Redispatch 101

TLR Introduction

- A generator's impact on a flowgate relative to a reference bus is measured by its Transmission Loading Relief (TLR) or Generation Shift Factor (GSF).
- The impact on a defined interface of a transaction between two points is its Power Transfer Distribution Factor (PTDF).

TLR Introduction, cont.

- The TLR is the ratio impact to the loading on a specific flowgate based on an Increase (INC) at the generator and a like Decrease (DEC) at a reference bus (Grand Coulee for our studies).
- A positive TLR will increase the loading.
- A negative TLR will decrease the loading and provide relief.

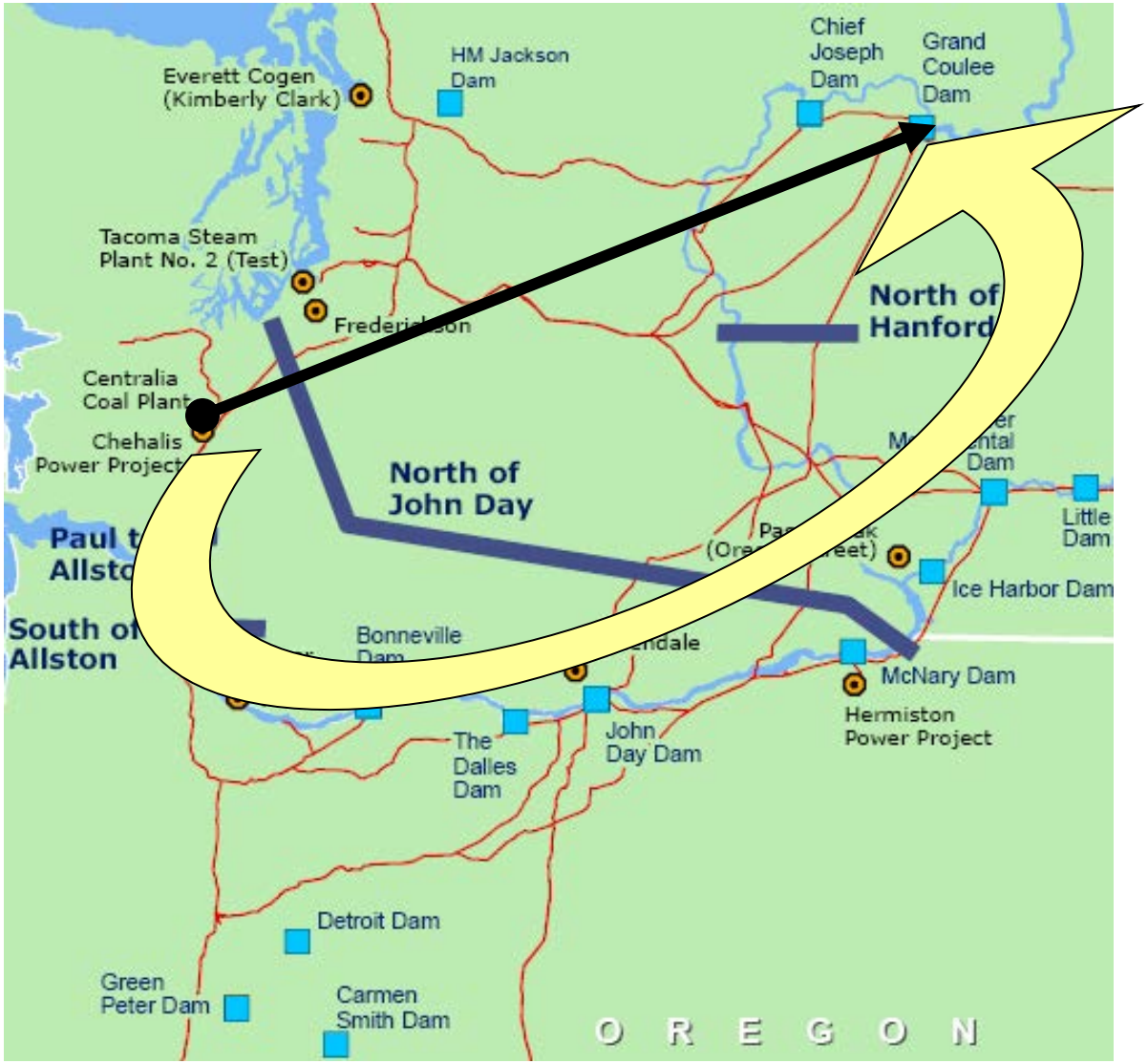
TLR Chart

- Each generator will have a TLR for each flowgate.

Generator	Acronym	Paul-Allston	North of John Day	North of Hanford
Carmen	CAR	-0.204	-0.819	-0.563
Centralia	CNT	0.352	-0.749	-0.232
Chehalis	CHP	0.389	-0.748	-0.250
Chief Joseph	CHJ	0.012	-0.007	-0.005
Grand Coulee	GCL	0.000	0.000	0.000
John Day	JDA	-0.156	-0.834	-0.611
The Dalles	TDA	-0.169	-0.808	-0.580

Paul to Allston TLR

CNT: 0.352

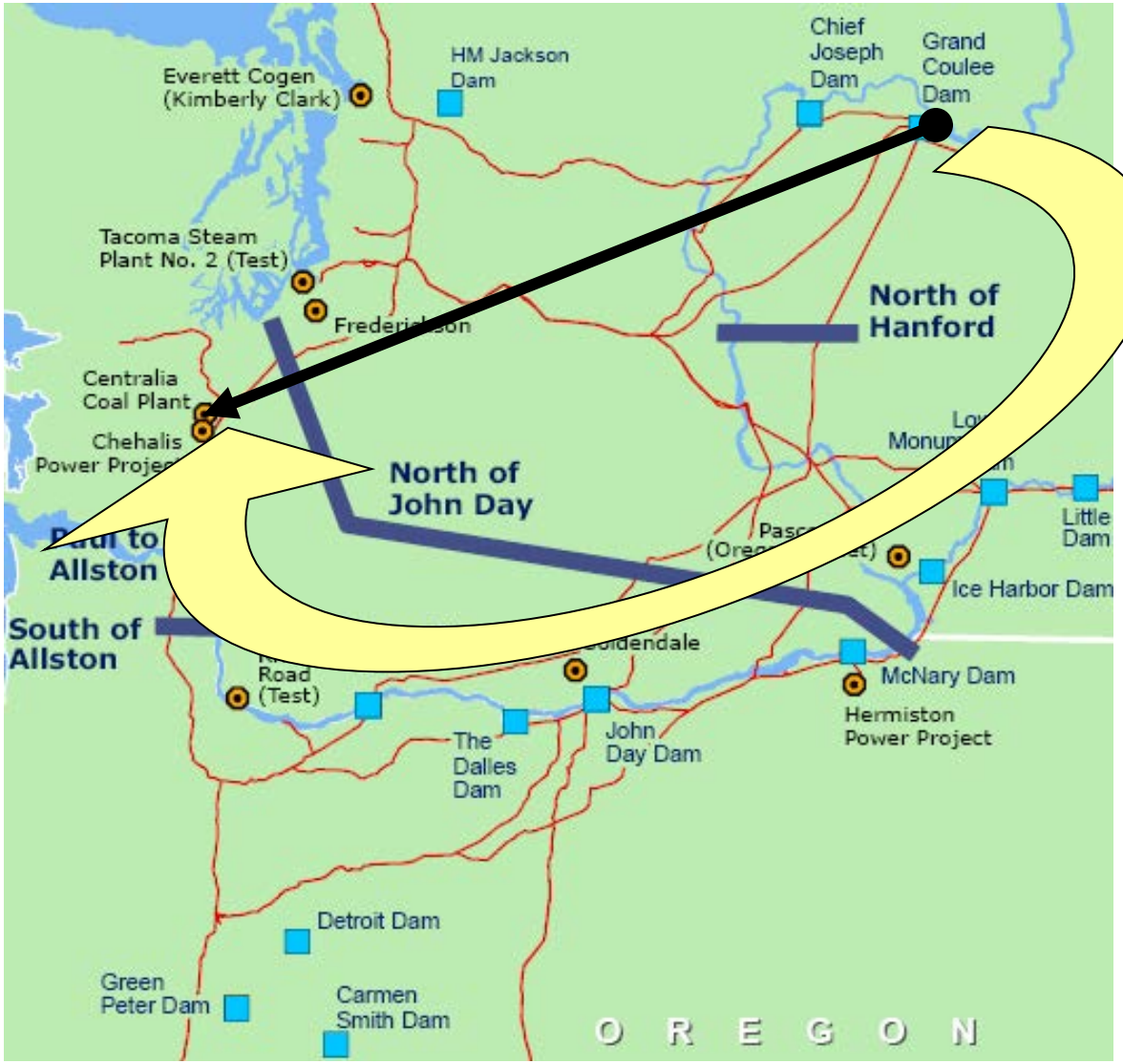


Impact

- For an INC of 1 MW at Centralia and a DEC of 1 MW at Grand Coulee, the loading on the Paul to Allston flowgate will increase by 0.352 MW.
- Similarly, for a Centralia DEC of 1 MW and an INC of 1 MW at Grand Coulee, the loading on the Paul to Allston flowgate will decrease by 0.352 MW.

Paul to Allston PTDF

CNT DEC:
GCL-CNT:
0.000-0.352=
-0.352

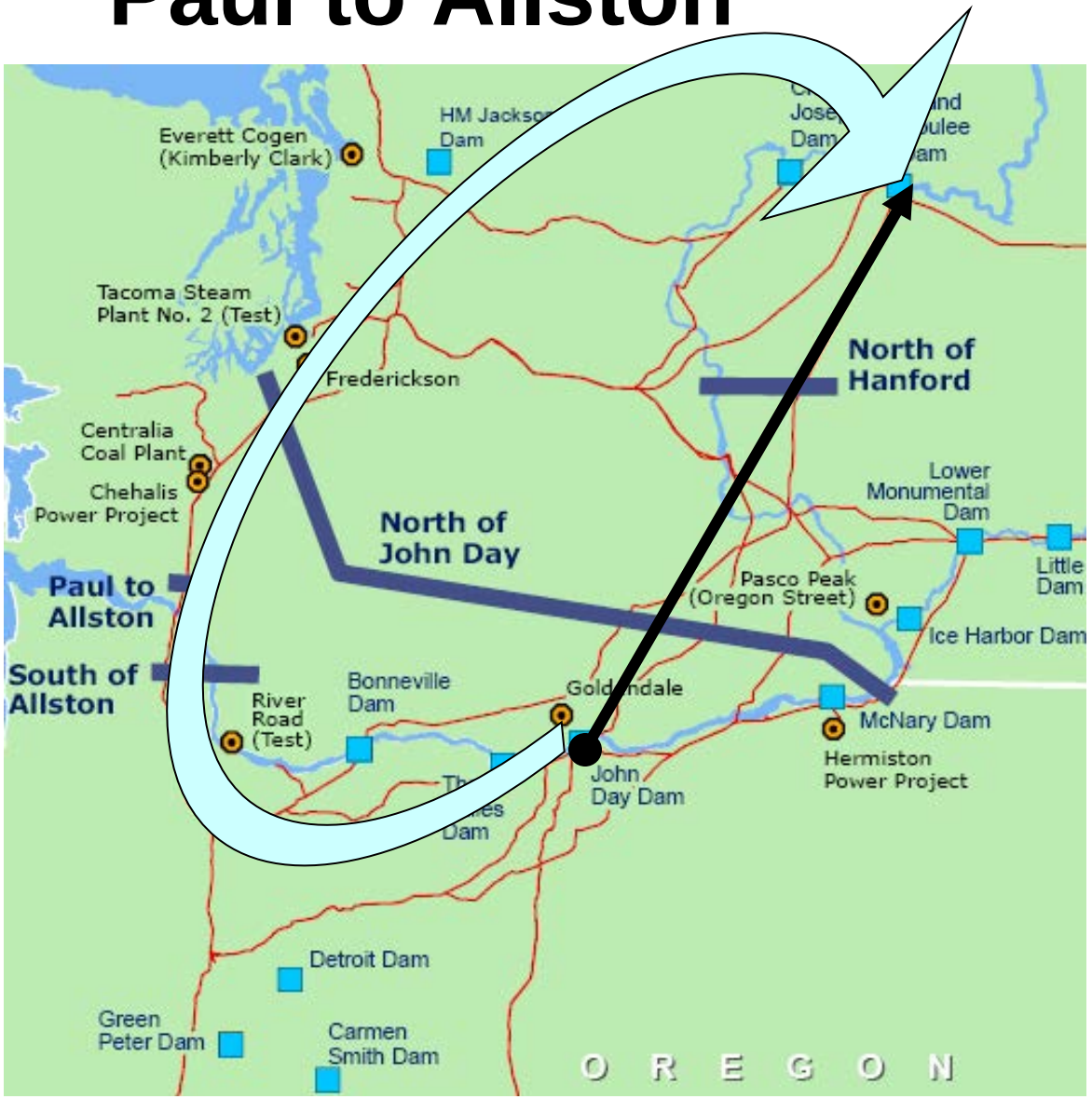


Example

- Redispatch is a balanced combination of increased and decreased generation.
- Add John Day (JDA).
- The TLR for the Paul to Allston flowgate relative to Grand Coulee is -0.156.

Paul to Allston

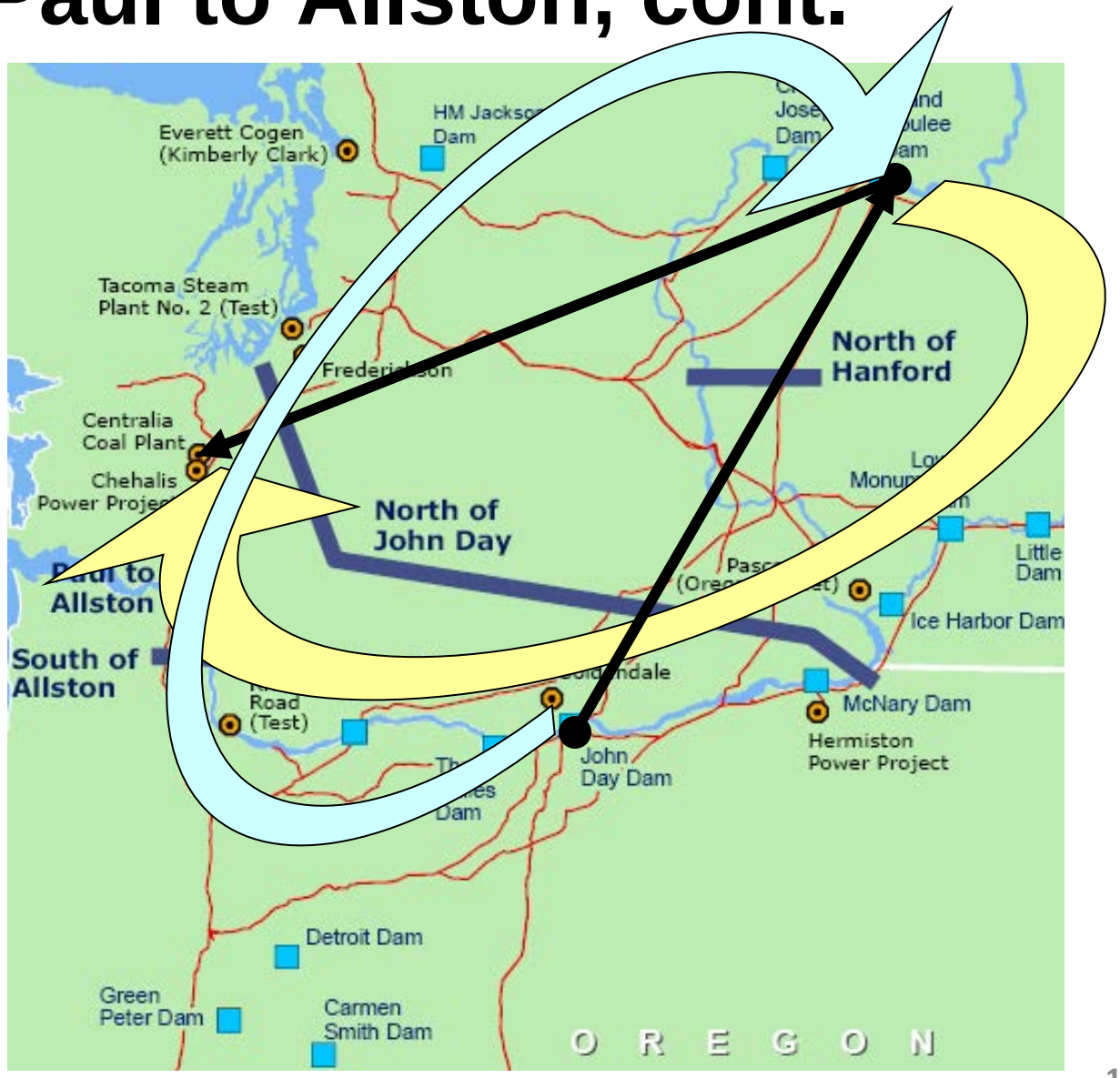
JDA: -0.156



Paul to Allston, cont.

CNT DEC: -0.352

JDA INC: -0.156



The MATH

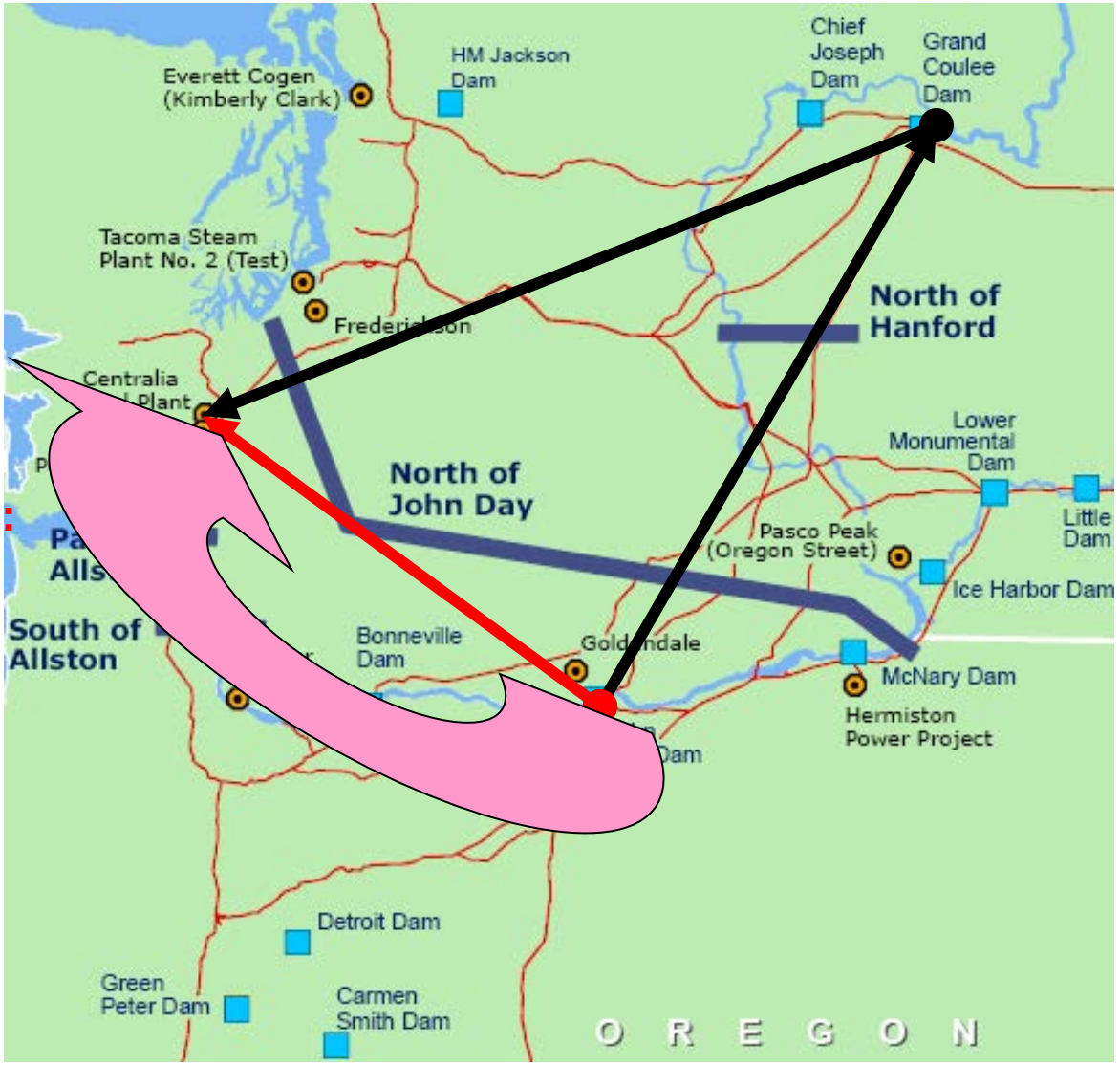
- For CNT DEC: GCL TLR – CNT TLR
- For JDA INC: JDA TLR – GCL TLR
- For the two combined:

  = (JDA TLR – GCL TLR) + (GCL TLR – CNT TLR)

  = JDA TLR – CNT TLR

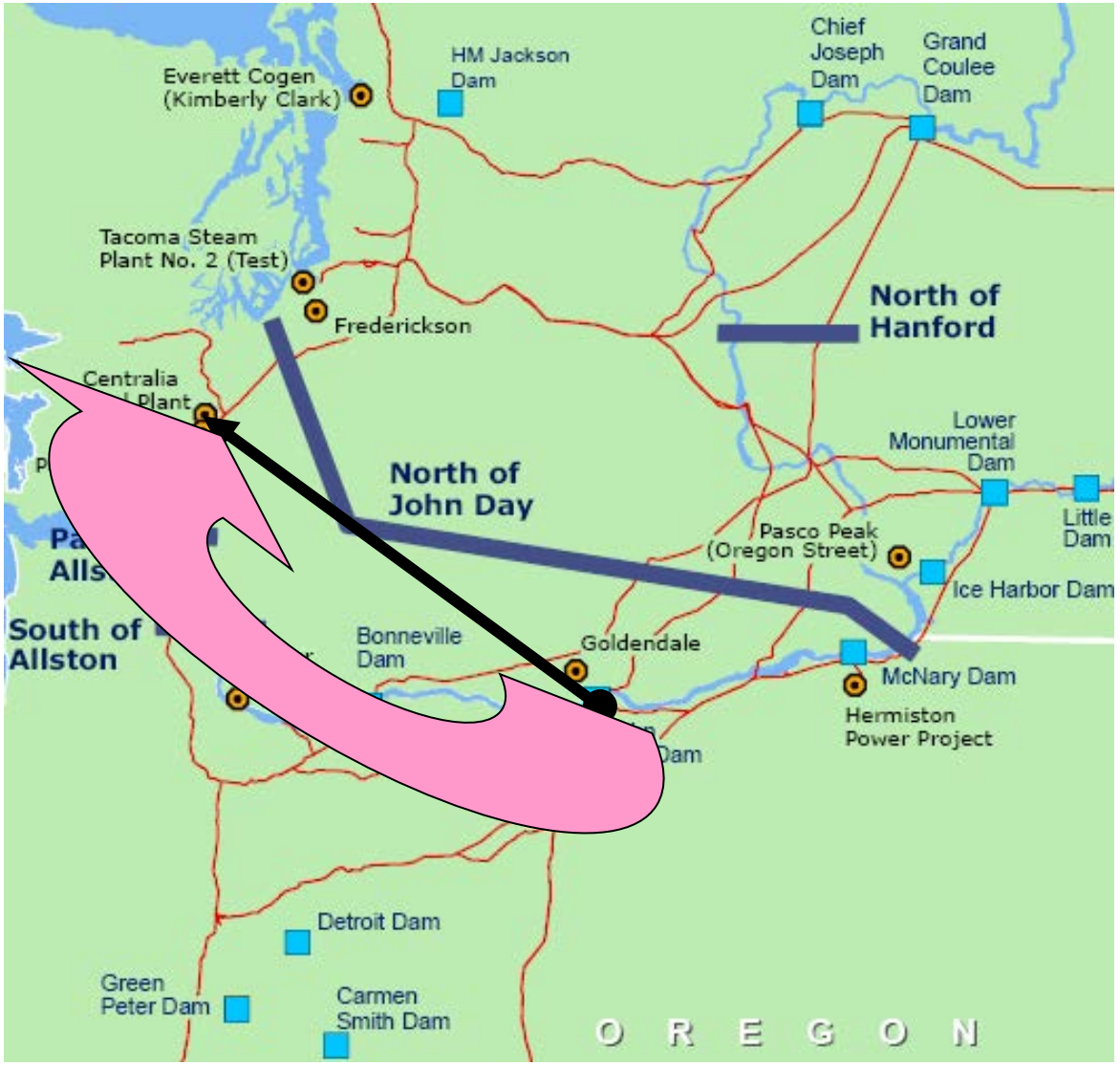
Paul to Allston

JDA INC + CNT DEC:
-0.156 + (-0.352)
= -0.508



Paul to Allston, cont.

JDA-CNT: -0.508



Redispatch

- To relieve the loading on the path, we find the pairs of generators that will provide relief.
- We look for combinations of INC generator and DEC generators with a PTDF that is negative.
- The PTDF is the INC TLR – DEC TLR.
- Numbers closer to -1.0 are more effective.

	DEC	CNT	CHP	CHJ	GCL
INC	**P-A**	0.352	0.389	0.012	0.000
CAR	-0.204	-0.556	-0.593	-0.216	-0.204
GCL	0.000	-0.352	-0.389	-0.012	0.000
JDA	-0.156	-0.508	-0.545	-0.168	-0.156
TDA	-0.169	-0.521	-0.558	-0.181	-0.169

+

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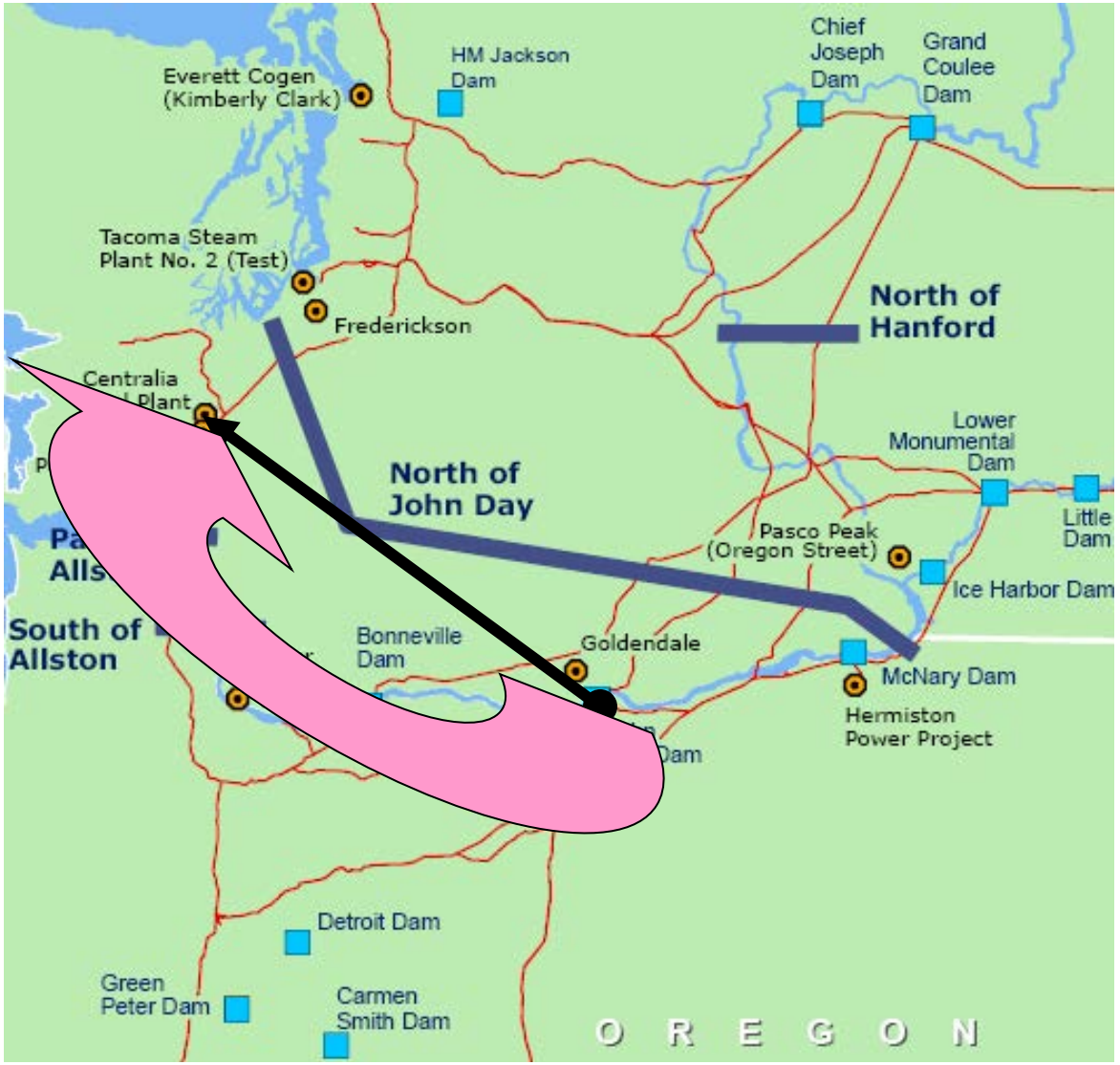
Single Redispatch Pair

JDA-CNT

Redispatch: 35 MW

Impact: 35*-0.508= -17.8 MW



Redispatch Solution

- To get more relief, redispatch more pairs of generators.
- Since a single generator could be involved in multiple pairs, the amounts are summed and given to each generator.