

RHWM Process Workshop

BP-20 Rate Period – Preliminary Outputs

Rates Hearing Room

May 9, 2018

Call in number: (517) 966-9295 Passcode: 3838471#

WebEx: [join the meeting](#)

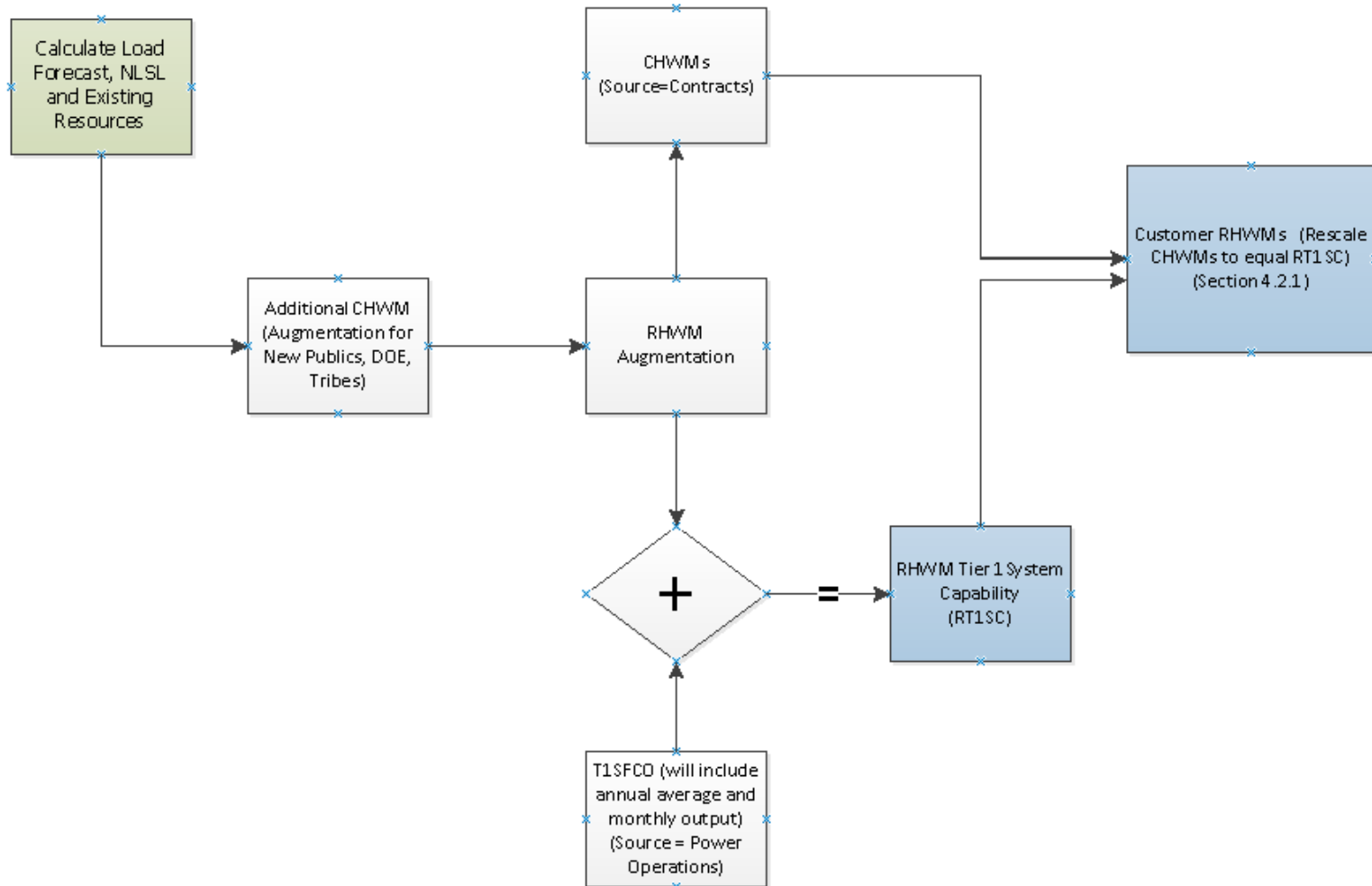
Meeting Number: 904 328 716 Meeting Password: GMsmEaPU



RHWM Process Workshop Agenda

Topic	Presenter
Introductions and Purpose of Workshop	Lindsay Bleifuss
Load Forecast Update	Glen Booth
Tier 1 System Firm Critical Output (T1SFCO):	
• Hydro Study Results	Peggy Racht
• T1SFCO Study Results	Steve Bellcoff
RHWM Augmentation	Lindsay Bleifuss
T1SFCO Discussion	Garry Thompson
Other Topics	All
Next Steps	Lindsay Bleifuss

RHWM Process*



*For more details about the Rate Period High Water Mark (RHWM) process and calculations, please refer to section 4.2.1 of the Tiered Rate Methodology (TRM)

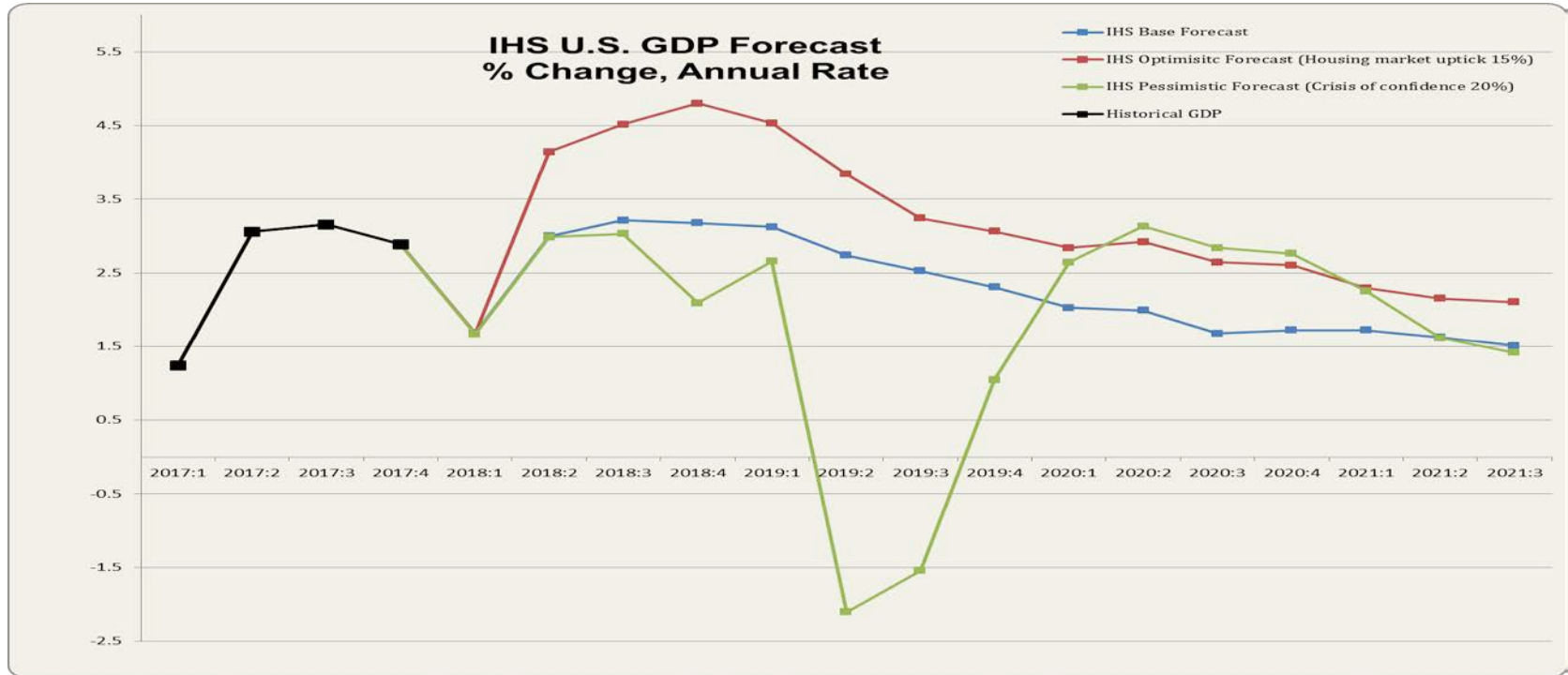
Load Forecast Update for BP-20 RHWM Process



Load Forecast Agenda

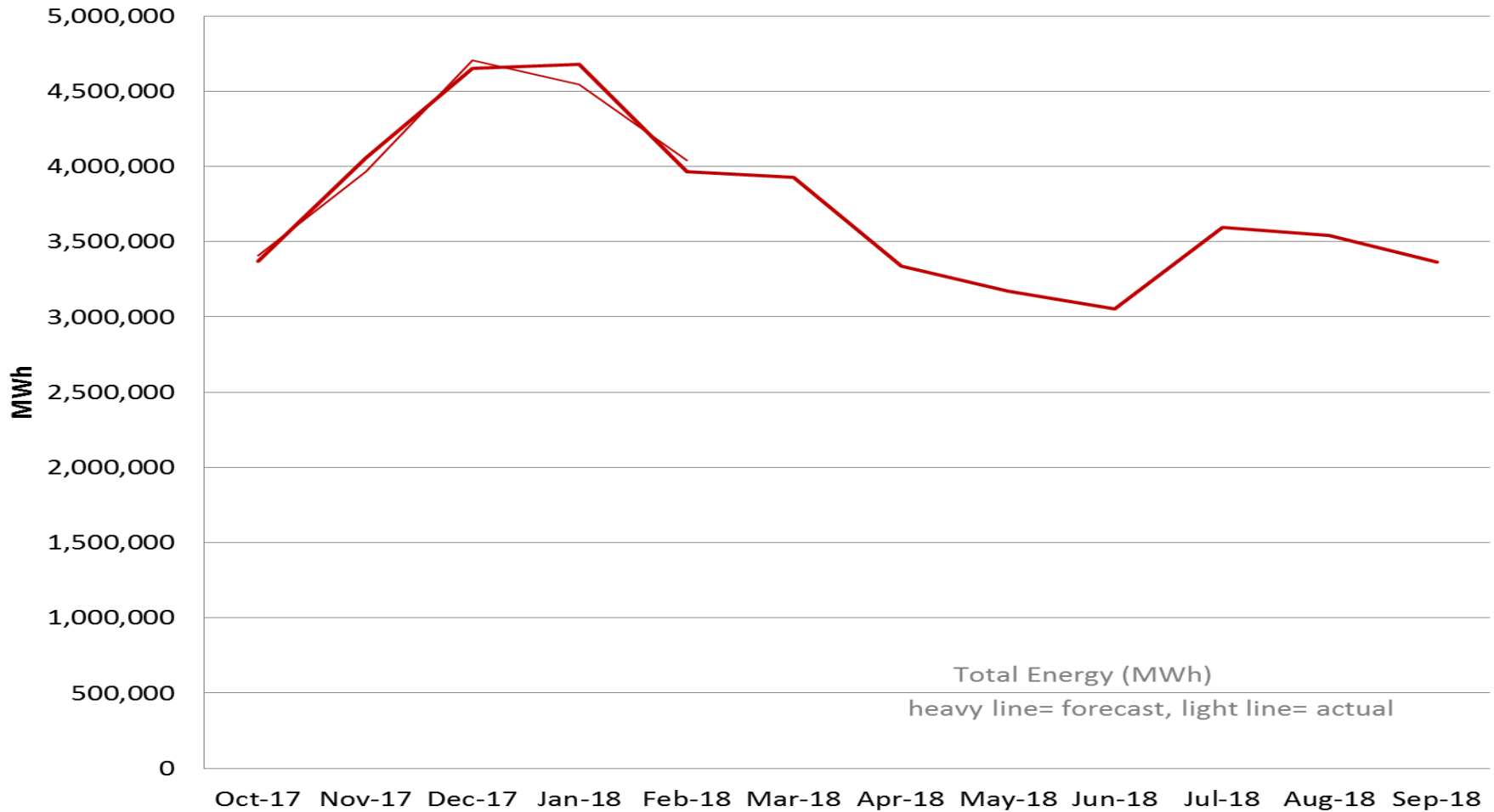
- Review economic conditions
- Review current model performance
- New forecast quantities
- Changes suggested
 - Principles guiding changes
 - Changes by subject
- Next steps

Forecasted Economic Conditions Continue from Last Year



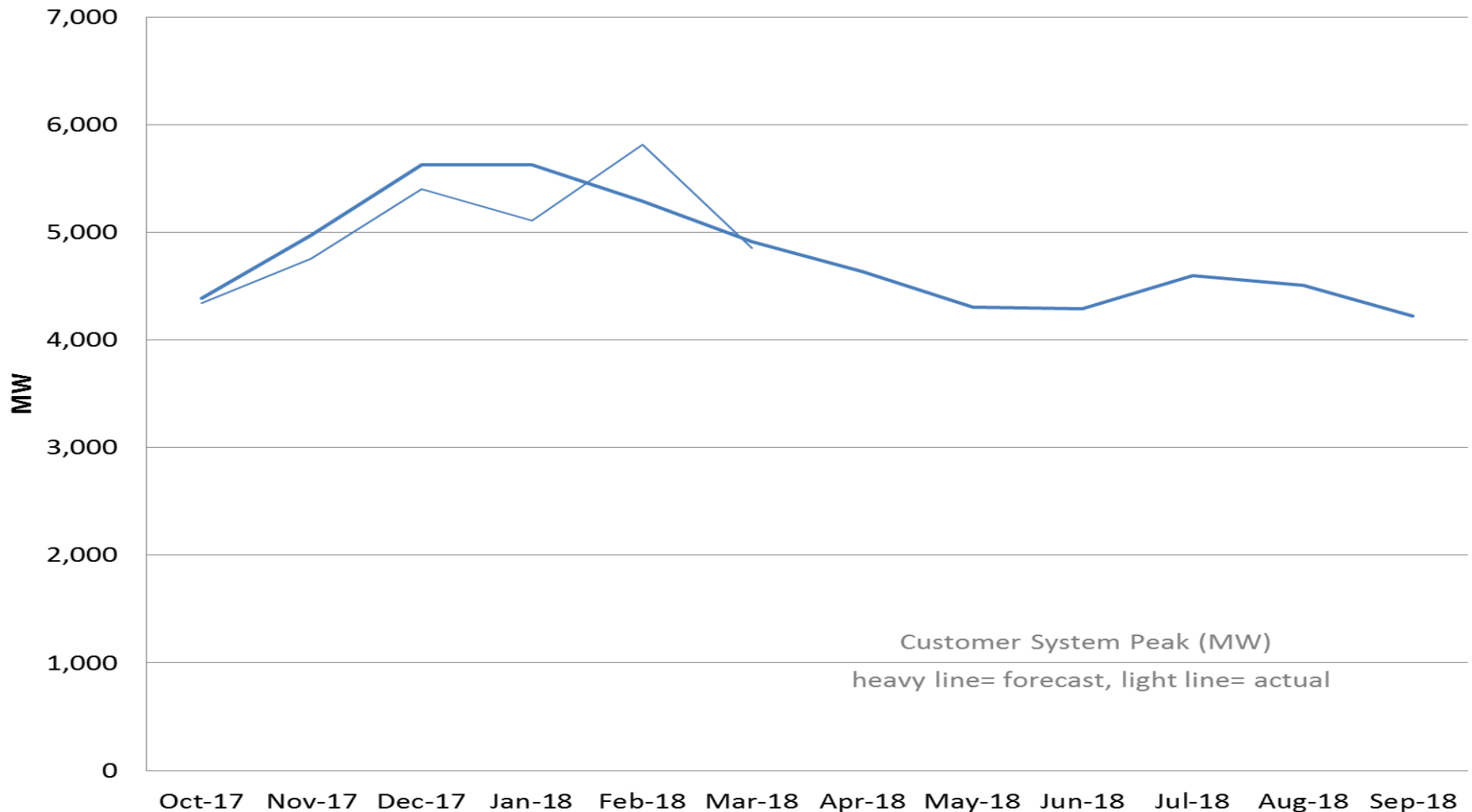
- Positive GDP growth is still expected for the nation
- Regional unemployment has improved slightly
- Load continues small growth
- World economic concerns continue

Current Models - Energy



- Forecasted energy is performing very well

Current Models - Peaks



- Demand models are performing well after compensating for the ups and downs of the weather.

Forecasted Agency Loads Continue to Decline

	Mwa				
	2018	2019	2020	2021	2022
Prior Forecast (April 2017)	9,133	9,248	9,441	9,598	9,732
Current Forecast (April 2018)	8,974	9,171	9,272	9,514	9,711
change	-159	-77	-169	-84	-21
% change	-1.7%	-0.8%	-1.8%	-0.9%	-0.2%

- ~55% of the customers increased forecast over last year levels, ~ 45% reduced forecasts
 - Average change about 1 aMW per customer
- Bulk of changes are coming from a few large customers.

Guidelines for Load Forecast Updates

Principles Guiding changes

- Avoid subjective bias in results
 - Make changes with a clearly identifiable cause and effect.
 - Avoid making changes within the tolerance of model errors, i.e. changes less than 5%.
 - Rely on models and results put together when consequences are not immediately pending.
- Avoid forcing the models to give specific answers
 - Rely on statistics of models
 - Rely on accuracy of models and improve when results are not within accuracy tolerance levels.
 - Avoid updating without sufficient new data
- Incorporate highly probably information
 - Include new loads/projects that have higher than 70% probability of occurring.

Load Forecast Next Steps

- Customers provide notice of additional changes - ASAP, please.
- Submit forecast change request (including cause and amount) on BPA.gov comment page.
- Forecaster to review and include necessary changes by June 10, 2018
- Communicate changes to be incorporated by June 20, 2018
- Deliver updated data for continued processing by July 1, 2018

Hydro Study Results and T1SFCO



Hydro Study General Updates

Pacific Northwest Coordination Agreement (PNCA) Project Data

- Update based on 2018 PNCA data, with an additional pumping update that will be part of next year's PNCA data. These updates include:
 - Grand Coulee net pumping estimates
 - BP18 Final Proposal included refinement of H/K data tables for several projects

Canadian Operations

- Update based on the 2022 Assured Operating Plan (AOP22) completed under the Columbia River Treaty. AOP22 provides the same Canadian Operation for FY20 – FY24.

Project Outages

- Update based on the latest long term maintenance and capital program forecasts from PGAF.

Reserves

- Update FCRPS reserve assumptions using most current information.

Loads

- Update based on latest load forecasts.

Spill Updates

Spring Spill season based on Block Spill Design

- Applies a four week 'gas cap spill block' at each of the eight fish passage dams
- When not in gas cap spill, Performance Standard Spill applies
- FY20 applies gas cap spill later in spring season, FY21 applies gas cap spill earlier in spring season

Summer Spill season

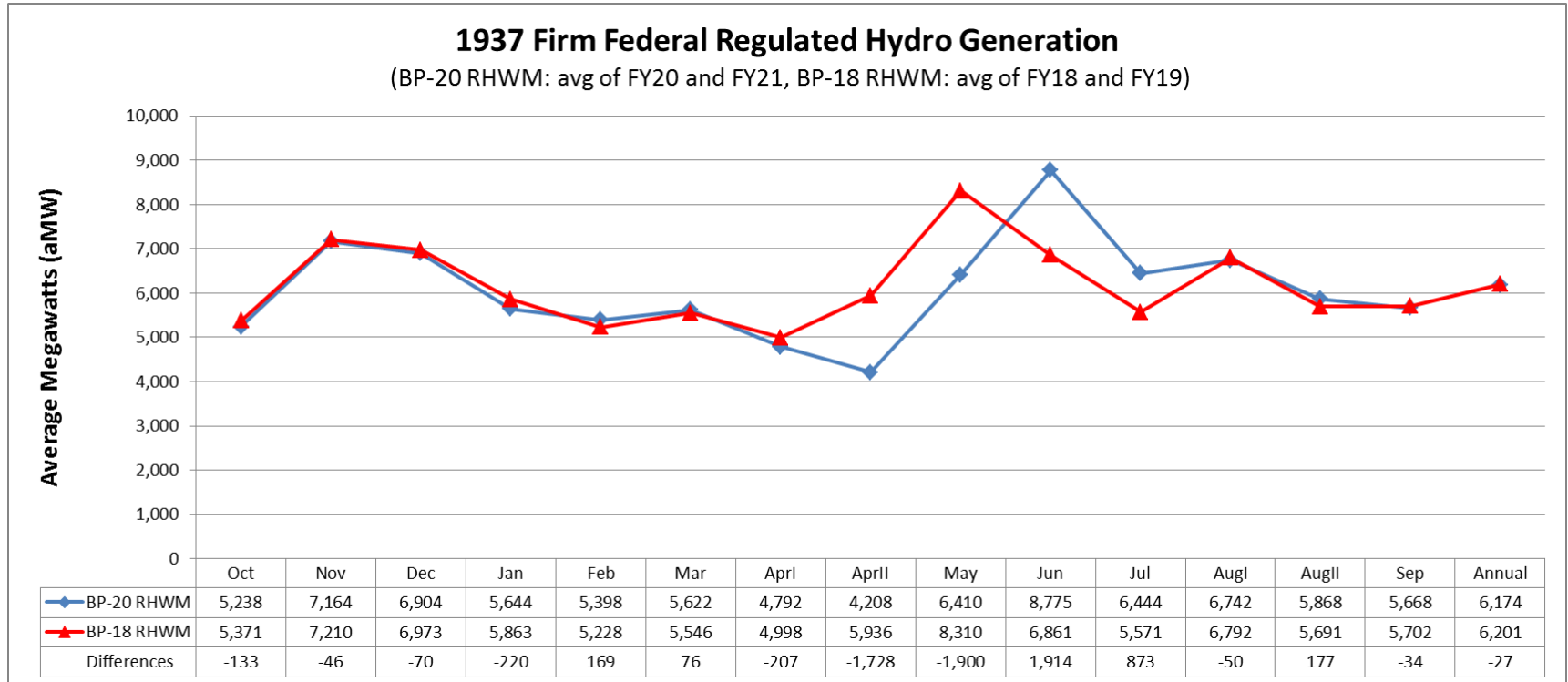
- Change the August spill curtailment dates as specified by PG Fish Operations
 - Lower Granite: August 18th (previously August 14th)
 - Little Goose: August 21st (previously August 20th)
 - Lower Monumental: August 6th (previously August 22nd)
 - Ice Harbor: August 6th (previously August 23rd)
- Update spill operations based on Performance Standards

Spill Cap Update

- CRSO Water Quality Team developed an updated set of spill caps for the fish passage projects, and PGPO added several refinements for Rate Case use as informed by historical data.

➡ Overall, the Spring Spill Block Design significantly increases Spring spill, running to Performance Standards changes spill slightly, changes in the August spill curtailment dates generally decrease Summer spill, and spill cap updates generally increase spill

Firm Hydro Comparison to BP-18 RHW



- The loss of 27 aMW in annual Federal Hydro generation was due to a combined loss of 108 aMW from the spill assumption changes, a gain of around 35 aMW from increased outflows from a new Canadian Operation, and a net gain of around 46 aMW from H/K updates and several project operational changes

(-27 aMW = -108 aMW + 35 aMW + 46 aMW)

Preliminary Federal Tier 1 System Firm Critical Output Summary

**Federal Tier 1 System Firm Critical Output Projection - 2-Year Average
2020 RHW M Process for BP-20 Rate Period
S151-RC-20180425-122530**

		A	B	C
1.	T1SFCO Projections Energy in aMW	2020	2021	Average
2.	Total Federal System Hydro Generation (<i>TRM Table 3.1</i>)	6,543	6,593	6,568
3.	Total Designated Non-Federally Owned Resources (<i>TRM Table 3.2</i>)	1,165	1,039	1,102
4.	Total Designated BPA Contract Purchases (<i>TRM Table 3.3</i>)	138	138	138
5.	Total Designated System Obligations (<i>TRM Table 3.4</i>)	-859	-844	-852
6.	Federal Tier 1 System Firm Critical Output (sum of Lines 2-5)	6,986	6,926	6,956

T1SFCO Difference Preliminary RHWM for BP-20 Rate Period and BP-18 Final RHWM

T1SFCO 2-Year Average Comparison (Energy in aMW)	RHWM Process for BP-20 Rate Period (FY 2020-21)	RHWM Process for BP-18 Rate Period (FY 2018-19)	Difference 2-Year Average	Component Details
T1SFCO Resource Differences				
1. Total Federal System Hydro Generation (TRM Table 3.1)	6,568	6,587	-19	Hydro generation forecasts were reduced due to the following: <ul style="list-style-type: none"> ● Spill Assumption Changes (Block Spill operations (-108 aMW)) ● Changes to Canadian Operations resulting in increased outflows (+35 aMW) ● H/K updates and individual project operational changes (+47 aMW) ● Independent hydro forecast updates (+8 aMW)
2. Total Designated Non Federally Owned Resources (TRM Table 3.2)	1,102	1,067	34	Non Federally owned resource changes: <ul style="list-style-type: none"> ● Columbia Generating Station (+36 aMW) ● Foote Creek iV contract acquisition expires 10/1/2020 (-2 aMW)
3. Total Designated BPA Contract Purchases (TRM Table 3.3)	138	137	0	
T1SFCO Load/Obligation Differences				
4. Total Designated System Obligations (TRM Table 3.4)	-852	-913	61	Contract purchase changes: <ul style="list-style-type: none"> ● BPA/USBR Obligations (-4 aMW) ● BPA/BCHA Canadian Entitlement Return (-19 aMW) ● BPA/AVWP WNP3 Settlement (-44 aMW) ● Slice Transmission loss Returns (+5 aMW)
5. Federal Tier 1 System Firm Critical Output (2-year average)	6,956	6,879	77	

RHWM Augmentation



RHWM Augmentation

BESID	Preference Customer	CHWM 2018	Portion of CHWM which was additional through BP-18	TRL 2021	Additional CHWM 2020	Total Additional	2020 CHWM
10426	U.S. DOE Richland Operations Office	31.768	11.475	37.913	6.150	17.625	37.913
10482	Umpqua Indian Utility Cooperative	4.175	1.375	2.698	0.000	1.375	4.175
10502	Yakama Power	18.986	5.490	18.963	0.000	5.490	18.986
13927	Kalispel	4.134	1.240	4.114	0.000	1.240	4.134
12026	Jefferson County PUD #1	45.847				45.847	45.847

T1SFCO	6955.973
RHWM Augmentation	71.577
RT1SC	7027.550

T1SFCO Change Over Time

- Changes to the T1SFCO in each Rate Period add uncertainty to resulting RHWMs and rates.

Rate Period	T1SFCO (aMW)	Delta from Previous RHW Process
BP-12	7135	N/A
BP-14	7059	-76
BP-16	6924	-135
BP-18	6879	-45
BP-20*	6956	77

*Preliminary T1SFCO amount

Stabilize the T1SFCO

- Propose an Improvement revision to the TRM to stabilize the T1SFCO
 - Creates long-term certainty
 - Reduces T1SFCO volatility
 - Helps stabilize rates
 - Simplifies RHWM Process

- Possible options for stabilizing the T1SFCO:
 - Floor of 7000 aMW
 - Hold BP-20 T1SFCO constant
 - Others?

- Before proposing in a 7i Process, a TRM Improvement revision requires an approval vote of 1) at least 70% of Customers (utility count) and 2) at least 50% of the sum of the CHWMs

Next Steps

- Public comment period May 10 - 24, 2018. Please submit comments (including load forecast change requests) on BPA's public comment page:
<https://www.bpa.gov/applications/publiccomments/OpenCommentListing.aspx>
- RHWM preliminary outputs are posted on the RHWM website:
<https://www.bpa.gov/Finance/RateCases/RHWM/Pages/FY-2020-21.aspx>
- June 27, 2018 public workshop tentatively scheduled to address customer concerns raised in the public comment period.
- August 1, 2018 public workshop to present draft final RHWM outputs

Questions?

Appendix

RHWM Timeline

Action	FY18 Timing
<i>PRELIMINARY PROCESS BEGINS</i>	
Public workshop - Present preliminary RHWM process outputs (T1SFCO, RHWM, and Above-RHWM Loads)	May 9 (Wednesday)
Public comment period will run for two weeks following the public workshop (on BPA comment page)	May 10 (Thursday) - May 24 (Thursday)
Second public workshop before official process begins (if necessary)	June 27 (Wednesday)
Calculate draft final RHWM process outputs	July
<i>FORMAL PROCESS BEGINS</i>	
Public workshop - Present draft final RHWM process outputs (T1SFCO, RHWM, and Above-RHWM Loads)	August 1 (Wednesday)
Draft final RHWM process outputs published	August 1 (Wednesday)
Public comment period will be run for 10 business days following the public workshop (on BPA comment page)	August 2 (Thursday) - August 15 (Wednesday)
Deadline for written preservation of right to dispute	August 6 (Monday)
Republish RHWM process outputs (if changes made due to public comments)	August 30 (Thursday)
Deadline for dispute notice	September 10 (Monday)
Publish final RHWM process outputs	September 28 (Friday)

Final RHWM outputs will be published on September 30th assuming there is no dispute

Federal System Hydro Generation Used in T1SFCO Calculation

Federal System Hydro Generation for use in the T1SFCO Calculation
2020 RHW Process for BP-20 Rate Period
TRM Table 3.1
 S151-RC-20180425-122530

		A	B	C
1.	Regulated Hydro	2020	2021	Average
2.	Albeni Falls	22.4	24.1	23.2
3.	Bonneville	385.3	389.1	387.2
4.	Chief Joseph	1,124.0	1,124.7	1,124.4
5.	Dworshak	140.0	138.5	139.2
6.	Grand Coulee	1,969.5	1,970.6	1,970.0
7.	Hungry Horse	81.3	81.3	81.3
8.	Ice Harbor	134.9	142.7	138.8
9.	John Day	736.6	748.4	742.5
10.	Libby	184.1	184.3	184.2
11.	Little Goose	146.4	147.8	147.1
12.	Lower Granite	125.7	142.0	133.8
13.	Lower Monumental	142.4	142.4	142.4
14.	McNary	430.7	431.3	431.0
15.	The Dalles	572.0	577.6	574.8

Federal System Hydro Generation Used in T1SFCO Calculation *(continued)*

Federal System Hydro Generation for use in the T1SFCO Calculation
2020 RHWM Process for BP-20 Rate Period
TRM Table 3.1
S151-RC-20180425-122530

		A	B	C
16.	Independent Hydro	2020	2021	Average
17.	Anderson Ranch	12.2	12.2	12.2
18.	Big Cliff	10.0	10.0	10.0
19.	Black Canyon	6.2	6.2	6.2
20.	Boise River Diversion	1.2	1.2	1.2
21.	Chandler	6.1	6.1	6.1
22.	Cougar	19.0	19.1	19.1
23.	Cowlitz Falls	26.5	26.5	26.5
24.	Detroit	41.7	41.8	41.8
25.	Dexter	9.3	9.3	9.3
26.	Foster	12.3	12.4	12.4
27.	Green Peter	27.1	27.2	27.1
28.	Green Springs - USBR	7.3	7.3	7.3
29.	Hills Creek	17.9	17.9	17.9
30.	Idaho Falls - City Plant (expires 9/30/2016)			
31.	Idaho Falls - Lower Plants #1 & #2 (expires 9/30/2016)			
32.	Idaho Falls - Upper Plant (expires 9/30/2016)			
33.	Lookout Point	36.1	36.2	36.1
34.	Lost Creek	30.1	30.1	30.1
35.	Minidoka	10.7	10.7	10.7
36.	Palisades	67.3	67.4	67.4
37.	Roza	6.9	6.9	6.9
38.	Total Tier 1 Federal System Hydro Generation	6,543.2	6,593.2	6,568.2

Designated Non-Federally Owned Resources Used in T1SFCO Calculation

**Designated Non-Federally Owned Resources for use in the T1SFCO Calculation
2020 RHWM Process for BP-20 Rate Period
TRM Table 3.2
S151-RC-20180425-122530**

		A	B	C
1.	Project	2020	2021	Average
2.	Ashland Solar Project (<i>expires 5/31/2020</i>)	0.0	0.0	0.0
3.	Columbia Generating Station	1,116.0	993.7	1,054.8
4.	Condon Wind Project (<i>expires 9/30/2022</i>)	11.7	11.7	11.7
5.	Dworshak/Clearwater Small Hydropower	2.6	2.6	2.6
6.	Foote Creek 1 (<i>expires 4/2022</i>)	3.6	3.6	3.6
7.	Foote Creek 2 (<i>expired 2014</i>)			
8.	Foote Creek 4 (<i>Acquisition Expires 10/1/2020</i>)	4.0	0.0	2.0
9.	<i>Fourmile Hill Geothermal (Not included)</i>	0.0	0.0	0.0
10.	<i>Georgia-Pacific Paper (Wauna) (Acquisition Expired 4/5/2016)</i>			
11.	Klondike I (<i>expires 4/2022</i>)	5.6	5.7	5.6
12.	Stateline Wind Project (<i>expires 12/2026</i>)	21.2	21.2	21.2
13.	White Bluffs Solar	0.0	0.0	0.0
14.	Total Designated Non-Federally Owned Resources	1,164.7	1,038.5	1,101.6

Designated BPA Contract Purchases Used in T1SFCO Calculation

Designated BPA Contract Purchases for use in the T1SFCO Calculation 2020 RHWM Process for BP-20 Rate Period TRM Table 3.3

S151-RC-20180425-122530

	A	B	C	D	
1.	Contract Purchases	Contract #	2020	2021	Average
2.	Priest Rapids CER for Canada	97PB-10099	28.6	28.6	28.6
3.	Rock Island #1 CER for Canada	97PB-10102	18.3	18.3	18.3
4.	Rock Reach CER for Canada	97PB-10103	37.7	37.7	37.7
5.	Wanapum CER for Canada	97PB-10100	28.6	28.6	28.6
6.	Wells CER for Canada	97PB-10101	23.4	23.4	23.4
7.	BCHP to BPA PwrS	99PB-22685	1.0	1.0	1.0
8.	BCHP to BPA LCA (<i>settled financially</i>)	99PB-22685			
9.	PASA to BPA Pk Repl (<i>expired 4/30/2015</i>)	94BP-93658			
10.	PASA to BPA S/N/X (<i>expired 4/30/2015</i>)	94BP-93658			
11.	PASA to BPA Xchg Nrg (<i>expired 4/30/2015</i>)	94BP-93658			
12.	RVSD to BPA Pk Repl (<i>expired 4/30/2016</i>)	94BP-93958			
13.	RVSD to BPA Seas Xchg (<i>expired 4/30/2016</i>)	94BP-93958			
14.	RVSD to BPA Xchg Nrg (<i>expired 4/30/2016</i>)	94BP-93958			
15.	PPL to BPA SNX (Spring Return) (<i>expired 6/1/2014</i>)	94BP-94332			
16.	PPL to BPA SPX (Summer Return) (<i>expired 6/1/2014</i>)	94BP-94332			
17.	Total Designated BPA Contract Purchases		137.7	137.7	137.7

Designated BPA System Obligations Used in T1SFCO Calculation

Designated BPA System Obligations for use in the T1SFCO Calculation
2020 RHWM Process for BP-20 Rate Period
TRM Table 3.4 *(Negative numbers indicate obligations)*
 S151-RC-20180425-122530

		A	B	C	D
1.	System Obligation	Contract #	2020	2021	Average
2.	BPA to BRCJ Chief Joseph	14-03-17506; 14-03-49151	-8.8	-8.8	-8.8
3.	BPA to BRCB Columbia Basin Project	Ibp-4512; 14-03-001-12160	-139.2	-139.5	-139.3
4.	BPA to BRCR Crooked River Project	14-03-73152	-0.7	-0.7	-0.7
5.	BPA to BROP Owyhee Project	EW-78-Y-83-00019	-1.5	-1.5	-1.5
6.	BPA to BRRP Rathdrum Prairie Project	14-03-49151	-0.8	-0.8	-0.8
7.	BPA to BRSID Southern Idaho Projects	EW-78-Y-83-00019	-19.8	-19.9	-19.9
8.	BPA to BRSIN Spokane Indian Develop.	14-03-49151	-0.3	-0.3	-0.3
9.	BPA to BRSV Spokane Valley	14-03-63656	-0.7	-0.7	-0.7
10.	BPA to BRTD The Dallas Reclamation Project	14-03-32210	-2.0	-2.0	-2.0
11.	BPA to BRTV Tualatin Project	14-03-49151	-0.8	-0.8	-0.8
12.	BPA to BRUB Umatilla Basin Project	10GS-75345	-2.5	-2.5	-2.5
13.	BPA to BRYK Yakima Project	DE-MS79-88BP92591	-1.8	-1.8	-1.8
14.	BPA to BCHP LCA <i>(settled financially)</i>	99PB-22685	0.0	0.0	0.0
15.	BPA to BCHA Can Ent	99EO-40003	-453.5	-438.9	-446.2
16.	BPA to BCHA NTSA	12PG-10002	-10.7	-11.1	-10.9

Designated BPA System Obligations Used in T1SFCO Calculation *(Continued)*

**Designated BPA System Obligations for use in the T1SFCO Calculation
2020 RHW Process for BP-20 Rate Period
TRM Table 3.4 (Negative numbers indicate obligations)
S151-RC-20180425-122530**

	A	B	C	D	
1.	System Obligation	Contract #	2020	2021	Average
17.	BPA to BHEC 2012PSC (expired 6/30/2017)	97PB-10051			
18.	BPA to PASA C/N/X (expired 4/30/2015)	94BP-93658			
19.	BPA to PASA S/N/X (expired 4/30/2015)	94BP-93658			
20.	BPA to RVSD C/N/X (expired 4/30/2016)	94BP-93958			
21.	BPA to RVSD Seas Xchg (expired 4/30/2016)	94BP-93958			
22.	Federal Intertie Losses (Calculated: 3.0% of Intertie Sales Table 2.12.5 lines 18-21)	n/a	0.0	0.0	0.0
23.	BPA to AVWP WP3 S (expires 6/30/2019)	85BP-92186			
24.	BPA to PPL SNX (Spring Delivery) (expired 6/1/2014)	94BP-94332			
25.	BPA to PPL SPX (Summer Delivery) (expired 6/1/2014)	94BP-94332			
26.	BPA to PSE WP3 S (expired 6/30/2017)	85BP-92185			
27.	BPA to PSE Upper Baker 2	09PB-12126	-1.3	-1.3	-1.3
28.	BPAP to BPAT (Dittmer/Substation Service)	09PB-12128	-9.4	-9.4	-9.4
29.	Federal Power Trans. Losses	n/a	-235.7	-233.4	-234.6
30.	Slice Transmission Loss Returns	n/a	30.0	29.7	29.9
31.	Total Designated System Obligations		-859.5	-843.6	-851.5