

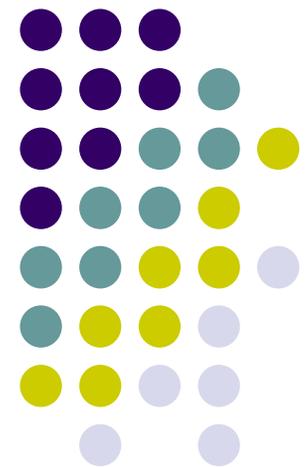
Renewable Energy Transmission Initiative

Phase 2A

Draft Conceptual Transmission Plan

June 18 - 24, 2009

Victorville, Redding, and Sacramento, CA

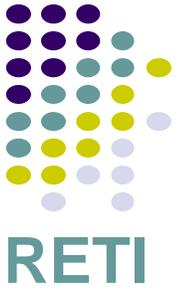




RETI Phase 2

1. Refine CREZ analysis

2. Prepare conceptual transmission plan to access CREZ, and compare ability of plan segments to access renewable energy in least environmentally harmful way
 - 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



Draft Conceptual Plan

- Summary, Major Outcomes
- Caveats, Limitations
- Guidelines
- Methodology
- Types of Line Segments in Plan
- Ranking
- Recommendations
- Next Steps



Draft Plan: Summary

- Uses existing ROW, corridors as much as possible in identification of new line segments
- Base case scenario evaluates 106 network line segments, to allow some delivery from every CREZ:
 - 14 “Renewable Foundation” lines
 - 13 “Renewable Delivery” lines
 - 12 groups of “Renewable Collector” lines, grouped by resource area
- Assesses relative value of line segments to access, deliver renewable energy in least environmentally damaging way



Draft Plan: Major Outcomes

- Development of transparent, objective methodology for conceptual planning, in a process that supports active participation by diverse stakeholders.
- Stakeholder recommendation: Foundation and Delivery lines likely required under many different generation development scenarios, **and** likely to provide additional benefits to the grid. Therefore...
 - Transmission planning entities (California Independent System Operator and Publicly-Owned Utilities) should study these lines immediately.



Draft Plan: Caveats 1

- Conceptual planning:
 - Is not a determination of need or a recommendation to build
 - Recommends potential transmission projects for study
 - Provides no information about power flows, congestion, reliability
 - Cannot determine ability of existing system to accommodate flows of new renewable generation without new lines.



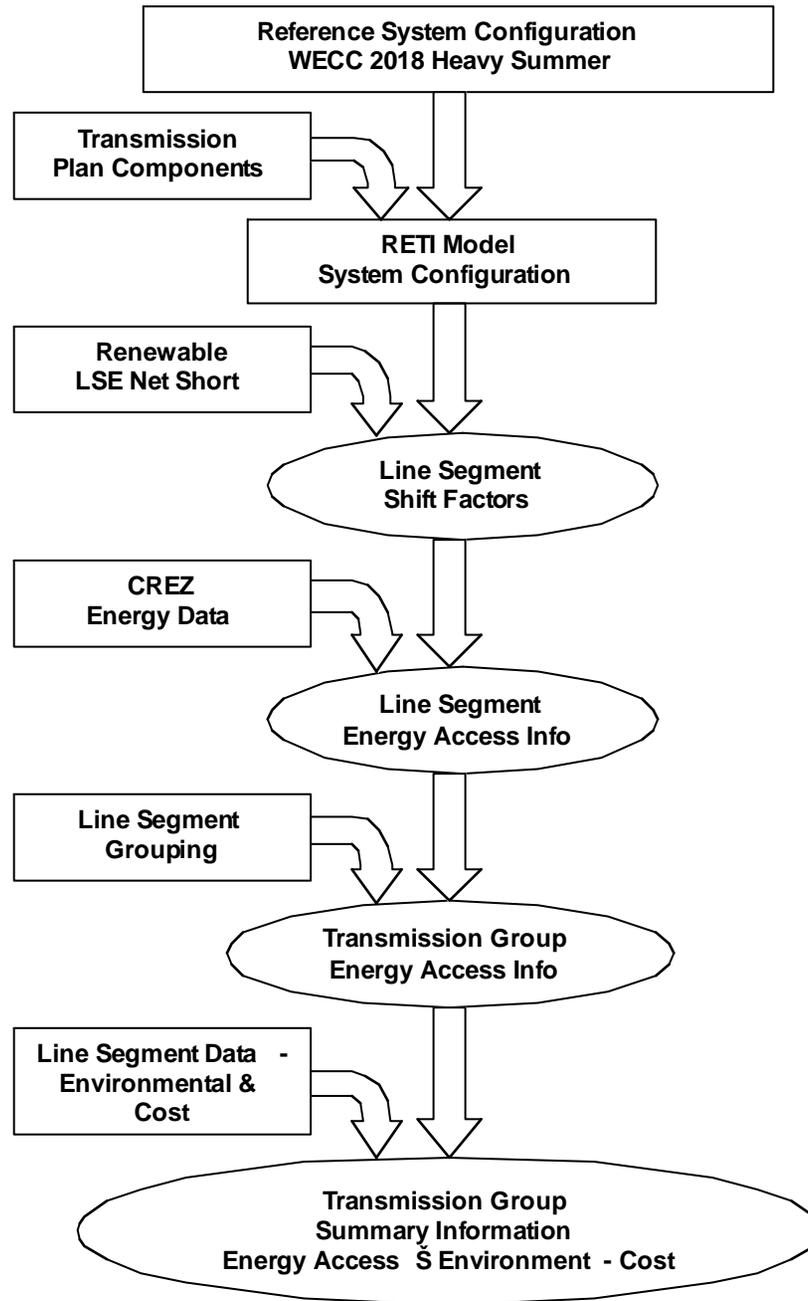
Draft Plan: Caveats 2

- 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



Draft Plan: Guidelines

- Statewide perspective w/o respect to ownership, operation of potential new lines
- Renewable Net Short – the amount needed to get to 33% in 2020: 60,000 GWh
 - Planning target: $1.6 \times \text{Net Short} = 96,000$ GWh/yr
- Provide access to all CREZ, Out of State areas (15,000 GWh imports)
- Use existing rights of way, corridors as much as possible





Types of Lines Segments in Plan

- Renewable Foundation Lines
 - Increase N-S/S-N flows on CA network
 - 14 line segments; carry power from many CREZ
 - Useful under many different renewable generation development scenarios
- Renewable Delivery Lines
 - Move energy from Foundation lines to cities
 - 13 line segments; carry power from several CREZ
- Renewable Collector Lines
 - Carry CREZ power to Foundation, Delivery lines
 - Some connect to interstate ties, access OOS CREZ

RETI Phase 2A Transmission Segments Southern California

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

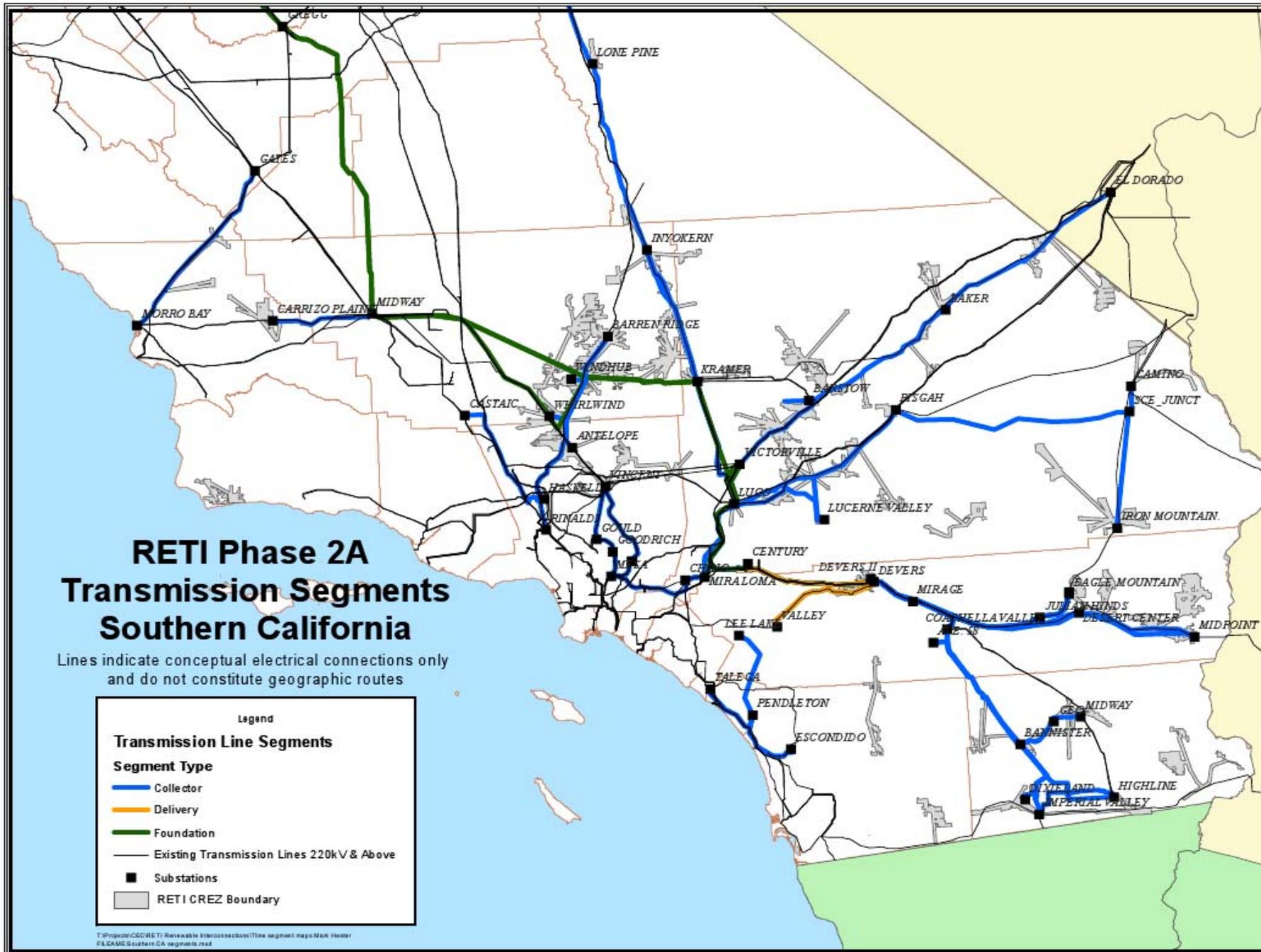
Legend

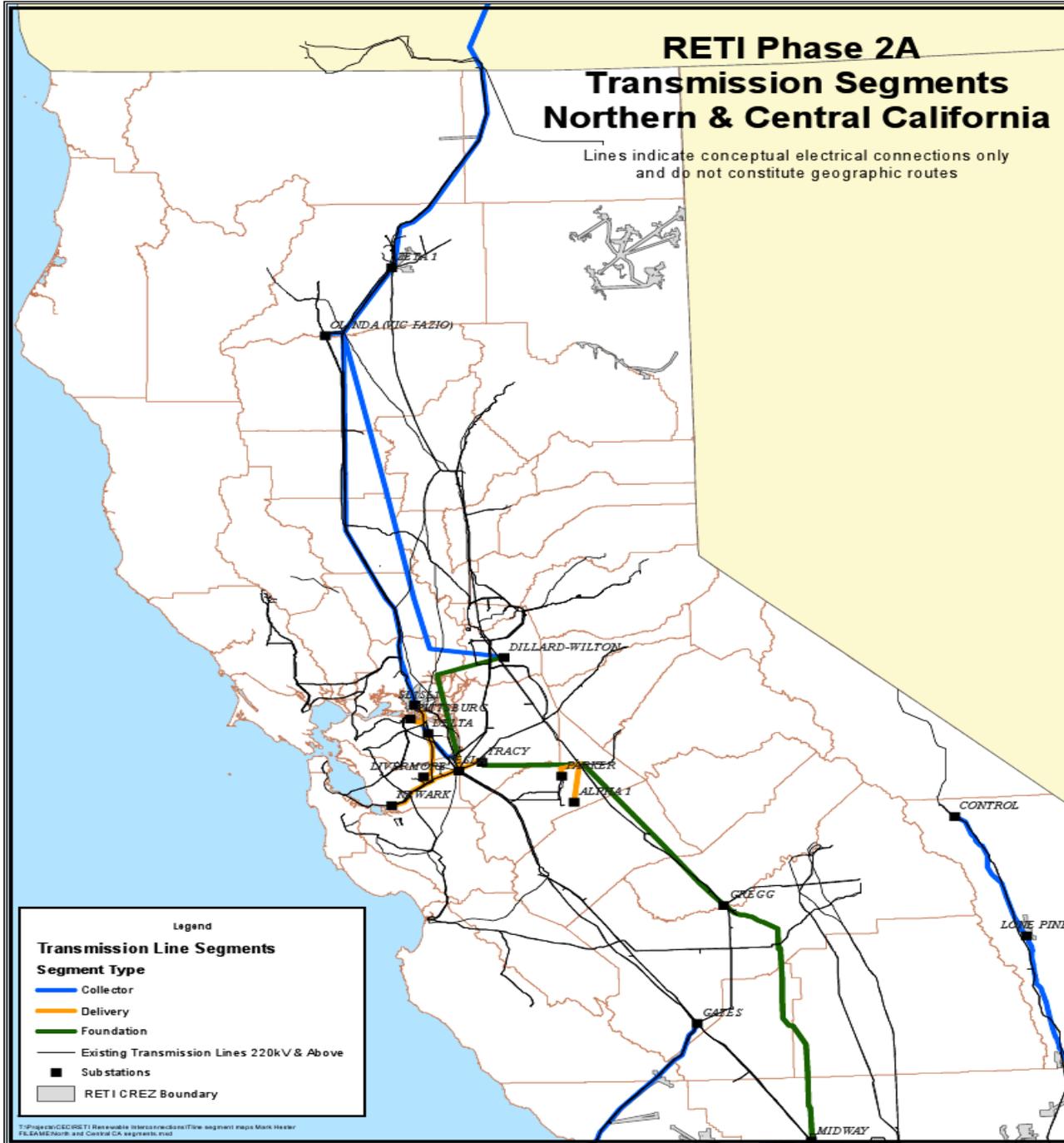
Transmission Line Segments

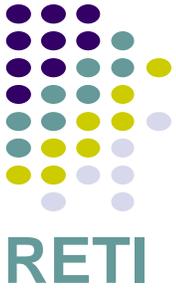
Segment Type

- Collector
- Delivery
- Foundation
- Existing Transmission Lines 220kV & Above
- Sub stations
- ▭ RETI CREZ Boundary

T:\Projects\CGD\RETI Revealed Interconnections\Time segment maps\Mark Hester
FILEGMS\Southern CA segments.mxd







Foundation & Delivery Lines – CREZ Energy, Enviro Score, Cost

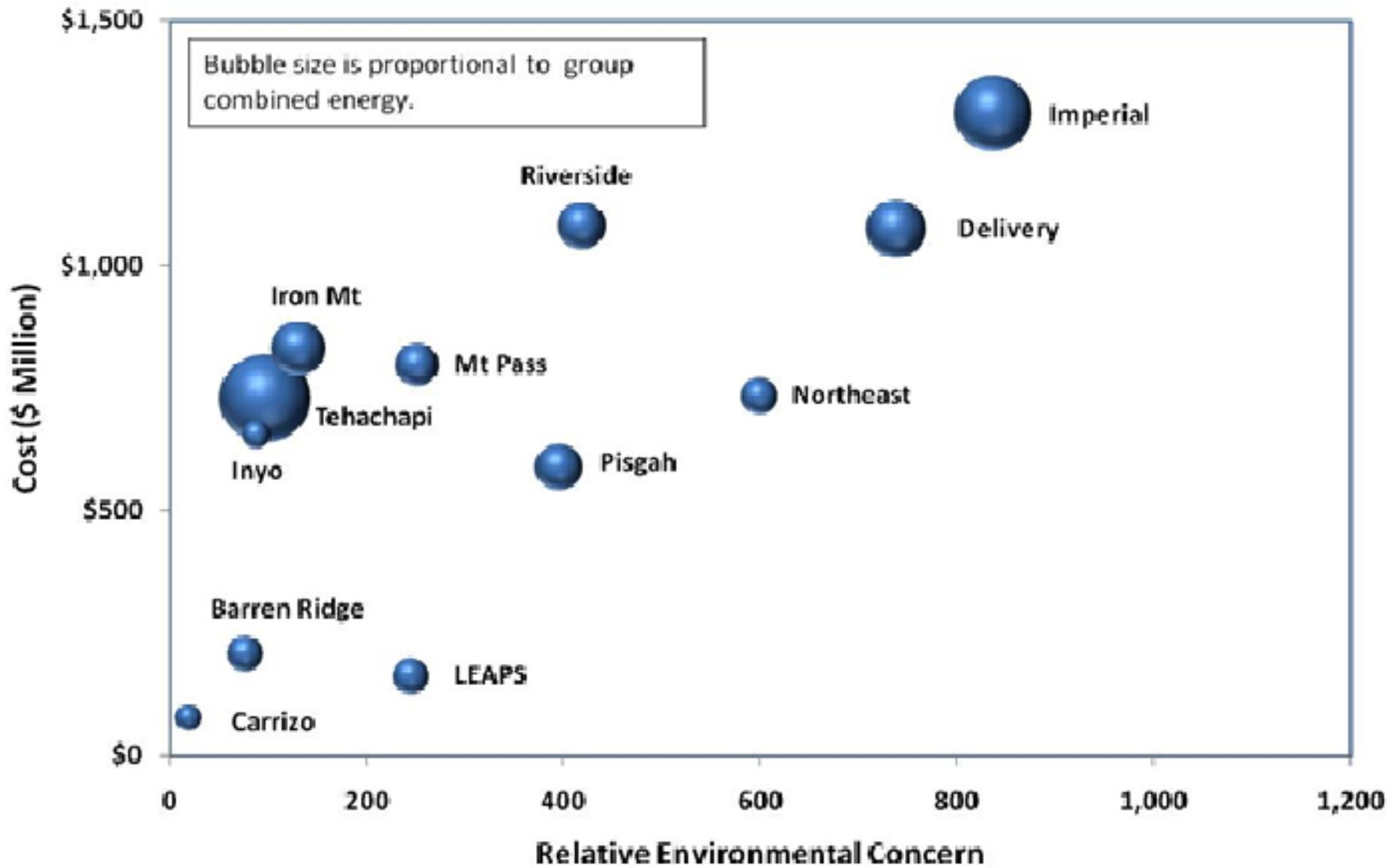
Foundation & Delivery Lines			
	Group Combined CREZ Energy (GWh)	Group Enviro Score	Group Cost (\$Million)
Foundation	52759	1119	\$3,481
Delivery	12945	739	\$1,075

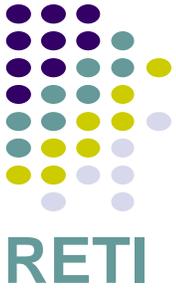


Collector Lines - CREZ Energy, Environmental Score, Cost

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

Transmission Group Cost & Environmental Scores (see accompanying notes)





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 other initiatives.



Review Process

- Report posted for public comment, June 3
 - Report, maps, appendices, notices, etc. available at: <http://www.energy.ca.gov/reti/>
- Public meetings to solicit comment:
 - Victorville, June 18
 - Redding, June 23
 - Sacramento, June 24
- Comment period ends July 10
- SSC reviews Draft Final Report, July 22
- Phase 2A Final Report posted, mid-July 2009



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