

State-Provincial Steering Committee

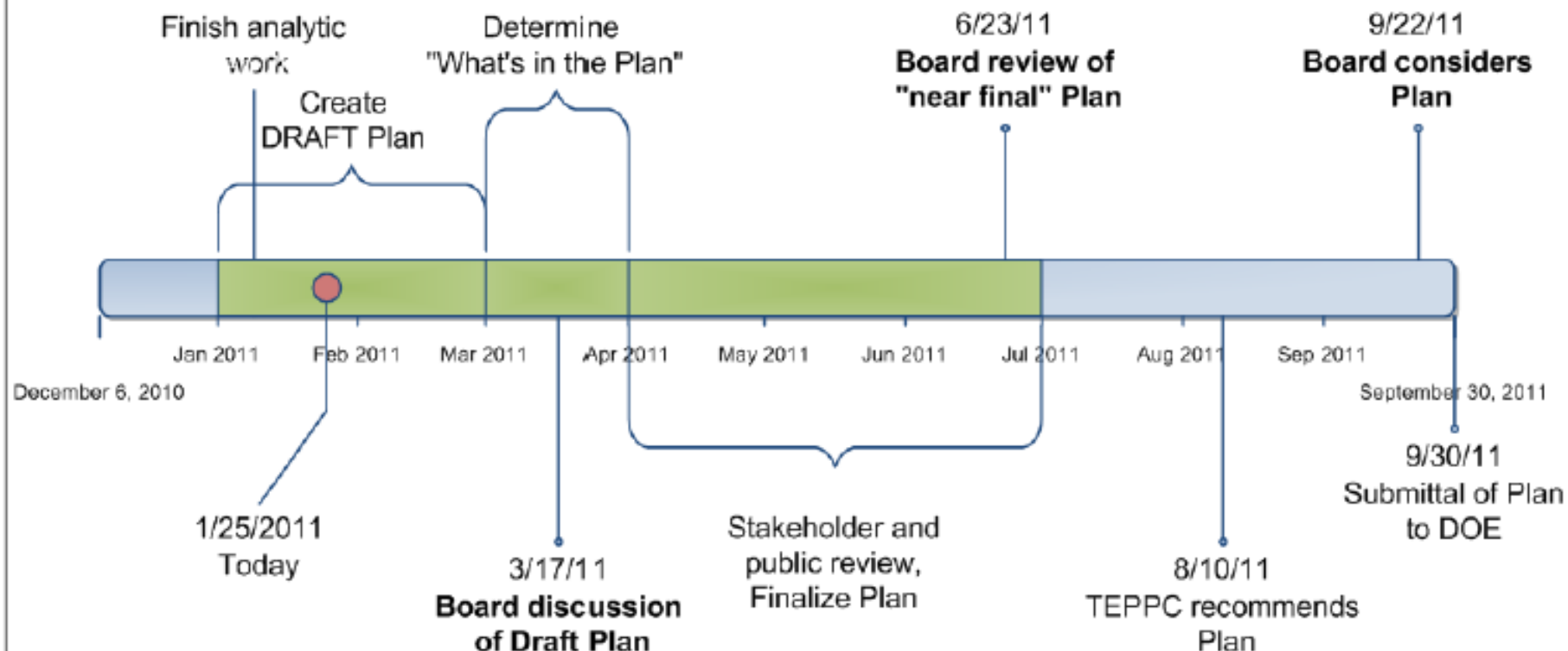
# **Update on Developing a 10 Year Transmission Plan**

**February 22, 2011**

# WECC meetings and plan schedule

- Past –
  - Jan. 25-26 Technical Advisory Subcommittee (TAS) meeting
  - Feb. 9 Studies Work Group meeting
  - **Feb. 16 TAS meeting**
- Upcoming –
  - Feb. 23-25 Scenario Planning Steering Group (SPSG) and Transmission Planning Policy Committee (TEPPC)
  - Mar. 17 WECC Board – “discussion” of the Plan
  - April – May - Stakeholder review and input
  - June 23, WECC Board – deliver a “near final Plan”

# Plan Development Timeline



# TAS meeting Feb. 16

- WECC staff presented revised Dashboard and congestion metrics
  - Framework to evaluate congestion across WECC paths using the 15 study cases

# WECC 10-Year Plan Dashboard

## Main View

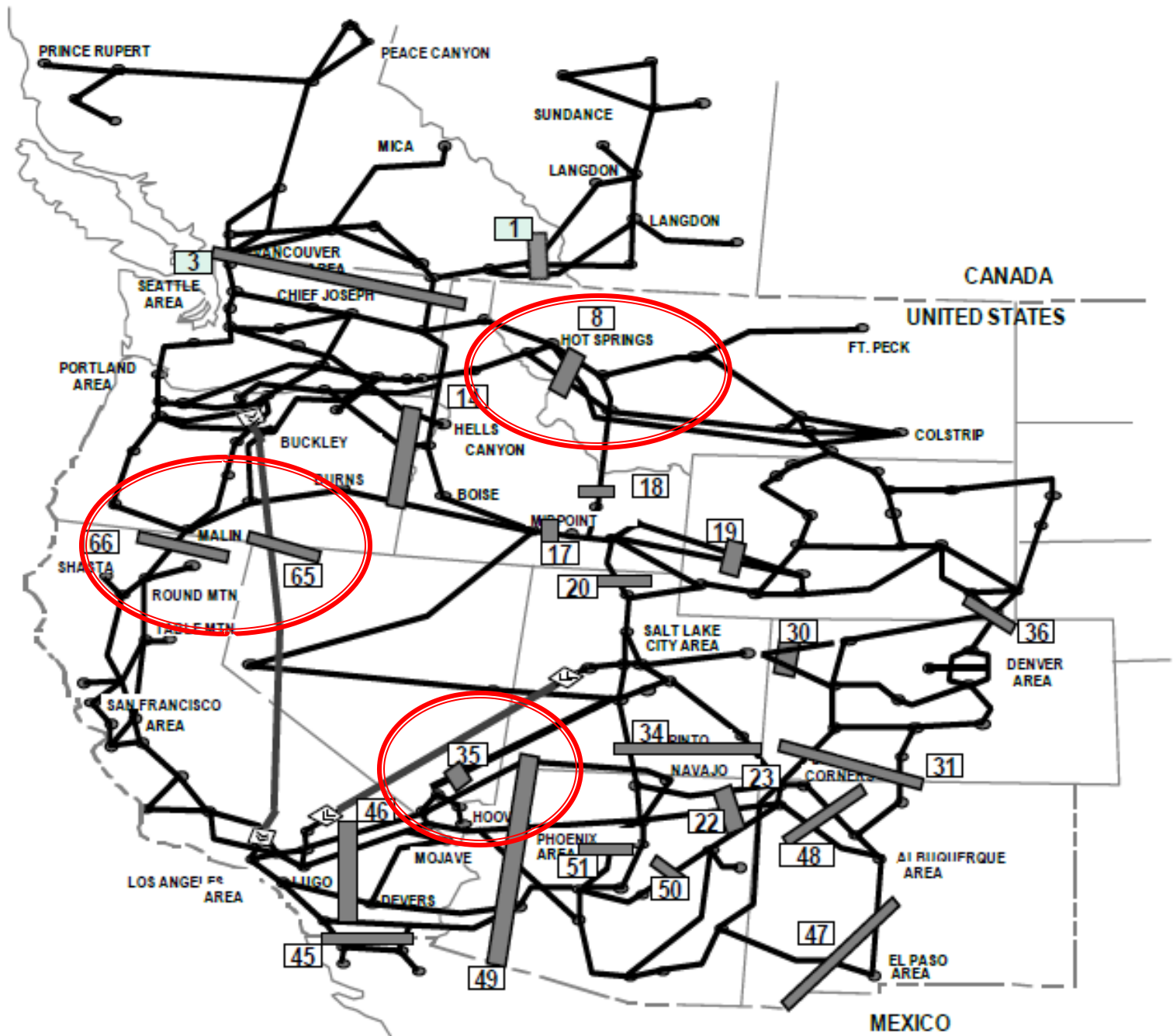
(High value indicative of congestion)

Path #	Path Name	Voltage (kV)	Path Rating (MW)	Historical Congestion						2019												2020				Max Conditional Congestion Score	Most Conditional Score		
				Design Congestion	Project Development	Foundational Project Dev.	Recurrent Count	Total Recurrent Congestion Score	2019 Base Case	Arizona/S. Nevada	Wyoming	British Columbia	N. Nevada	Alberta	Montana	New Mexico	Northwest Coastal	SPSC Reference Case	High Load	High DSM (Low load)	Carbon Reduction	Aggressive MT Wind	Aggressive WY Wind						
← Conditional Congestion Score →																													
1	ALBERTA - BRITISH COLUMBIA	500	1000	X	-	4	1	8	4.49	0.52	0.49	0.48	0.92	0.47		0.52	0.48	0.61										0.92	British Columbia
3	NORTHWEST - CANADA	500	3150	X	-	4	1	3	2.11				0.47												0.85	0.79	0.85	High DSM (Low load)	
8	MONTANA - NORTHWEST	500	2200	X	-	0	0	14	9.00	0.37	0.38	0.49	0.32	0.30	0.38	1.63	0.41	0.31	0.55	0.45	0.44			2.11	0.85	2.11	Aggressive MT Wind		
9	WEST OF BROADVIEW	500	2573	ND	-	0	0	1	0.35																		0.35	0.35	Aggressive WY Wind
10	WEST OF COLSTRIP	500	2598	ND	X	1	0	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00						0.00		
11	WEST OF CROSSOVER	500	2598	ND	-	0	0	12	2.53	0.15	0.14	0.30	0.10	0.08	0.16		0.16	0.08	0.19	0.42	0.11						0.63	0.63	Aggressive WY Wind
14	IDAHO - NORTHWEST	500	2400	-	-	1	1	0	0.00																		0.00		
16	IDAHO - SIERRA	345	500	ND	-	0	0	2	0.85						0.47						0.39						0.47	N. Nevada	
17	BORAH WEST	345	2557	X	-	3	0	0	0.00																		0.00		
18	IDAHO - MONTANA	230	337	-	-	3	0	2	2.41							0.87							1.54			1.54	Aggressive MT Wind		
19	BRIDGER WEST	345	2200	X	X	3	0	1	1.03															1.03		1.03	Aggressive WY Wind		
20	PATH C	345	1000	X	-	5	1	0	0.00																		0.00		
22	SOUTHWEST OF FOUR CORNERS	500	2325	X	-	1	0	3	2.26				0.57				1.02								0.67	1.02	New Mexico		
23	FOUR CORNERS 345/500	500	840	-	-	1	0	0	0.00																		0.00		
27	IPP DC LINE	500	1920	X	X	1	0	13	6.04				0.52	0.24	0.58	0.18	0.34	0.35	0.23	0.48	0.33	0.89	0.43	0.74	0.73	0.89	High DSM (Low load)		
29	INTERMOUNTAIN - GONDER 230 KV	230	200	ND	-	0	0	9	2.35	0.19	0.18	0.21				0.18		0.18		0.35		0.54	0.22	0.29	0.54	High DSM (Low load)			
30	TOT 1A	345	650	X	-	0	0	1	0.33																		0.33	0.33	Aggressive WY Wind
31	TOT 2A	345	690	X	-	0	0	2	0.63				0.24														0.39	0.39	Aggressive WY Wind
32	PAVANT INTRMTN - GONDER 230 KV	230	440	ND	-	0	0	1	1.10						1.10												1.10	N. Nevada	
33	BONANZA WEST	345	785	ND	-	1	1	2	1.05				0.27														0.78	0.78	Aggressive WY Wind
34	TOT 2B	345	900	-	-	0	0	0	0.00																		0.00		
35	TOT 2C	345	300	X	-	5	1	14	4.36	0.34	0.31		0.41	0.58	0.36	0.27	0.32	0.39	0.20	0.30	0.29	0.22	0.16	0.22	0.22	0.58	N. Nevada		
36	TOT 3	345	1605	X	-	3	1	2	2.46				0.81														1.84	1.84	Aggressive WY Wind
42	IID - SCE	230	600	ND	-	2	2	5	1.22											0.31	0.48	0.16	0.12	0.14	0.48	High Load			
43	NORTH OF SAN ONOFRE	230	2440	ND	-	6	0	6	2.15		0.45	0.34		0.39	0.37		0.42				0.18					0.45	Arizona/S. Nevada		
46	WEST OF COLORADO RIVER (WOR)	500	10623	-	-	2	1	0	0.00																		0.00		
47	SOUTHERN NEW MEXICO (NM1)	345	1048	X	-	4	0	0	0.00																		0.00		
48	NORTHERN NEW MEXICO (NM2)	345	1970	-	-	3	0	0	0.00																		0.00		
49	EAST OF COLORADO RIVER (EOR)	500	9300	X	-	2	0	0	0.00																		0.00		
50	CHOLLA - PINNACLE PEAK	345	1200	X	-	0	0	1	0.06								0.06										0.06	New Mexico	
51	SOUTHERN NAVAJO	500	2800	-	-	1	0	0	0.00																		0.00		
52	SILVER PEAK - CONTROL 55 KV	55	17	ND	-	0	0	1	1.74					1.74													1.74	N. Nevada	
60	INYO - CONTROL 115 KV TIE	115	56	ND	-	0	0	6	4.06										0.65	0.70	0.68	0.56	0.55	0.91	0.91	Aggressive WY Wind			
61	LUGO - VICTORVILLE 500 KV LINE	500	2400	ND	-	0	0	1	0.23	0.23																	0.23	2019 Base Case	
65	PACIFIC DC INTERTIE	500	3100	-	-	4	0	4	1.69										0.31		0.72		0.31	0.35	0.72	High DSM (Low load)			
66	COI	500	4800	X	-	4	0	15	23.19	1.18	1.30	1.34	1.70	0.95	1.34	1.65	1.23	1.69	1.60	1.09	2.34	2.33	1.87	1.58	2.34	High DSM (Low load)			
75	MIDPOINT - SUMMER LAKE	500	1500	ND	-	1	0	9	4.50	0.40	0.47	0.94	0.40		0.44	0.33	0.49	0.32								0.71	0.94	Wyoming	
76	ALTURAS PROJECT	345	300	ND	-	0	0	1	0.74					0.74													0.74	N. Nevada	
78	TOT 2B1	345	600	ND	-	1	0	3	0.60			0.22	0.22			0.16											0.22	N. Nevada	
80	MONTANA SOUTHEAST	230	600	ND	-	0	0	1	1.57														1.57			1.57	Aggressive MT Wind		

# TAS meeting Feb. 16

- “Paths of Concern”
  - Proposal to identify 3 paths with “recurrent congestion”
    - Montana to Northwest (Path 8)
    - COI and PDCI (Path 66 & 65)
    - Tot 2c (Path 35)

# Map of Selected WECC Paths



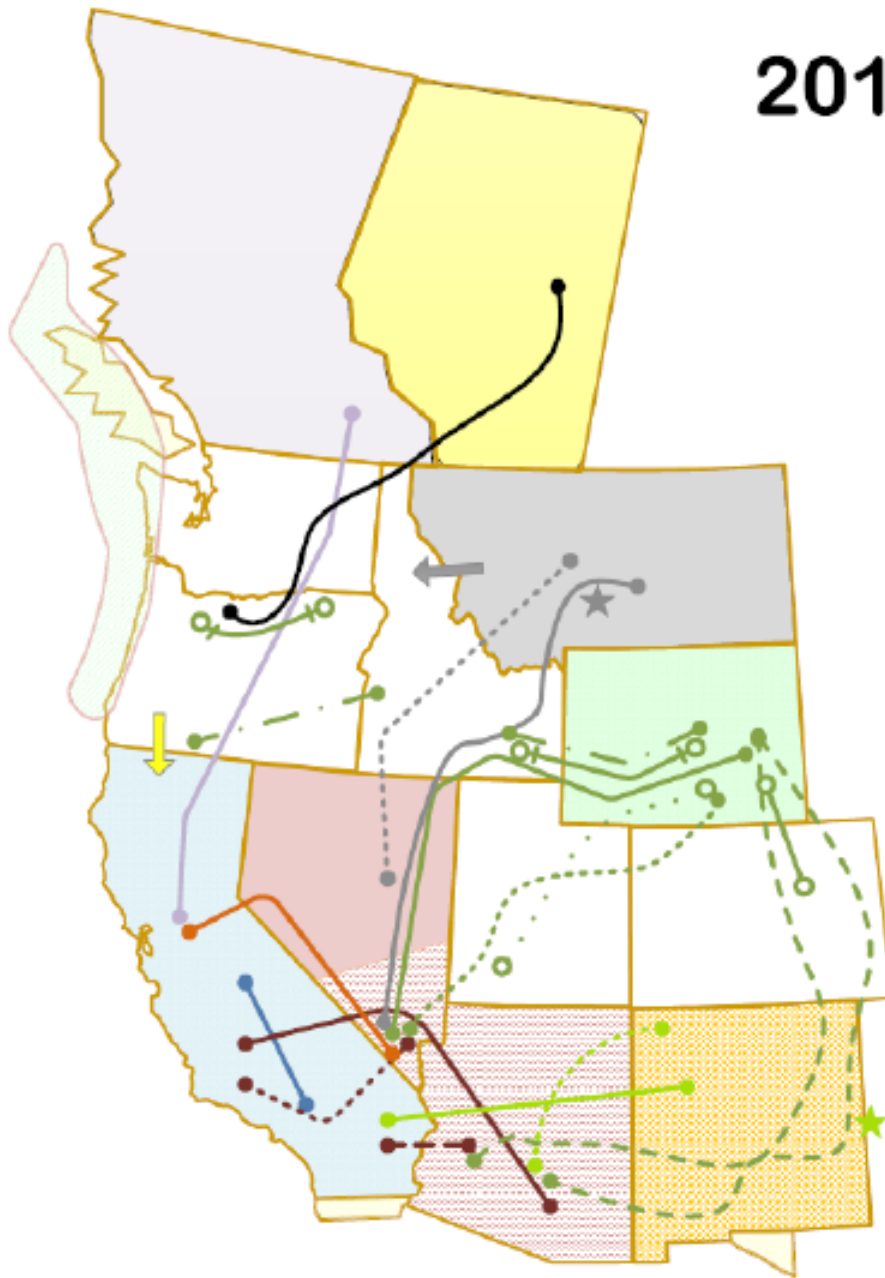
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- “Areas of Concern”
  - Proposal to identify areas with “Conditional Congestion” based on promising resource opportunities
    - Montana
    - Wyoming
    - Others: AZ/S.NV, NM, AB, BC, N.NV, coastal NW

# TAS meeting Feb. 16

- New economic analysis
  - Analysis of combined operating and capital costs for generation and transmission for transmission expansion cases that shift generation resources from California to 8 other areas (2019 relocation cases)
  - Findings showing net benefits for almost all cases studied
    - Results suggest further evaluation of economics of alternative resource locations is warranted and has regional policy implications

# 2019 Expansion Cases



Resource Scenarios	Transmission Scenarios
PC1A Base Case	EC1A-1 Central California Clean Energy Transmission Project
PC7 AZ/S. NV	EC7-1 Phoenix-Mead-Adelanto HVDC
	EC7-2 Green Energy Express Transmission Project Phases 2&3
	EC7-3 Palo Verde - Colorado River 500kV Line
PC8 WY	EC8-1 Zephyr Project
	EC8-2 TransWest Express
	EC8-3 Hemingway-Captain Jack & GW#2
	EC8-4 High Plains Express and SunZia
	EC8-5 Cascade Crossing & GW #2
	EC8-6 Wyoming-Colorado Intertie
	EC8-7 Gateway South #2
PC9 BC	EC9-1 Canada-PNW-Northern CA Project
PC10 N. NV	EC10-1 Reno to Las Vegas 500kV and Two Blackhawk to Tracy/Tesla 500 kV lines
PC11 AB	EC11-1 Northern Lights
PC12 MT	EC12-1 Chinook Project
	EC12-2 MSTI and SWIP Projects
	EC12-3 MT-NW Path 8 Upgrades
	EC12-4 Add 400MW Pumped Storage
PC13 NM	EC 13-1 Santa Fe Project
	EC13-2 SunZia, High Plains Express Projects
	EC13-2-1 Tres Amigas Added
PC14 OR-WA-BC	EC 13-3 Navajo Transmission Project
	EC14-3 COI Uprate Project

# Observations

- Concerns raised by some state/provincial representatives
  - More insights buried in the congestion analysis
    - Assumptions modeling 2020 creates congestion
    - DC line problem
  - Insights about resource areas not new
  - Issues raised about the economic analysis
  - Need time to reflect, process moving too fast

# Potential next steps for SPSC

- WECC plan clearly focused on congestion metrics and resulting “paths of concern”
- SPSC’s best opportunity is to fill a void – policy considerations
- Next Steps to Consider:
  - Proceed with process and plan
  - Draft SPSC report and append to the plan
  - SPSC drafts stand alone report
  - Call to slow down the process