

Frontier Line Project

Status Report

STEP Informational Item

November 17, 2006



Partnership Members

- WRTEP Signatories
 - Pacific Gas & Electric
 - San Diego Gas & Electric
 - Southern California Edison Co.
 - Sierra Pacific Power Company
 - Nevada Power Company
 - MidAmerican Energy Holdings Company
- Also:
 - Arizona Public Service
 - Public Service of New Mexico



Background on Partnership

- Responded to the governors
- Their vision: help growing load centers tap into the West's vast renewable and clean coal resources
- Transmission needs in the West are critical
- April 2006 agreement – and other utilities

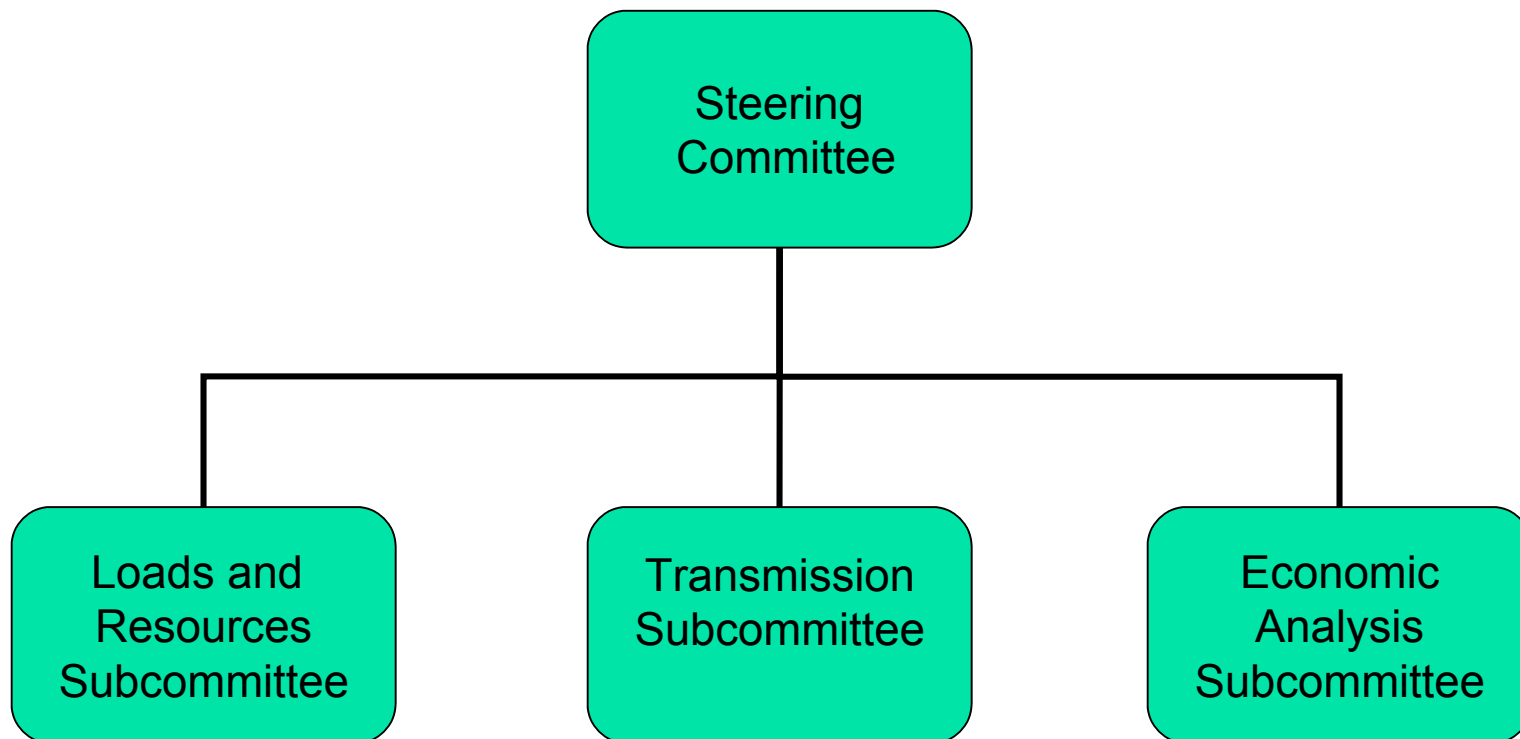


Background on Partnership (cont'd)

- Partnership hosting today's meeting; invitations to four states and stakeholders.
- Our commitment to coordinate and collaborate with the states.
- Steps taken – organizational.
- Stakeholder involvement – What does it mean?
 - Transparency
 - Active Role



WRTEP Organization





Stakeholder Process

- Open process
- Periodic stakeholder meetings to discuss issues, methods, schedules, results, findings and proposed actions.
- Stakeholders may join the subcommittees.
- Documents and reports are posted for comment at ftloutreach.com.
 - Responses are posted.



Loads and Resources Subcommittee

- Reviewed prior studies (e.g., RMATS, SSG-WI and CDEAC).
- Performed a screening level demand analysis of 2015 scenarios to identify the range of need.
- Product: Identified inter-area transportation options
 - Source and sink areas and MW capacity
- To: Transmission Subcommittee



L&R Table

Path	Total Path Capability	
	Pre-Existing	Identified Options
Montana-Wyoming	200 MW	1,500 MW
N Nevada-PGE	100 MW	800 MW 1,300 MW 1,500 MW 2,000 MW 7,000 MW
N Nevada-S Nevada	0 MW	5,000 MW 5,500 MW
NW-N Nevada	300 MW	2,000 MW
NW-PGE	4,200 MW	6,200 MW
PGE-SCE	4,000 MW	4,400 MW 4,900 MW 5,200 MW 5,500 MW 9,400 MW
PV-SCE	2,037 MW	3,500 MW 4,000 MW 6,000 MW 6,500 MW 7,037 MW
S Nevada-SCE	1,700 MW	3,000 MW 3,500 MW 4,500 MW 5,000 MW

Path	Total Path Capability	
	Pre-Existing	Identified Options
Wyoming-Arizona	0 MW	3,000 MW 5,500 MW 6,000 MW 8,000 MW
Wyoming-SCE	0 MW	1,000 MW 1,500 MW 2,000 MW 6,000 MW 6,500 MW 7,000 MW
Wyoming-N Nevada	0 MW	800 MW 1,300 MW 3,500 MW 4,000 MW 4,500 MW 5,000 MW
Wyoming-S Nevada	0 MW	1,000 MW 1,500 MW 2,000 MW 5,000 MW 5,500 MW 7,000 MW
Wyoming-Utah	400 MW	1,400 MW 1,900 MW



Transmission Subcommittee

- Convert L&R's conceptual inter-area transportation options into point-to-point electrical alternatives.
- Products:
 - Conceptual transmission links
 - Estimated costs of the links
- To: Economic Analysis Subcommittee



Transmission Links and Costs

Transmission Links	Straight Line Mileages	Capacity (MW)	Transmission Type	Estimated Cost (x 1,000,000,000)
S.E. Montana – S. Wyoming	205	1500	1-500 kV AC	0.8
S. Wyoming – Southern CA	850	3000	1-500 kV DC	2.7
	1700	6000	2-500 kV DC	5.4
S. Wyoming – N.E. Nevada	512	3000	1-500 kV DC	1.9
	1024	6000	2-500 kV DC	3.7
N.E. Nevada – S. Nevada	234	3000	2-500 kV AC	1.3
	468	6000	4-500 kV AC	2.4
S. Nevada – Southern CA	200	3000	2-500 kV AC	1.2
	400	6000	4-500 kV AC	2.2
Northwest – N.W. Nevada	350	3000	2-500 kV AC	1.8
S. Wyoming – N.W. Nevada	685	3000	1-500 kV DC	2.3
	1370	6000	2-500 kV DC	4.5
N.W. Nevada – Northern CA	233	3000	2-500 kV AC	2.4
	466	6000	4-500 kV AC	4.8
Northern CA – Southern CA	325	3000	2-500 kV AC	1.8
	650	6000	4-500 kV AC	3.5
Northwest – Northern CA	560	3000	1-500 kV DC	2.1
S. Wyoming – S. Nevada	635	3000	1-500 kV DC	2.2
	1270	6000	2-500 kV DC	4.3
S. Wyoming - Arizona	900	3000	1-500 kV DC	2.8
	1800	6000	2-500 kV DC	5.6
Arizona – Southern CA	320	3000	2-500 kV AC	1.7
	640	6000	4-500 kV AC	3.2
Wyoming – Mona (Utah)	360	3000	2-500 kV AC	1.9
Mona (Utah) – Southern Nevada	280	3000	2-500 kV AC	1.5
Mona (Utah) – N.E. Nevada	170	3000	2-500 kV AC	1.0
Wyoming – Midpoint(Idaho)	420	3000	2-500 kV AC	2.2
Midpoint(Idaho) – N.E. Nevada	220	3000	2-500 kV AC	1.2
Midpoint(Idaho) – N.W. Nevada	280	3000	2-500 kV AC	1.5

Combining the Transmission Links

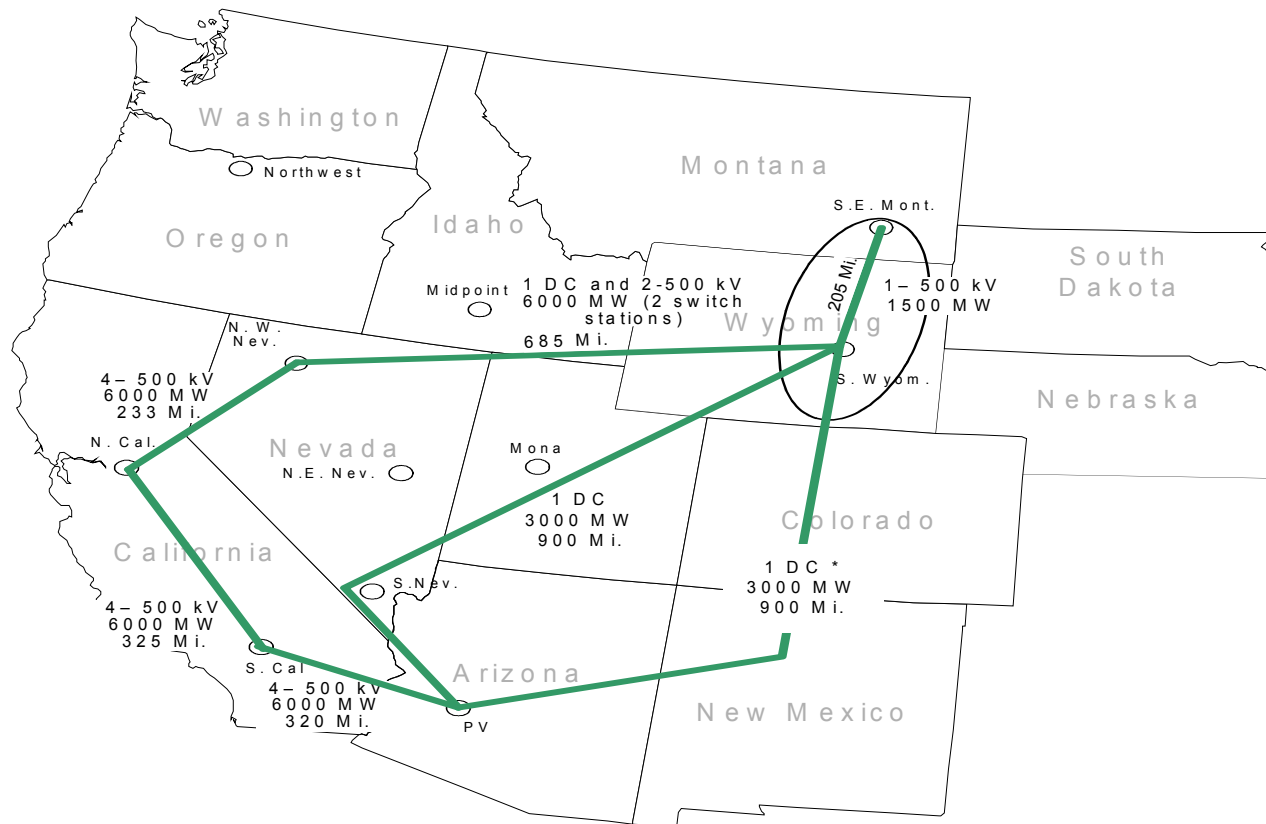
Figure 7b



TOTAL COST ~ \$ 4.3 B

Combining the Transmission Links (cont'd)

Figure 10



* Transwest Express

TOTAL COST ~ \$21.0 B



Economics Subcommittee

- Will assess and compare the benefits and costs of Transmission Subcommittee's conceptual electrical links in various combinations.
 - Will consider various scenarios
 - Not necessarily the same ones L&R used
- Product: Identify circumstances that would make a Frontier Line beneficial—or not—and the sensitivity of benefits to key assumptions.
- To: Steering Committee to decide next steps.



Next Steps

- Assuming the benefits analysis is positive, next steps in Phase 2 may include:
 - WECC Regional Planning Review Process
 - Power system studies to confirm technical feasibility and cost
 - Production simulation studies to assess benefits of the more promising alternatives in more detail.
 - Routing feasibility studies