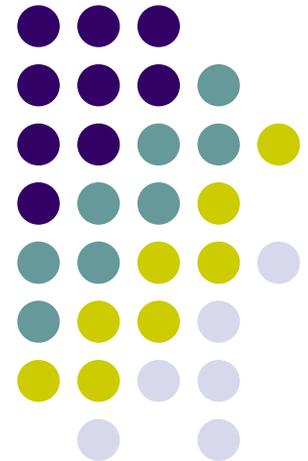


Renewable Energy Transmission Initiative

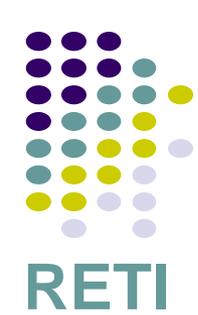
Phase 2A Draft Results
June 15, 2009





Presentation Overview

- RETI mission, goals, structure; Phase 1 work
- Phase 2A Draft Report
 - CREZ revision
 - Conceptual Transmission Plan
- Next RETI tasks



RETI Mission

- Identify transmission to meet state goals, support future energy policy
 - Minimize financial, environmental costs
- Facilitate tx siting and permitting
- Support corridor identification
- Create consensus statewide plan, broad support for next major projects



Key Premises

- Proactive tx development required
 - CREZ focus development, minimize tx
- Actively involving diverse stakeholders to formulate upgrade alternatives => most effective way to build broad support for transmission
 - Incorporate environmental concerns from the first

Structure of the Collaborative





Stakeholder Steering Committee

- All transmission owners, operators
- All power buyers
- Biomass, geothermal, solar, wind, generators
- State regulatory, permitting agencies
- BLM, USFS; military
- Enviros; consumers
- Counties, Tribes



Phase 1: Identify, Rank CREZ

- Phase 1A Report (5/08): CREZ assumptions, methodology
- Phase 1 Resources Report (8/08): cost-effective energy accessible
- Phase 1B Report (12/08): 29 CA CREZ, Out of State (OOS) resource areas
 - Identify environmental exclusion areas
 - Aggregate most economic solar, wind, geothermal, biomass projects into CREZ
 - Apply relative environmental ranking
 - Sensitivities and uncertainty analysis



RETI Phase 2

Confirm developability, revise CREZ

- CREZ Revision Work Group
- Environmental Work Group

Prepare conceptual transmission plan

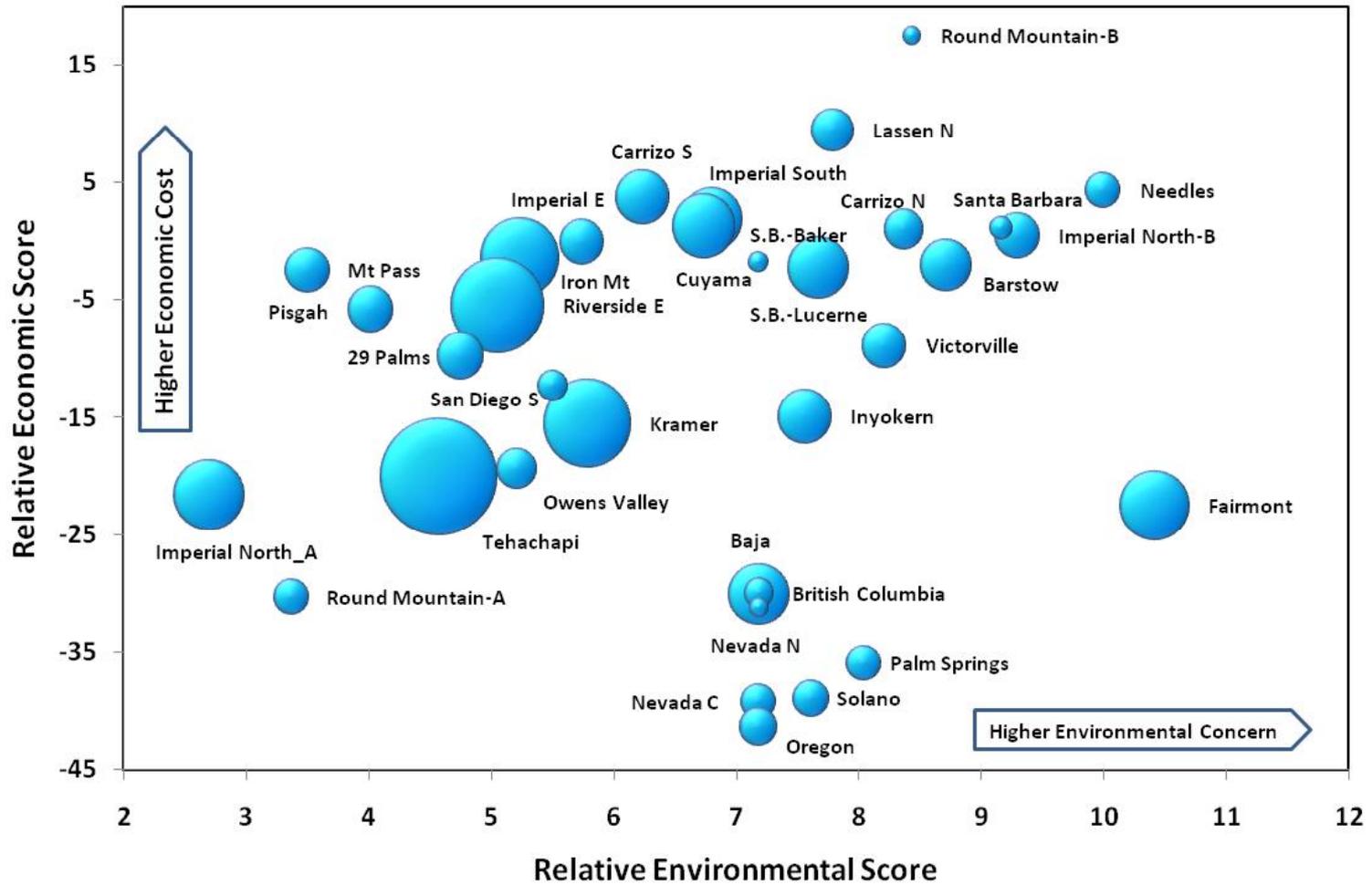
- Conceptual Planning Work Group
 - Out of State Resources Committee
 - Results Reporting Work Group
 - Environmental rating of conceptual tx facilities: EWG and expert panels for N. CA and S. CA

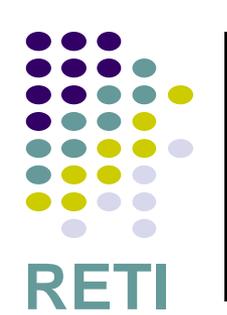


CREZ Revision

- On-the-ground evaluation of issues affecting ability to permit generation
 - Land ownership parcelization
 - BLM 1% development cap in DWMAAs
 - Other environmental concerns
 - Proposed Mojave National Monument
- Revised CREZ GWh estimates, economic, environmental ranking

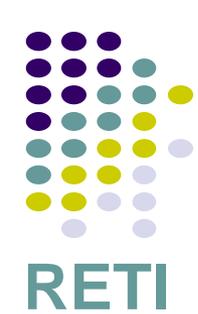
CREZ Economic and Environmental Scores - Phase 2 (see accompanying notes)





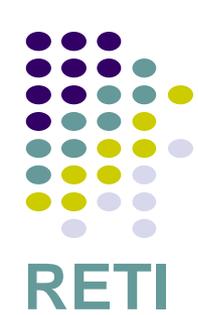
Draft Conceptual Plan

- Summary, Major Outcomes
- Caveats, Limitations
- Guidelines
- Methodology
- Transmission Groups
- Ranking
- Next Steps



Draft Plan - Summary

- Assesses relative value of line segments to access, deliver renewable energy
- Base case scenario evaluates 106 network line segments, groups into:
 - 14 Renewable Foundation Lines
 - 13 Renewable Delivery Lines
 - Renewable Collector Lines
- Recommends Foundation Lines, Delivery Lines for immediate study by CAISO, POUs
- Least-Regrets additions to CA grid
- Utilizes existing ROW, corridors



Draft Plan: Major Outcomes

- Stakeholder recommendation: two sets of major lines likely to be required for renewables, **and** which likely provide additional benefits to the grid.
 - CAISO, POU's should study immediately.
- Development of transparent, objective methodology for conceptual planning, in a process that supports active participation by diverse stakeholders.



Draft Plan: Caveats - 1

Conceptual Planning:

- Recommends potential transmission projects for study
- Provides no information about power flows, congestion, reliability
- Is not a determination of need
- Cannot determine ability of existing system to accommodate flows of new renewable generation.



Draft Plan: Caveats - 2

- Plan based on current estimates of CREZ energy output, costs
 - CREZ economics, actual development uncertain
- Shift factor methodology only approximates how power would flow
- Not useful for long-term benefit/cost studies
 - RETI looks to 2020, vs. 50-yr tx asset life
 - No benefits for congestion relief, reliability, accessing lower cost power

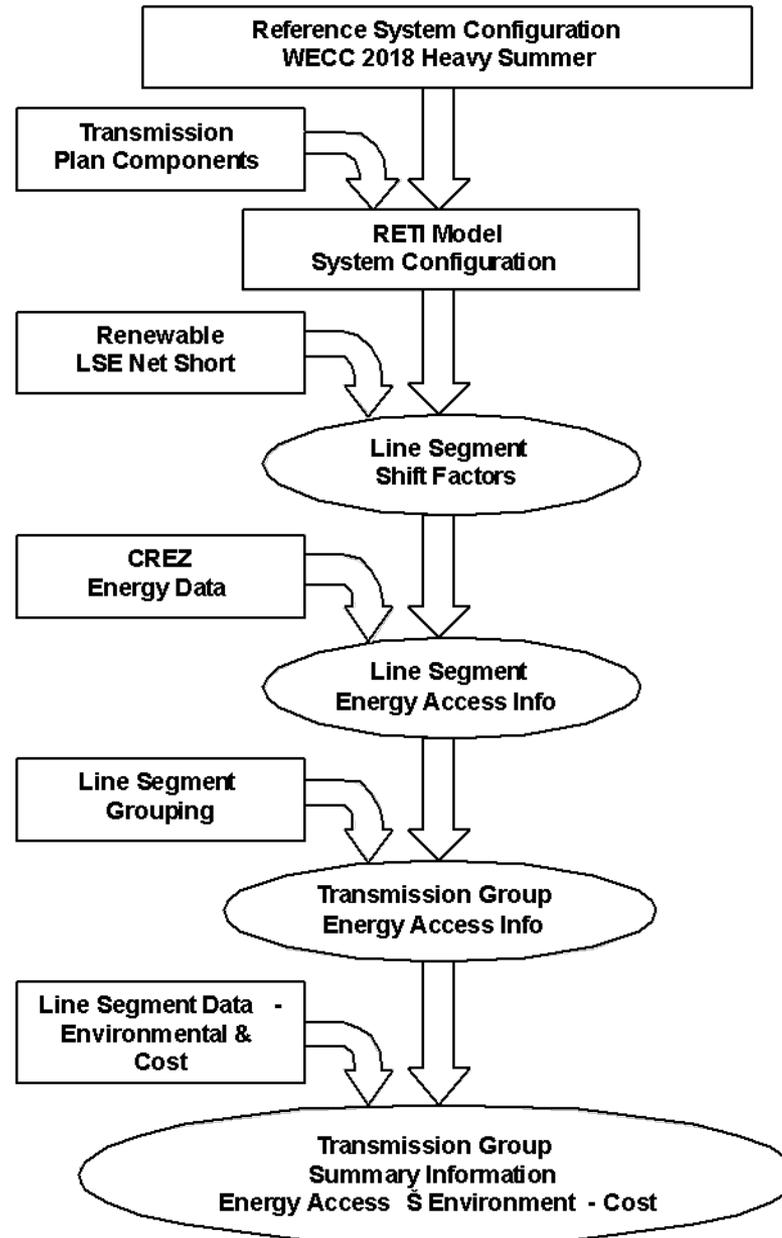


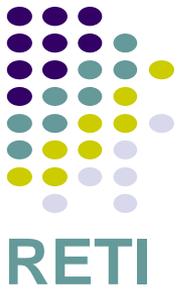
Planning Guidelines

- Statewide perspective; plan w/o respect to ownership, operation of potential upgrades
- Renewable Net Short, 2020: 60,000 GWh
 - Target: $1.6 \times \text{Net Short} = 96,000 \text{ GWh/yr}$
- Provide access to all CREZ, Out of State areas
 - 15,000 GWh imports



RETI



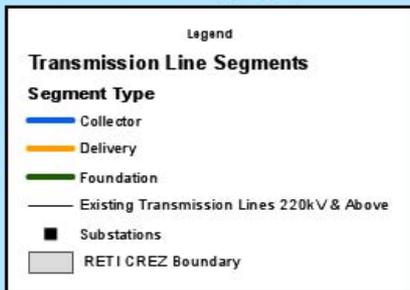


Transmission Groups

- **Renewable Foundation Lines**
 - Increase N-S/S-N flows on CA network
 - 14 line segments; carry power from many CREZ
 - Useful regardless of renewable generation
- **Renewable Delivery Lines**
 - Move energy from Foundation lines to load centers
 - 13 line segments; carry power from several CREZ
- **Renewable Collector Lines**
 - Carry CREZ power to Foundation, Delivery lines
 - Some connect to inter-ties, access OOS CREZ

RETI Phase 2A Transmission Segments Southern California

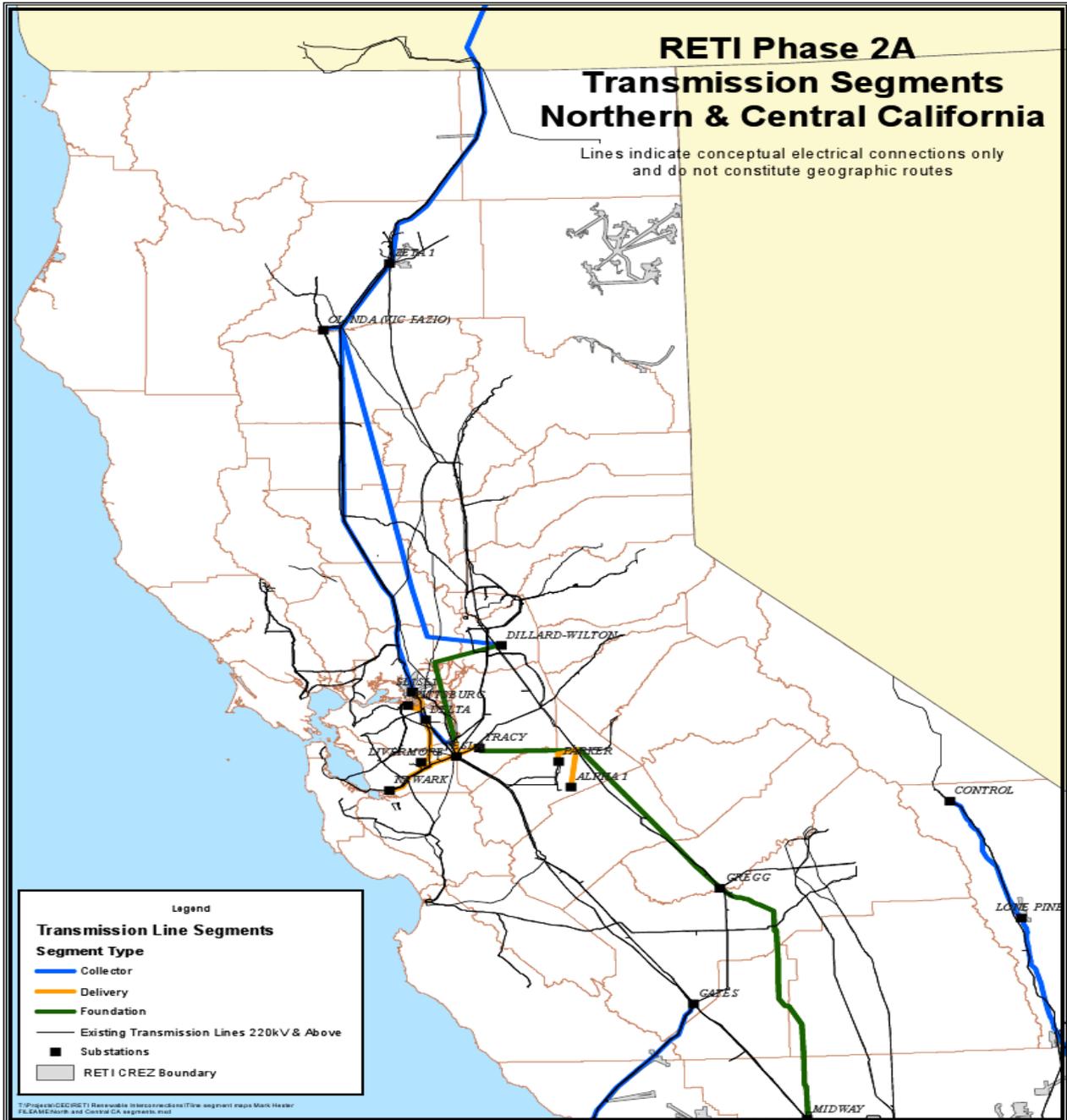
Lines indicate conceptual electrical connections only
and do not constitute geographic routes

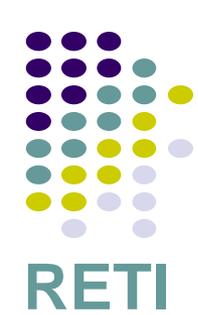


T:\Projects\CS\RETI Revealed Interconnections\Line segment maps\Mark Header
FILENAME Southern CA segments.mxd



RETI





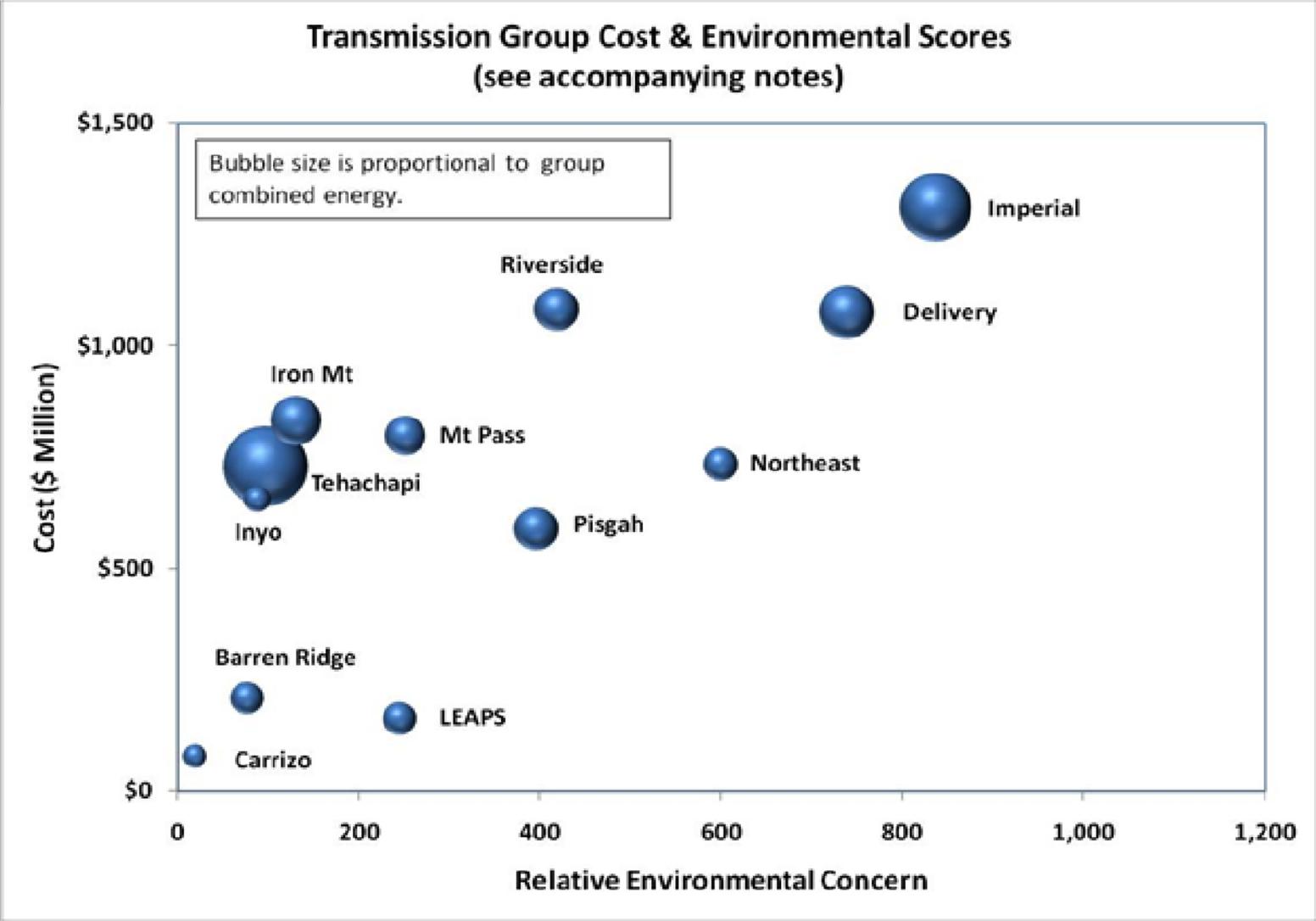
Transmission Groups - CREZ Energy, Enviro Score, Cost

Foundation & Delivery Lines			
	Group Combined CREZ Energy (GWh)	Group Enviro Score	Group Cost (\$Million)
Foundation	52759	1119	\$3,481
Delivery	12945	739	\$1,075



Collector Lines - CREZ Energy, Environmental Score, Cost

Collector Lines					
Group	Group Combined CREZ Energy (GWh)	Group	Group Enviro Score	Group	Group Cost (\$Million)
Tehachapi	30,947	Carrizo	20	Carrizo	\$78
Imperial	22,219	BarrenRidge	77	LEAPS	\$162
IronMt	10,928	Inyo	88	BarrenRidge	\$208
Riverside	8,756	Tehachapi	97	Pisgah	\$588
Pisgah	8,411	IronMt	131	Inyo	\$656
MtPass	6,885	LEAPS	246	Tehachapi	\$728
NorthEast	5,055	MtPass	252	NorthEast	\$735
LEAPS	4,753	Pisgah	396	MtPass	\$798
BarrenRidge	4,618	North	401	IronMt	\$832
North	3,536	Riverside	419	Riverside	\$1,081
Inyo	2,880	NorthEast	600	Imperial	\$1,311
Carrizo	2,351	Imperial	837	North	\$3,898
Median	5,970	Median	249	Median	\$731





Draft Report - Recommendations

1. CAISO, POU's study Foundation, Delivery lines to determine which needed by 2020.
2. Develop joint IOU-POU projects to avoid duplicative facilities; remove barriers to use.
3. Customers buying CA CREZ energy should pay only a single transmission charge.
4. CEC designate new corridors beyond those now established, in coordination with others.



Phase 2A Draft Report

- Posted for public comment, June 3, 2009
- Public meetings to solicit comment:
 - Victorville, June 18
 - Redding, June 23
 - Sacramento, June 24
- Comment period ends June 26, 2009
- SSC reviews Draft Final Report, July 8
- Phase 2A Final Report posted, mid-July



Next Steps

- Coordinate with CAISO, POU processes
- Reduce number of line segments; prioritize
- Reduce transfer capacity of plan to 33% RE target in 2020
 - While recognizing tx planned today supports evolving policy goals to 2050 and beyond
- Reconsider Out of State resources, imports vs. CA CREZ development