation on Modeling:

Additional information can be found in the 2017-2030 Hydro Asset Strategy available on the [2016 IPR webpage](#).

## Breakdown of Projects by Cost:

The chart below, also available in the [2017-2030 Hydro Asset Strategy](#) on page 88, illustrates the total capital investment by Equipment Category as proposed by the Asset Strategy at each plant between FY 2016 and FY 2030. Additionally, a list of planned projects and their current planning or execution stage is listed in Appendix A of the Hydro Asset Strategy.



This information was made publicly available on July 8, 2016, and contains information not sourced directly from BPA financial statements.

## Large Capital Forecast by Plant (\$000s)

Strategic Class	Project Name	Unit Reliabil	Station Serv	Operations	Water Contr	Cranes	Infrastructur	Opportunity	Grand Total
Main Stem Columbia	Bonneville	152,288	43,530	4,818	60,189	7,152	30,003	30	298,010
	Chief Joseph	232,387	13,718	2,543	734	5,027	3,419	22,811	280,639
	Grand Coulee	1,030,732	19,337	30,232	48,644	48,343	53,038	7,632	1,237,958
	John Day	211,212	31,390	15,585	14,370	11,012	22,045	35	305,649
	McNary	642,600	31,998	8,843	13,241	6,040	16,211	235	719,168
	The Dalles	153,317	4,045	6,109	-	3,975	3,335	-	170,780
<b>Main Stem Columbia Total</b>		<b>2,422,537</b>	<b>144,017</b>	<b>68,129</b>	<b>137,178</b>	<b>81,550</b>	<b>128,051</b>	<b>30,742</b>	<b>3,012,204</b>
Headwater/Lower Snake	Dworshak	81,941	-	4,998	11,011	-	6,870	-	104,821
	Hungry Horse	108,212	5,264	7,831	863	27,420	5,021	-	154,611
	Ice Harbor	88,421	3,253	5,286	1,590	6,692	4,361	77,079	186,683
	Libby	98,640	5,070	4,913	31,706	8,829	4,563	-	153,722
	Little Goose	42,487	10,352	14,459	5,702	3,138	5,671	-	81,808
	Lower Granite	43,765	8,785	7,984	-	6,628	4,030	-	71,193
	Lower Monumental	46,173	10,818	10,234	550	1,450	1,256	-	70,481
<b>Headwater/Lower Snake Total</b>		<b>509,640</b>	<b>43,542</b>	<b>55,705</b>	<b>51,423</b>	<b>54,158</b>	<b>31,772</b>	<b>77,079</b>	<b>823,318</b>
Area Support	Albeni Falls	13,611	5,813	882	500	2,724	-	-	23,530
	Big Cliff	14,768	580	4,369	1,160	5,088	255	-	26,221
	Cougar	19,378	12,865	7,314	4,083	692	1,318	-	45,650
	Detroit	57,999	343	6,928	3,317	1,639	550	-	70,777
	Dexter	12,640	1,061	5,462	1,650	727	5,214	-	26,754
	Foster	32,476	6,055	3,149	-	4,460	4,958	-	51,099
	Green Peter	73,591	12,204	1,893	271	5,066	6,549	-	99,574
	Hills Creek	18,435	6,177	5,654	188	640	2,180	-	33,274
	Lookout Point	19,541	6,370	2,375	884	1,933	7,143	-	38,246
	Lost Creek	46,253	7,166	1,352	3,093	-	2,936	-	60,800
	Palisades	7,265	1,627	1,835	4,396	181	3,532	2,703	21,538
	<b>Area Support Total</b>		<b>315,956</b>	<b>60,261</b>	<b>41,213</b>	<b>19,544</b>	<b>23,149</b>	<b>34,637</b>	<b>2,703</b>
Local Support	Anderson Ranch	9,346	2,302	213	298	-	-	-	12,160
	Black Canyon	33,058	2,089	187	3,392	-	1,090	30,674	70,490
	Boise Diversion	2,451	536	4	1,468	-	-	-	4,459
	Chandler	21,555	258	11	-	-	-	-	21,825
	Green Springs	9,988	298	74	3,153	-	-	-	13,512
	Minidoka	15,520	1,093	1,674	229	706	2,958	-	22,180
	Roza	17,795	1,767	-	-	-	-	-	19,563
<b>Local Support Total</b>		<b>109,714</b>	<b>8,342</b>	<b>2,164</b>	<b>8,540</b>	<b>706</b>	<b>4,049</b>	<b>30,674</b>	<b>164,189</b>
<b>Grand Total</b>		<b>3,357,847</b>	<b>256,162</b>	<b>167,211</b>	<b>216,685</b>	<b>159,562</b>	<b>198,509</b>	<b>141,198</b>	<b>4,497,174</b>

### Critical Water Assumptions on Slide 17:

The models generating this chart are geared toward long-term asset planning and the impacts of investment over long term horizons, hence the use of average water.

### Fish Costs by Dam:

Although a complete breakdown in fish O&M expenses by dam is not yet available for 2018-2019, below is a table showing actual fish & wildlife expenses at Corps projects in fiscal year 2015. These expenses represent only that portion of the Corps' program that is associated with the power purposes of the hydro projects and are direct funded by BPA. These costs do not contain spending which is funded by appropriations for the various non-power purposes (e.g. navigation, recreation, irrigation). The distribution of costs among dams is representative and does not typically vary significantly from year to year. These expenses include O&M costs for Fish Passage, Hatcheries, Trap & Transport, Program Management, Research, Resident Fish, Water Quality, and Wildlife.

#### Fish & Wildlife O&M Expenses by Dam

Project	FY2015 Expenses
John Day	\$8,192,738
Bonneville	\$6,068,214
Lower Granite	\$4,859,606
Dworshak	\$4,592,654
McNary	\$4,005,235
Little Goose	\$3,320,625
Lower Monumental	\$2,801,907
Ice Harbor	\$2,427,214
The Dalles	\$1,980,931
Lookout Point/Dexter	\$1,974,860
Detroit/Big Cliff	\$1,533,209
Chief Joseph	\$851,736
Libby	\$695,232
Green Peter/Foster	\$686,244
Albeni Falls	\$558,144
Cougar	\$315,296
Lost Creek	\$158,220
Hills Creek	\$77,614

Grand Total	<b>\$45,099,680</b>
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