



SYSTEM OPERATIONAL AND RELIABILITY BENEFITS TOOL ("SBT")

SBT Workgroup – Workshop #1
August 26, 2013
Portland, OR and Salt Lake City, UT



Let's turn the answers on.

Agenda (MT)

- 10:00-10:30 – Welcome / Introductions / Overview
- 10:30-12:00 – Walkthrough PaR and System Optimizer Model

- 12:00 – 12:45 – Lunch

- 12:45 – 2:30 – Detailed Review of SBT Benefit Metrics
 - 1:30-1:45 - Break
- 2:45 – 3:00 – Wrap-Up / Next Steps

SBT Workgroup Participants

Organizations represented:

- Blue Castle Project
- Idaho Public Utilities Commission
- NW Energy Coalition
- Oregon Department of Energy
- Utah Association of Energy Users
- Utah Clean Energy
- Utah Office of Consumer Services
- Utah Division of Public Utilities
- Washington Utilities and Transportation Commission
- Wyoming Industrial Energy Consumers
- Wyoming Public Service Commission, Office of Consumer Advocate

Workgroup “Is” and “Isn’t”

- The SBT workgroup is an opportunity to:
 - Deepen technical understanding of the SBT
 - Provide input to improve and refine SBT metrics
 - Collaborate with the company and stakeholders
- The SBT workgroup is not a forum for:
 - Challenging assumptions or analysis produced in the 2013 Integrated Resource Plan (IRP)
 - Re-running models used in the IRP process
 - Obtaining information beyond the scope necessary for improving the SBT

SBT Benefit Categories

- Seven benefit categories assessed by the SBT:
 - Operational cost savings (economic driven)
 - Improved generation dispatch (reliability driven)

Morning session

 - Segment loss savings (energy and capacity)
 - System reliability benefits
 - Customer and regulatory benefits
 - Avoided capital cost
 - Wheeling revenue opportunity

Afternoon Session
(time permitting)



Rick Link

Director - Pricing / Structuring

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PAR MODEL AND SYSTEM OPTIMIZER OVERVIEW

Overview of IRP Models

	System Optimizer	PaR
Minimize Costs to Meet Load (PacifiCorp System)	Yes	
Simplified Representation of PacifiCorp System (Topology)	Yes	
Resource Expansion Plan	Yes	No
Time-of-Use Periods	Yes	No
Unit Commitment Constraints/Hourly Chronological Dispatch*	No	Yes
Monte Carlo Random Sampling*	No	Yes
Wind Resource Curtailment	No	
Transmission Line Losses	No	
Transmission Line Outages	No	

*Hourly chronological dispatch in PaR is performed for sample weeks. Monte Carlo random sampling is applied to loads, power prices, gas prices, and hydro & thermal unit availability.

Interaction of System Optimizer and PaR with the SBT

- Either System Optimizer or PaR can be used to calculate operational cost savings associated with new transmission
- Change in the PVRR of system costs with and without the new transmission line as represented in the model topology (changes to the resource expansion plan and how resources are used to meet load)
 - System fuel costs
 - System balancing costs
 - System amortized capital costs and fixed O&M
 - Decommissioning
 - FOTs
 - DSM
- For the Segment D SBT analysis, PaR shows the PVRR of operational benefits total \$511m (Case EG2-C07 portfolio as run through PaR using base case natural gas and CO₂ assumptions from the 2013 IRP)
- Primary Limitations
 - Topology (more detail = deterioration in model performance)
 - Model capabilities (transmission outages/losses, wind curtailment)

Improved Generation Dispatch

- Transmission constraints can prevent the Company from dispatching the most economic resources to meet customer needs
- For the Segment D SBT analysis, this metric measures the benefit from avoiding backdown of coal unit production as well as curtailment of wind plant production when transmission constraints are relaxed with new line
 - Hourly simulation of load and resource balance behind constraints
 - Random draw of thermal outages and wind generation around expected values
 - No transmission outages or de-rates
 - 85% of oversupply volume assigned to coal (gross margin benefit)
 - 15% of oversupply volume assigned to wind (gross margin benefit)
- Based on these assumptions, the improved generation dispatch benefit totals approximately \$39m



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SBT BENEFIT METRICS DETAILED REVIEW

SBT Benefit Metrics

- Segment line loss savings – energy
 - [Segment Line Loss Savings Energy Spreadsheet](#)
 - [Segment Line Loss Savings Energy Workpaper](#)
- Segment line loss savings – capacity
 - [Segment Line Loss Savings Capacity Spreadsheet](#)
- System reliability benefits
 - [System Reliability Benefit Spreadsheet](#)
 - [System Reliability Benefits Workpaper](#)

SBT Benefit Metrics

- Customer and regulatory benefits
 - [Customer and Regulatory Benefit Spreadsheet](#)
- Avoided capital cost
 - [Avoided Capital Spreadsheet](#)
- Wheeling revenue opportunity
 - [Wheeling Revenue Spreadsheet](#)

Next Steps

- Email suggestions for SBT workgroup areas of focus for Workshop #2 by September 3rd
 - Email: TransmissionSBT@PacifiCorp.com
- Doodle poll to be conducted for date of September meeting