TBL Business Practices Technical Forum V

TBL Wind Team Update

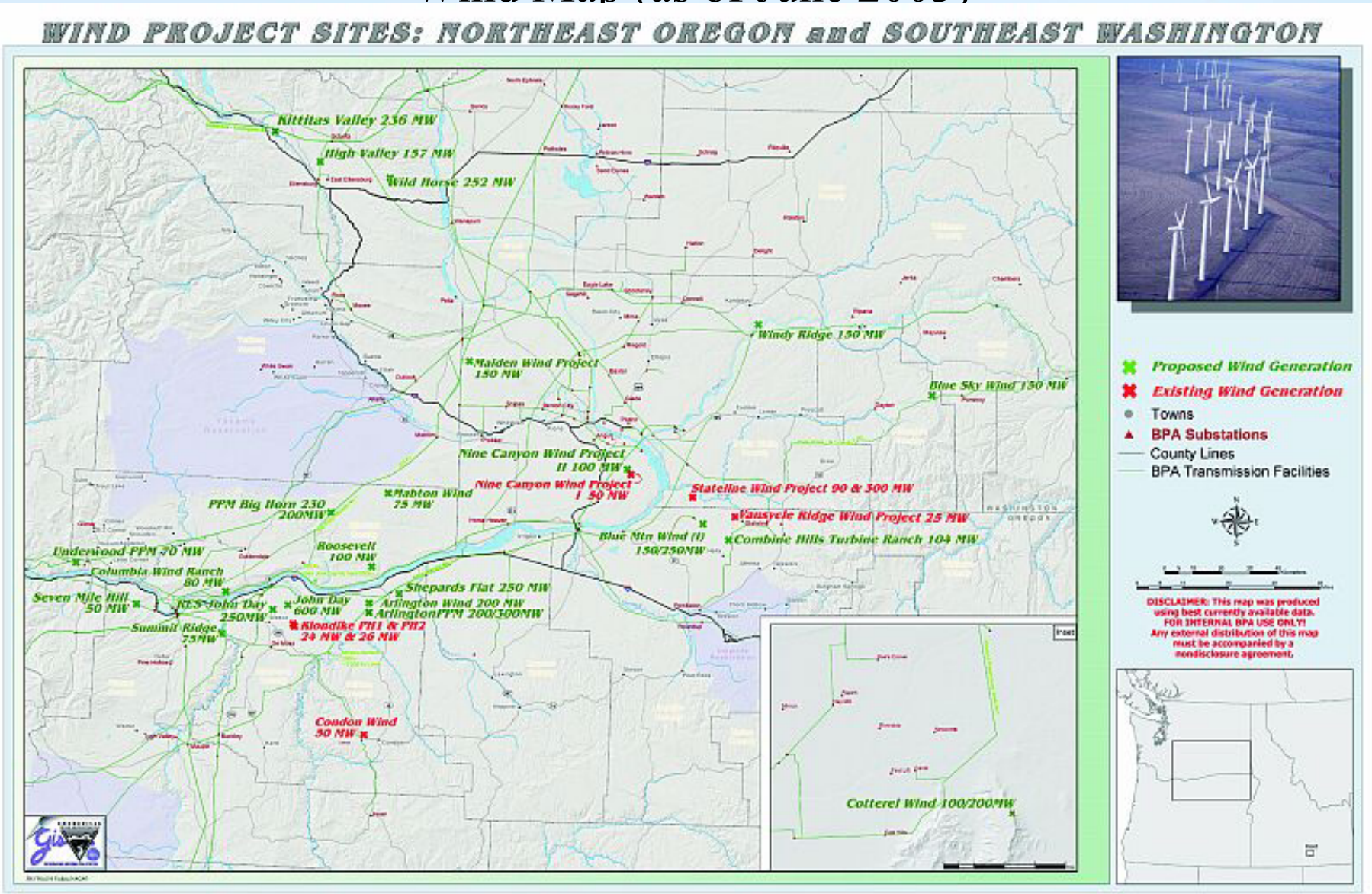
December 9, 2003

Bonneville Power Administration Transmission

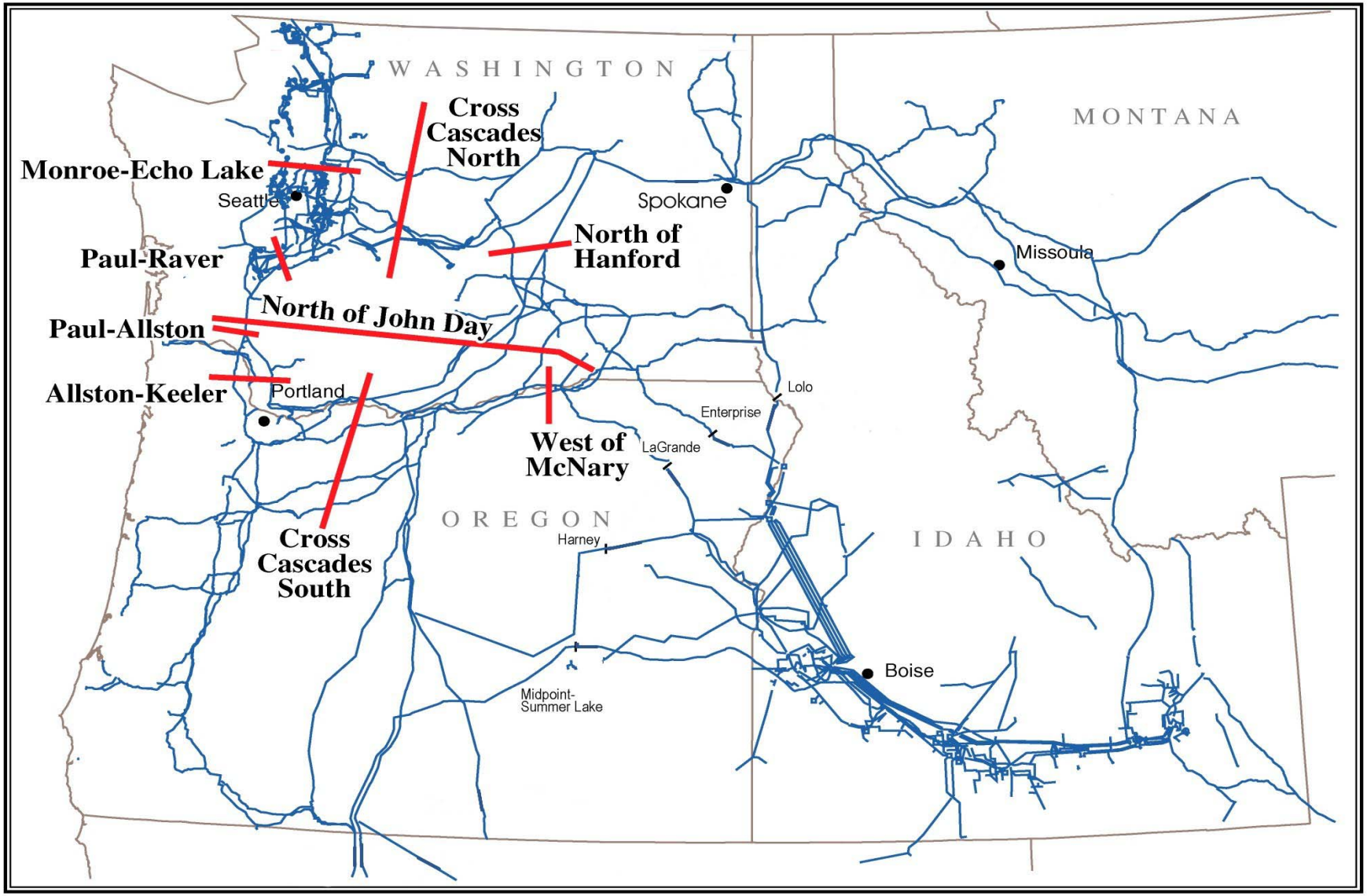
BPA Interconnection Queue

- 25+ Proposed (Study Request)
  - Over 4000MW's Wind
- 5 Wind Projects On-Line:
  - Vansycle 25MW (1996)
  - Stateline 90MW (2001)
  - Condon 50MW (2001)
  - Klondike 24MW (2001)
  - Nine Canyon 48MW (2002)

Wind Map (as of June 2003)

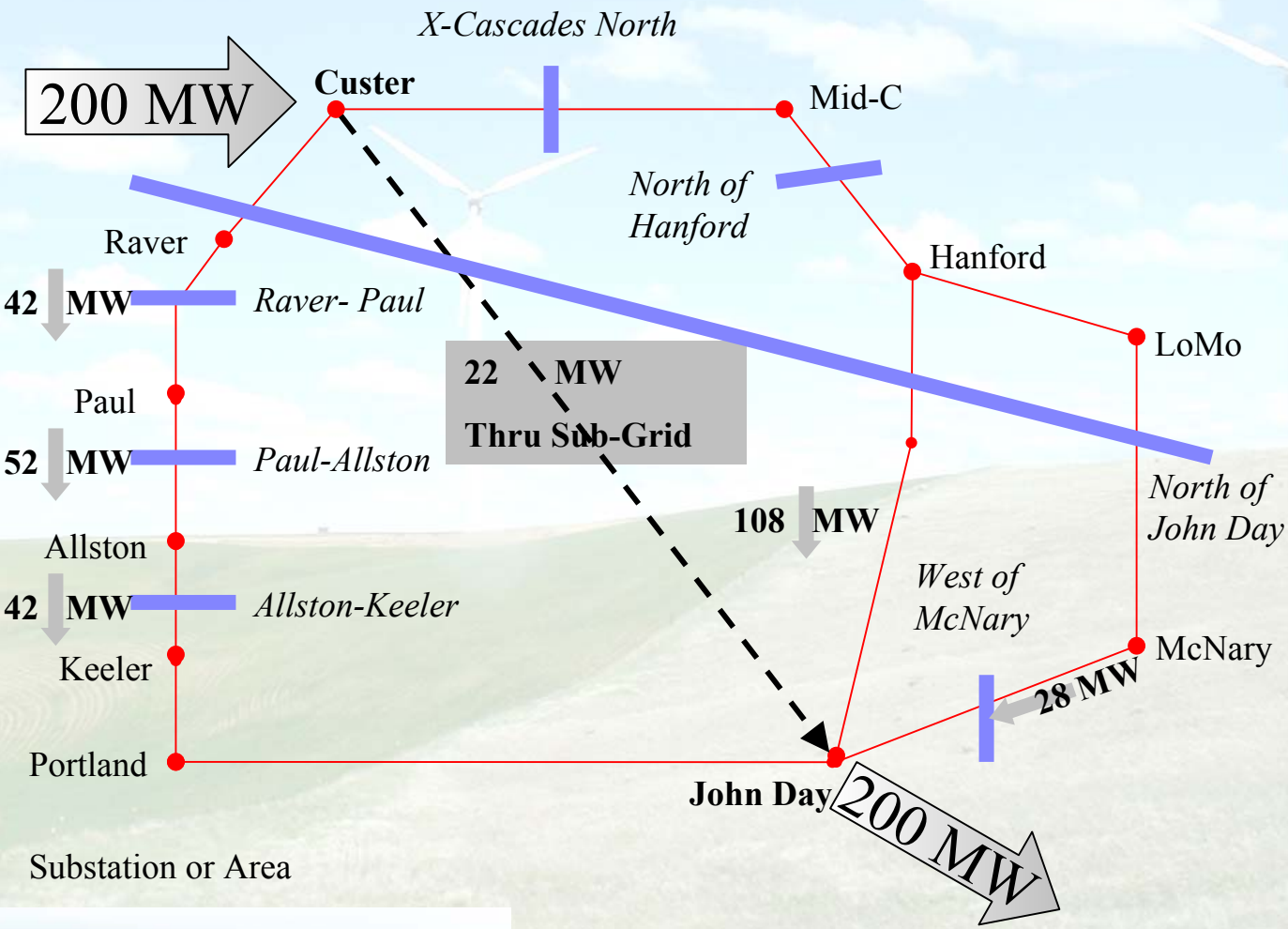


BPA Transmission Flowgates



Depiction of How a Single Transaction Uses Multiple Flowgates on the Internal System

Hypothetical Case: 200 MW Custer to John Day



TBL Products

- Long-Term Firm Transmission
- Short-Term / Non-Firm Transmission
- NT contracts allow new generation added as NT Resource
- Long-Term Partial Firm (new)

Transmission Queue Issues

- TBL must follow OATT for Interconnections
  - Back Log of Thermal Generation requests awaiting major Transmission Line additions
  - Most Wind Projects Later in Queue
- Many wind projects have not requested firm transmission
- Wind Projects also stalled due to:
  - Lack of Firm Power Purchase/Sales
  - Excess Generation/Soft Power Market
  - Lack of Transmission in Some Areas

Wind Generation Concerns

- Induction Machine Issues – PF Correction
- Variable Generation / Voltage Regulation
- Weak System (Sub-Grid) Harmonics
- Ride Through Capability and System Transient Concerns (WECC Issues)
- Construction Time/Timing
- FERC Network Interconnection (under study)

BPA/TBL Efforts to Facilitate Wind Projects

- Streamlined Study process for Interconnection
- Developed Strategies to Increase use of sub-grid for Wind Generation
- Considering Sub-Grid Management to increase Sub-Grid ATC (under study)

Questions?