

# Transmission Corridor Designation Selection Methodology

**2009 Integrated Energy Policy Report Joint  
IEPR/Siting Committee Workshop**

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# Renewable Energy Transmission Initiative (RETI)

## Phase 1

- **CREZ Identification and Ranking**
  - **Phase 1A: Criteria, Assumptions & Methodology**
  - **Phase 1B: CREZ Identification and Ranking**

## Phase 2

- **CREZ Refinement**
- **Conceptual Transmission Plans of Service**

## Phase 3

- **Detailed Transmission Plans of Service**



## RETI Phase 2A Draft Report Recommendation

**The California Energy Commission should begin immediately..., to designate additional appropriate corridors, beyond those already established by federal agencies or utilities' rights of way, to reserve and protect transmission access to areas where renewable energy development is likely to occur. Corridor designation must be coordinated among state and federal agencies and support access to, for example, BLM Solar Energy Zones, and Desert Renewable Energy Conservation Plan (DRECP) generation development areas, as well as to the most likely CREZ.**



# Competitive Renewable Energy Zone (CREZ)

**29 CREZ with high commercial renewable energy potential identified throughout California for building renewable energy projects (wind, solar, geothermal and biomass).**



# Transmission Line Segment Types

- **Renewable Foundation Lines – 14**
- **Renewable Delivery Lines – 13**
- **Collector Lines – 79**



# Renewable Foundation Lines

- **Will increase the amount of energy that can move between northern and southern California.**
- **Will be needed for delivering renewable energy from any CREZ to consumers.**
- **Likely to be needed to meet growing energy demand regardless of generation source.**

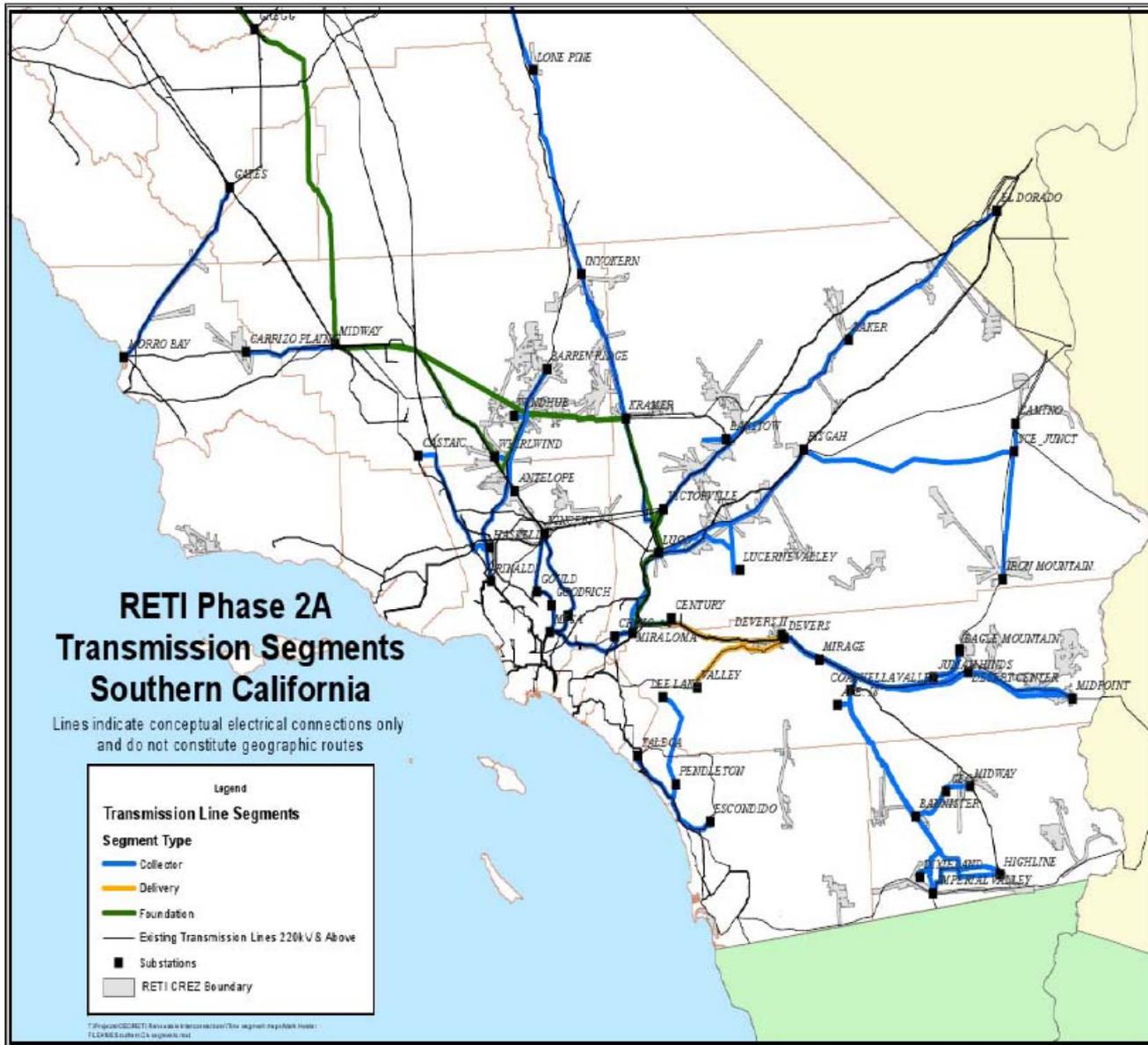


# Renewable Delivery and Collector Lines

- **Renewable Delivery Lines**
  - **Move energy from Foundation lines to major load centers.**
  - **Likely to be needed to meet growing energy demand regardless of generation source.**
- **Collector Lines**
  - **Carry power from CREZ to Foundation and Delivery lines.**







# Corridor Designation Assumptions

- **A corridor designation for any RETI transmission segment included in the 2009 Strategic Transmission Investment Plan will be in conformance with that Plan.**
- **Corridor designations should not be considered for transmission segments with on-line service dates prior to 2015.**



# RETI Transmission Line Segment Factors

1. **Rights-of-way:**
  - a) **expand an existing right-of-way**
  - b) **new right-of-way co-located near an existing right-of-way**
  - c) **new right-of-way**
2. **On-line service dates.**
3. **Total energy potential and commercial interest expressed for development of CREZ being accessed by line segment.**
4. **Location of CREZ(s) being accessed.**
5. **Environmental Concern.**
6. **Cost.**
7. **Other Factors.**



# Factors Considered by Segment Type

Factor	Collector	Foundation	Delivery
Right-of-Way	X	X	X
On-line Date	X	X	X
Energy Potential	X		
CREZ Location	X		
Environmental Concern	X	X	X
Economic Score	X	X	X
Other Factors*	X	X	X

**\* Other Factors to Consider:**

- 1) Can multiple segments use same corridor?
- 2) Will federal corridors be connected?



# Rights-of-Way Breakdown

**Starting Point:** 106 Segments Identified in RETI and  
 41 Segments would use existing ROWs  
 65 Segments require expanded ROW or new ROW

Type of ROW	Collector	Foundation	Delivery	Total
Expand existing ROW	27	1	4	<b>32</b>
New ROW Co-located near existing ROW	10	6	3	<b>19</b>
New ROW	7	2	5	<b>14</b>
<b>Total</b>	<b>44</b>	<b>9</b>	<b>12</b>	<b>65</b>



# On-Line Service Date Breakdown

On-Line Service Date	Collector	Foundation	Delivery	Total
2015	4	2	1	7
2016	0	4	0	4
2020	9	0	2	11
<b>Total Being Considered</b>	<b>13</b>	<b>6</b>	<b>3</b>	<b>22</b>

43 Projects with On-Line service dates prior to 2015 not considered.



# Collector Lines Sorted by Type of Right-of-Way

Name	Collector Group	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
F	Riverside	Riverside East Palm Springs 29 Palms	Expand	2020	259	566	H	\$31.30 (2)
H	Inyo	Central Nevada Inyokern Kramer	Expand	2015	2,322	908	H	\$130.00
I	MtPass	S. Nevada Mtn Pass Baker Barstow	Expand	2015	1,717	3,410	H	\$193.80 (2)
A	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	5,478	14,261	H	\$296.40
B	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	4,538	13,375	H	\$165.80
C	North	British Columbia Oregon Round Mtn A Round Mtn B	New/Coloc	2020	2,008	5,943	M	\$146.90



# Collector Lines Sorted by Total Energy Potential

Name	Collector Group	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
A	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	5,478	14,261	H	\$296.40
B	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	4,538	13,375	H	\$165.80
G	Pisgah	Pisgah Iron Mtn SB Lucerne	New/Coloc	2015	2,805	6,776	H	\$214.50
H	Inyo	Central Nevada Inyokern Kramer	Expand	2015	2,322	908	H	\$130.00
C	North	British Columbia Oregon Round Mtn A Round Mtn B	New/Coloc	2020	2,008	5,943	M	\$146.90
I	MtPass	S. Nevada Mtn Pass Baker Barstow	Expand	2015	1,717	3,410	H	\$193.80 (2)



# Collector Lines Sorted by Environmental Concerns

Name	Collector Group	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
C	North	British Columbia Oregon Round Mtn A Round Mtn B	New/Coloc	2020	2,008	5,943	M	\$146.90
E	Riverside	Riverside East Palm Springs 29 Palms	New/Coloc	2020	1,280	2,793	M	\$1.60 (2)
A	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	5,478	14,261	H	\$296.40
B	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	4,538	13,375	H	\$165.80
D	Riverside	Riverside East Palm Springs 29 Palms	New/Coloc	2020	1,280	2,793	H	\$240.60 (2)
F	Riverside	Riverside East Palm Springs 29 Palms	Expand	2020	259	566	H	\$31.30 (2)
G	Pisgah	Pisgah Iron Mtn SB Lucerne	New/Coloc	2015	2,805	6,776	H	\$214.50



# Collector Lines Sorted by Cost

Name	Collector Group	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
E	Riverside	Riverside East Palm Springs 29 Palms	New/Coloc	2020	1,280	2,793	M	\$1.60 (2)
F	Riverside	Riverside East Palm Springs 29 Palms	Expand	2020	259	566	H	\$31.3 (2)
H	Inyo	Central Nevada Inyokern Kramer	Expand	2015	2,322	908	H	\$ 130.00
C	North	British Columbia Oregon Round Mtn A Round Mtn B	New/Coloc	2020	2,008	5,943	M	\$146.90
B	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	New/Coloc	2020	4,538	13,375	H	\$165.80
I	MtPass	S. Nevada Mtn Pass Baker Barstow	Expand	2015	1,717	3,410	H	\$193.80 (2)
G	Pisgah	Pisgah Iron Mtn SB Lucerne	New/Coloc	2015	2,805	6,776	H	\$214.50



# Summary of Sorted Data for Collector Lines

Segment	Right-of-Way	Total Energy Potential (GWh)	Environmental Concern	Cost	Average
A	2	1	3	9	3.75
B	2	2	3	5	3
C	2	5	2	4	3
D	2	7	3	8	5.25
E	2	8	2	1	3.25
F	1	9	3	2	3.75
G	2	3	3	7	3.75
H	1	4	3	3	2.75
I	1	6	3	6	4

ROW Ranking: 1 = Expand, 2 = Co-located, 3 = New ROW  
 Environmental Ranking: 1 = L, 2 = M, 3 = H



# Renewable Areas Accessed for Collector Lines

Name	Collector Group	CREZ Accessed in RETI	BLM	DRECP
A	Imperial	Imperial North A Imperial North B Imperial South Imperial East Baja	?	?
F	Pisgah	Pisgah Iron Mtn SB Lucerne	?	?
G	Inyo	Central Nevada Inyokern Kramer	?	?
B	North	British Columbia Oregon Round Mtn A Round Mtn B	?	?



# Foundation Lines Sorted by Environmental Concern

Name	Segment Type	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
B	Foundation	All	Expand	2015	213,885	155,503	L (Low with adequate survey and mitigation, and use of existing infrastructure roads)	\$78.00
C	Foundation	All	New/Coloc	2016	213,885	155,503	M	\$312.50 (2)
D	Foundation	All	New/Coloc	2016	213,885	155,503	M	\$440.60 (2)
A	Foundation	All	New ROW	2015	213,885	155,503	Not Assessed	\$225.00

\* If no clear favored project, then confer with California Joint Transmission Planning Group.



# Foundation Lines Sorted by Cost

Name	Segment Type	CREZ Accessed	ROW Required	On-line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
B	Foundation	All	Expand	2015	213,885	155,503	L (Low with adequate survey and mitigation, and use of existing infrastructure roads)	\$78.00
A	Foundation	All	New ROW	2015	213,885	155,503	Not Assessed	\$225.00
C	Foundation	All	New/Coloc	2016	213,885	155,503	M	\$312.5 (2)
D	Foundation	All	New/Coloc	2016	213,885	155,503	M	\$440.6 (2)

\* If no clear favored project, then confer with California Joint Transmission Planning Group.



# Delivery Lines Sorted by Environmental Concern

Name	Segment Type	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
B	Delivery	All	New ROW	2020	213,885	155,503	L	\$1.60 (2)
A	Delivery	All	Expand	2015	213,885	155,503	H	\$270.00

**\* If no clear favored project, then confer with California Joint Transmission Planning Group.**



# Delivery Lines Sorted by Cost

Name	Segment Type	CREZ Accessed	ROW Required	On-Line Date	Total Energy Potential of CREZ (GWh)	Commercial Interest Expressed for Development (GWh)	Environmental Concerns	Cost (\$Million)
B	Delivery	All	New ROW	2020	213,885	155,503	L	\$1.60 (2)
A	Delivery	All	Expand	2015	213,885	155,503	H	\$270.00

\* If no clear favored project, then confer with California Joint Transmission Planning Group.



# Discussion Questions

- **What changes should staff make to improve its proposed methodology for selecting RETI transmission line segments for corridor designation?**
- **What is the earliest on-line service date for a RETI transmission line segment that should be assumed to consider the segment a candidate for corridor designation?**
- **Is on-line date slippage a factor that should be considered in staff's methodology, and if so, how should it be considered?**
- **Should transmission line segments identified by the RETI process that are included in the 2009 Strategic Transmission Investment Plan be considered in conformance with the Plan for purposes of a corridor designation need determination?**



## Discussion Questions (cont.)

- **Under what circumstances do you believe that designating a corridor ahead of time could shorten and improve the overall transmission line permitting process and outcome?**
- **If the Energy Commission identifies in the 2009 STIP a certain RETI transmission line segment as a candidate for corridor designation, should the transmission line owner prepare and submit an application for a corridor designation?**
- **If the answer to the question above is no, what would be the reasons for not applying for a corridor designation?**

