

NWPP Members' Market Assessment and Coordination Initiative

Transmission Customer Forum 41



NWPP MC Update

- Phase 4 in progress
- Focus on operational enhancements that can bring value to Northwest power and transmission customers
- Phased approach
 - Reduces risk of unintended consequences
 - Promotes sustainable, reliable outcomes
 - Two modules already implemented

MC Drivers and Principles

- Address growing operational and commercial challenges affecting regional power system:
 - reliably and efficiently manage transmission constraints and impacts of variable energy resources
 - efficiently and equitably access regional balancing diversity and capabilities
- Proposed infrastructure upgrades and market-based solutions must meet these objectives while respecting unique attributes of the NWPP MC footprint, including:
 - prevalence of extensive coordinated hydro-thermal generating systems
 - multiple transmission provider environment
 - tightly correlated variable energy resource projects
 - overlapping transmission systems
 - significant market presence of non-jurisdictional entities

NWPP MC Initiative – Phase 3 Results

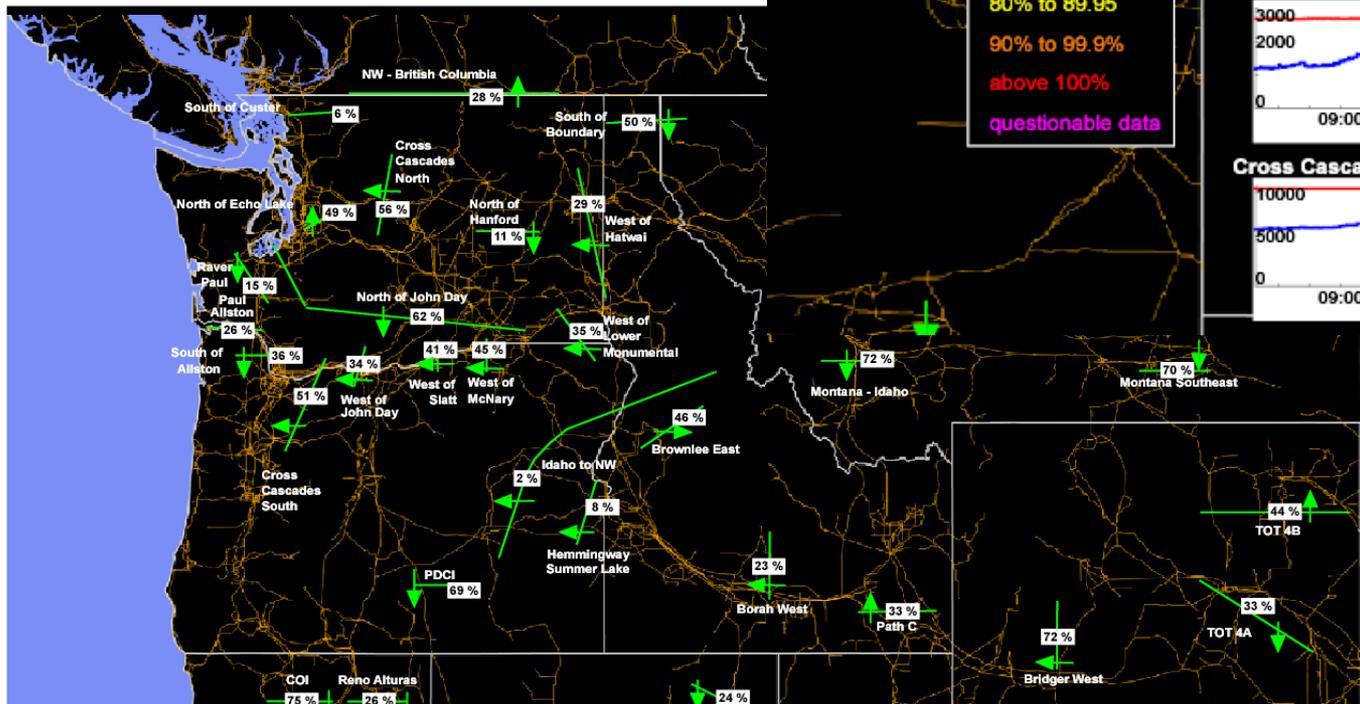
- Operational tools development
 - Implemented regional data sharing consolidation through Peak Reliability
 - Implemented Regional Flow Forecast tool (Version 1.0 beta) in live production environment as of March 31
 - Currently available to reliability entities only
 - Expect to make tool available to merchants at some point in the future (TBD)
 - Testing Resource Monitoring and Deliverability tool in off-line table-tops to support Resource Sufficiency policy efforts
 - Tools will be leveraged by Phase 4 teams to deliver incremental value across platforms

Regional Flow Forecast – Geographic View



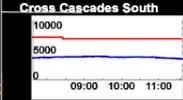
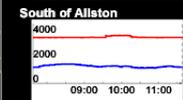
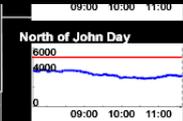
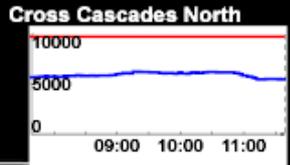
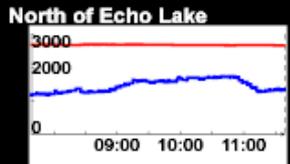
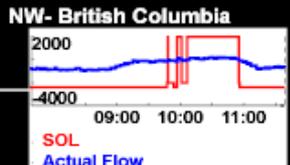
RFF: **Map** | Tabular | Trends RMD: BA Summary | BA Details User Document

- RFF Map
- OH
- OH+1
- OH+2
- OH+3



OH OH+1 OH+2 OH+3

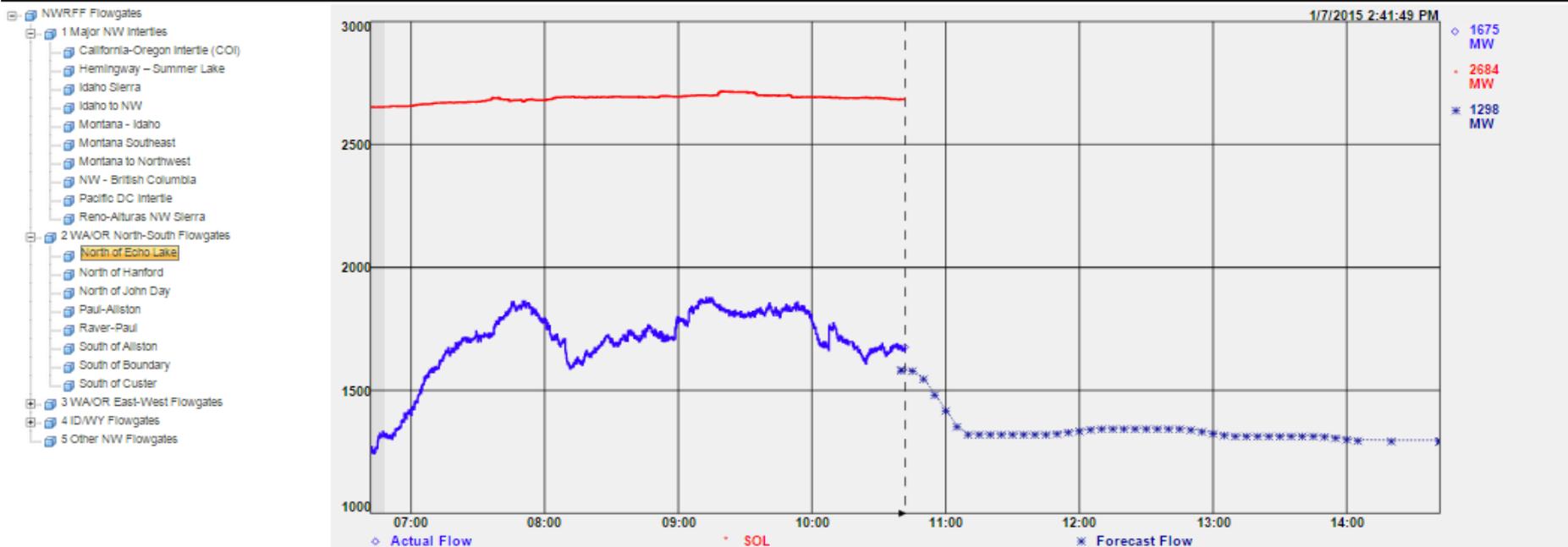
SOL %
 below 80%
 80% to 89.95%
 90% to 99.9%
 above 100%
 questionable data



Regional Flow Forecast – Trend View



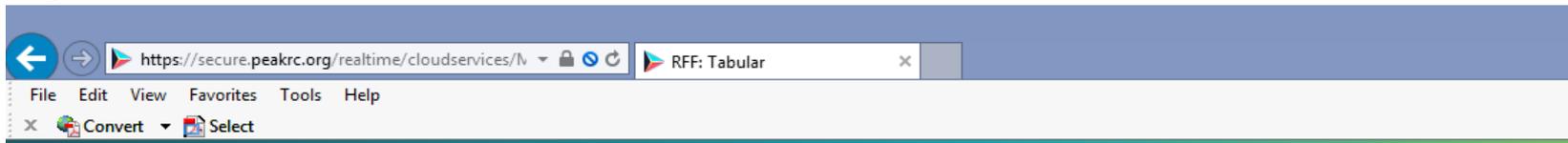
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- NWRFF Flowgates
 - 1 Major NW Interties
 - California-Oregon Intertie (COI)
 - Hemingway – Summer Lake
 - Idaho Sierra
 - Idaho to NW
 - Montana - Idaho
 - Montana Southeast
 - Montana to Northwest
 - NW - British Columbia
 - Pacific DC Intertie
 - Reno-Alturas NW Sierra
 - 2 WA/OR North-South Flowgates
 - North of Echo Lake**
 - North of Hanford
 - North of John Day
 - Paul-Alliston
 - Raver-Paul
 - South of Alliston
 - South of Boundary
 - South of Custer
 - 3 WA/OR East-West Flowgates
 - 4 ID/WY Flowgates
 - 5 Other NW Flowgates

Ⓢ
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Regional Flow Forecast – Tabular View



FILE	OPEN IN EXCEL	DATA	FIND															
				A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	Flowgate					11:15	11:30	11:45	0:00	0:25		XX:15	XX:30	XX:45	XX:60	OH+1	OH+2	OH+3
2		SOL				2557	2557	2557	2557	2557		2,557	2,557	2,557	2,557	2,557	2,557	2,557
3	Borah West	FLOW				1029	1043	1027	1040	812		741	782	738	643	772	712	
4		MARGIN				1,528	1,514	1,530	1,517	1,745		1,816	1,775	1,819	1,656	1,785	1,845	
5	Borah West	FLOW/SOL				40%	41%	40%	41%	32%		29%	31%	29%	26%	30%	28%	
9	Bridger West	FLOW/SOL				96%	95%	95%	94%	67%		63%	64%	64%	60%	64%	63%	
13	Brownlee East	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
17	Path C	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	
21	Tot4A	FLOW/SOL				78%	75%	75%	77%	72%		86%	82%	77%	82%	79%	77%	
25	Tot4B	FLOW/SOL				46%	44%	44%	37%	58%		33%	35%	37%	49%	41%	36%	
29	California-Oregon Intertie	FLOW/SOL				2%	2%	2%	2%	32%		2%	2%	2%	2%	2%	2%	
33	Hemmingway-Summer Lake	FLOW/SOL				96%	95%	95%	94%	67%		63%	64%	64%	60%	64%	63%	
37	Idaho Sierra	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
41	Idaho to NW	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	
45	Montana-Idaho	FLOW/SOL				78%	75%	75%	77%	72%		86%	82%	77%	82%	79%	77%	
49	Montana Southeast	FLOW/SOL				46%	44%	44%	37%	58%		33%	35%	37%	49%	41%	36%	
53	Montana to Northwest	FLOW/SOL				2%	2%	2%	2%	2%		2%	2%	2%	2%	2%	2%	
57	NW - British Columbia	FLOW/SOL				96%	95%	95%	94%	67%		63%	64%	64%	60%	64%	63%	
61	Pacific DC Intertie	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
65	Reno-Alturas NW Sierra	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	
69	Cross Cascades North	FLOW/SOL				2%	2%	2%	2%	32%		2%	2%	2%	2%	2%	2%	
73	Cross Cascades South	FLOW/SOL				96%	95%	95%	94%	67%		63%	64%	64%	60%	64%	63%	
77	West of Hatwai	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
81	West of John Day	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	
85	West of Lower Monumental	FLOW/SOL				78%	75%	75%	77%	72%		86%	82%	77%	82%	79%	77%	
89	West of McNary	FLOW/SOL				46%	44%	44%	37%	58%		33%	35%	37%	49%	41%	36%	
93	West of Slatt	FLOW/SOL				78%	75%	75%	77%	72%		86%	82%	77%	82%	79%	77%	
97	North of Echo Lake	FLOW/SOL				96%	95%	95%	94%	67%		63%	64%	64%	60%	64%	63%	
101	North of Hanford	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
105	North of John Day	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	
109	Paul-Allston	FLOW/SOL				78%	75%	75%	77%	72%		86%	82%	77%	82%	79%	77%	
113	Raver-Paul	FLOW/SOL				46%	44%	44%	37%	58%		33%	35%	37%	49%	41%	36%	
117	South of Allston	FLOW/SOL				30%	29%	29%	29%	42%		36%	37%	40%	30%	36%	37%	
121	South of Boundary	FLOW/SOL				4%	2%	4%	1%	21%		4%	5%	1%	-16%	2%	3%	



NWPP MC Initiative – Phase 3 Results

- Security Constrained Economic Dispatch (SCED) market detail development
- SCED market operator RFP issuance and response review
- Regulatory due diligence activity
- Completed objectives \$1M under budget, which allowed further investment in operational tools for 2015
- Developed path forward (Phase 4) that supports maximizing member and customer value long-term

NWPP MC Phase 4 Activities

- Focus on implementation
 - Regionally tailored to system needs
 - Operations- and market-based modules
 - Modular approach where each incremental step provides value to customers, and cost/benefits assessed at each step
 - Options to be evaluated prior to next-steps commitment
- MC organization in 2015
 - Includes all Phase 3 NWPP MC members except PacifiCorp, Grant County PUD, and Clark County PUD
 - \$2M spending authority committed through December 2015
 - Will explore options for permanent organization to meet MC member needs beyond Phase 4, including funding and board oversight for SCED and operational tools

NWPP MC Major Deliverables

Phase 4 Kickoff – April-May 2015

- Module 1: Regional Flow Forecast Tool
- Module 2: Resource Monitoring and Deliverability Tool
- Module 3: Resource Sufficiency Program to support Modules 4,5,6,8
- Module 4: 15 Minute Economic Dispatch
- Module 5: Regulation Diversity
- Module 6: Balancing Reserves Diversity
- Module 7: TSP/TOP Coordination Opportunities
- Module 8: Security Constrained Economic Dispatch (15-min, 5-min)
- All modules designed to be complementary and lead to a reliable, efficient operations and marketing paradigm for the region

BPA Perspective on NWPP MC Phase 4

- Continued support, funding and staff assignments to internal and external evaluation.
- Regional resource sufficiency metric development and implementation is a key deliverable and positive step for region.
- Committed to exploring and evaluating other modules to assess potential value to customers and the region.
- Continued SCED due diligence in support of Module 8 and organizational structure development.

Questions?

NWPP MC Initiative 2012 and Beyond

- Collaborating to deliver near- and long-term benefits to NWPP MC members and their customers by enhancing the reliability and efficiency of meeting the region's power needs while preserving local decision making now and in the future.

