Dworshak-Taft 500 kV Line
Daily Outage

June 12-30 0600-2000 Hours

Why is outage needed?

- Perform needed maintenance to prevent unplanned outage
  - Replace failed conductor spacer/dampers (7200 spacers on this line)
  - Repair damaged conductor
  - Repair damaged insulators and tower hardware on 97 towers
- Spacer damper replacement program is high priority for BPA

Examples of conductor damage

Examples of conductor damage

Limited Outage Window Opportunities

- Access to portion of line needing repair is only available from June-October.
- System impacts to outage greatest in July-August period during high transfer periods
- This limits outage periods to June and September-October.
- June has potential to limit Western Montana hydro and thermal generation.
- September-October has potential to limit thermal generation.

Maximizing Work Crews

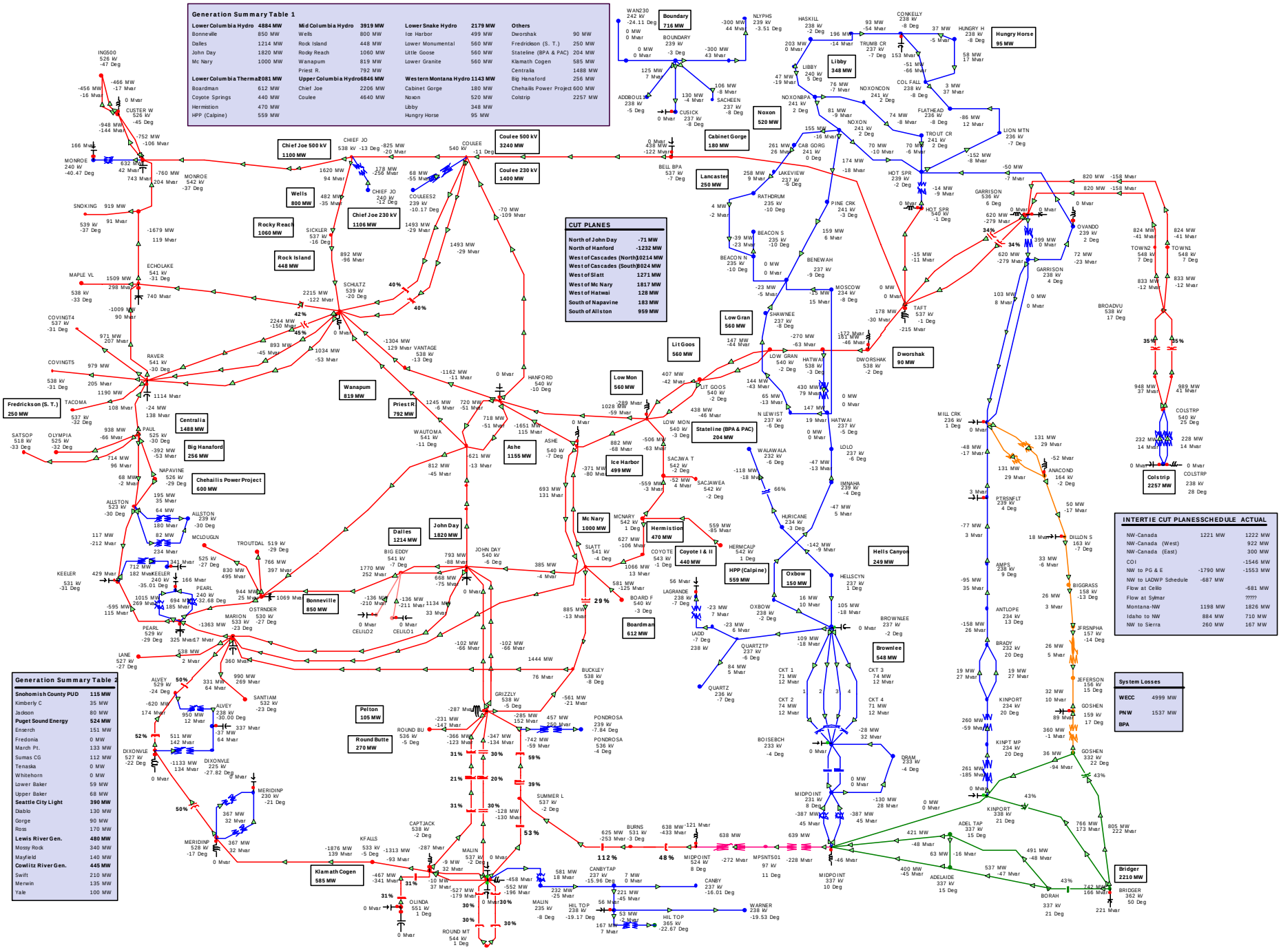
- Six crews are being used to maximize the work completed during the outage.
  - Crews must repair damaged conductor before they can replace spacer dampers
  - As conductor is repaired crews will get on repaired conductor sections and replace spacer dampers

Emergency Conditions

- Daily outages allow canceling next day outage if water restrictions a problem
- Daily outage also allow higher West of Hatwai flows during off-peak period when they are typically the highest due to lighter load conditions
- Line can be put back into service within 5 hours

Addition of Coulee-Bell 500 kV line

- Impacts of a Dworshak-Taft line outage has been greatly reduced by the addition of the parallel Coulee-Bell 500 kV line in late 2004.
- West of Hatwai was limited to 1100 MW E>W when the Dworshak-Taft line was out of service prior to the Coulee-Bell 500 kV line addition.
- West of Hatwai is limited to 2550 MW E>W when the Dworshak-Taft line is out of service with the Coulee-Bell 500 kV line in service.



Generation Summary Table 1

Lower Columbia Hydro	**4884 MW**	**Mid Columbia Hydro**	**3919 MW**	**Lower Snake Hydro**	**2179 MW**	**Others**	
Bonneville	850 MW	Wells	800 MW	Ice Harbor	499 MW	Dworshak	90 MW
Dalles	1214 MW	Rock Island	448 MW	Lower Monumental	560 MW	Fredrickson (S. T.)	250 MW
John Day	1820 MW	Rocky Reach	1060 MW	Little Goose	560 MW	Stateline (BPA & PAC)	204 MW
Mc Nary	1000 MW	Wanapum	819 MW	Lower Granite	560 MW	Klamath Cogen	585 MW
		Priest R.	792 MW			Centralia	1488 MW
Lower Columbia Therma	**2081 MW**	**Upper Columbia Hydro**	**6846 MW**	**Western Montana Hydro**	**1143 MW**	Big Hanaford	256 MW
Boardman	612 MW	Chief Joe	2206 MW	Cabinet Gorge	180 MW	Chehalis Power Project	600 MW
Coyote Springs	440 MW	Coulee	4640 MW	Noxon	520 MW	Colstrip	2257 MW
Hermiston	470 MW			Libby	348 MW		
HPP (Calpine)	559 MW			Hungry Horse	95 MW		

CUT PLANES

North of John Day	-71 MW
North of Hanford	-1232 MW
West of Cascades (North)	10214 MW
West of Cascades (South)	10024 MW
West of Slatt	1271 MW
West of Mc Nary	1817 MW
West of Hatwai	128 MW
South of Napavine	183 MW
South of Allston	959 MW

INTERTIE CUT PLANES

SCHEDULE	ACTUAL
NW-Canada 1221 MW	1222 MW
NW-Canada (West)	922 MW
NW-Canada (East)	300 MW
COI	-1546 MW
NW to PG & E -1790 MW	-1553 MW
NW to LADWP Schedule -687 MW	
Flow at Celilo	-681 MW
Flow at Sylmar	?????
Montana-NW 1198 MW	1826 MW
Idaho to NW 884 MW	710 MW
NW to Sierra 260 MW	167 MW

Generation Summary Table 2

Snohomish County PUD	**115 MW**
Kimberly C	35 MW
Jackson	80 MW
Puget Sound Energy	**524 MW**
Enserch	151 MW
Fredonia	0 MW
March Pt.	133 MW
Sumas CG	112 MW
Tenaska	0 MW
Whitehorn	0 MW
Lower Baker	59 MW
Upper Baker	68 MW
Seattle City Light	**390 MW**
Diablo	130 MW
Gorge	90 MW
Ross	170 MW
Lewis River Gen.	**480 MW**
Mossy Rock	340 MW
Mayfield	140 MW
Cowlitz River Gen.	**445 MW**
Swift	210 MW
Merwin	135 MW
Yale	100 MW

System Losses

WECC	4999 MW
PNW	1537 MW
BPA	

Four outages periods planned for this work

- To complete all necessary work, additional outages are planned for Fall 2006, June 2007, and Fall 2007.