DFA Suitability
&
Transmission Planning

May 7, 2013

Kevin Richardson

Discussion Topics

- CAISO Approved Transmission to Meet 33% RPS
- SCE's Commitment to the 33% RPS
- SCE's Existing & Proposed Transmission Projects
  - DRECP DFA correlation to transmission upgrades
  - Queued MW signed up to use upgrades
- Transmission Capacity / Queued MW
- Renewable Capacity in the CAISO Queue
- SCE's Queued Generation Summary
- Generation Interconnection Queue and GIDAP Challenges
- Transmission Planning Challenges
- SCE's Generation Interconnection Maps
- Pre-Scoping Meetings
- Summary

Transmission to meet 33% RPS in 2020

$7.0 B

	Transmission upgrade	Approval status		Online
		ISO	CPUC	
1	Carrizo-Midway	Pending LGIA	NOC effective	2013
2	Sunrise Powerlink	Approved	Approved	energized
3	Eldorado-Ivanpah	LGIA	Approved	2013
4	Valley-Colorado River	Approved	Approved	2013
5	West of Devers	LGIA	Not yet filed	2019
6	Tehachapi (segments 1, 2 & 3a of 11 completed)	Approved	Approved	2015
7	Cool Water-Lugo	LGIA	Not yet filed	2018
8	South Contra Costa	LGIA	Not yet filed	2015
9	Borden-Gregg	LGIA	Not yet filed	2015
10	Imperial Valley C Station	Approved	Not yet filed	2013
11	Sycamore-Penasquitos	Pending	Not yet filed	2017
12	Lugo-Eldorado line reroute	Approved	Not yet filed	2020
13	Lugo-Eldorado series cap	Pending	Not needed	2016
14	Warnerville-Bellota reconductor	Approved	Not yet filed	2017
15	Wilson-Le Grand reconductor	Approved	Not yet filed	2020

Based on draft 2012/13 Transmission Plan

SCE's Commitment to 33% RPS

- SCE is committed to meeting California's 33% RPS in a responsible manner
- SCE has provided upfront financing for many transmission system upgrades
- SCE has received FERC Abandoned Plant Treatment for over $5 billion dollars of Transmission Upgrades:
  - Tehachapi Renewable Transmission Project (TRTP)
  - Devers-Colorado River (DCR) Project
  - Eldorado-Ivanpah Transmission Project (EITP)
  - Coolwater-Lugo Transmission Project (CLTP)
  - West of Devers (WOD) Project
  - Lugo-Pisgah Project
  - Red Bluff Substation
  - Jasper Substation
- These upgrades correlate with DRECP Development Focus Areas (DFAs)
- The 2010-2011, 2011-2012, & 2012-2013 Annual CAISO Transmission Plans state that no additional transmission projects are needed to support 33% RPS

Differences in Analyses

Generation Interconnection Process & CAISO Annual Transmission Plan

- Specific assumptions
- Computer simulations
- Department of transmission planners
- Analyses performed over months
- Outcome is specific transmission upgrades
- Annual process

Desert Renewable Energy Conservation Plan (DRECP) Transmission Technical Group (TTG)

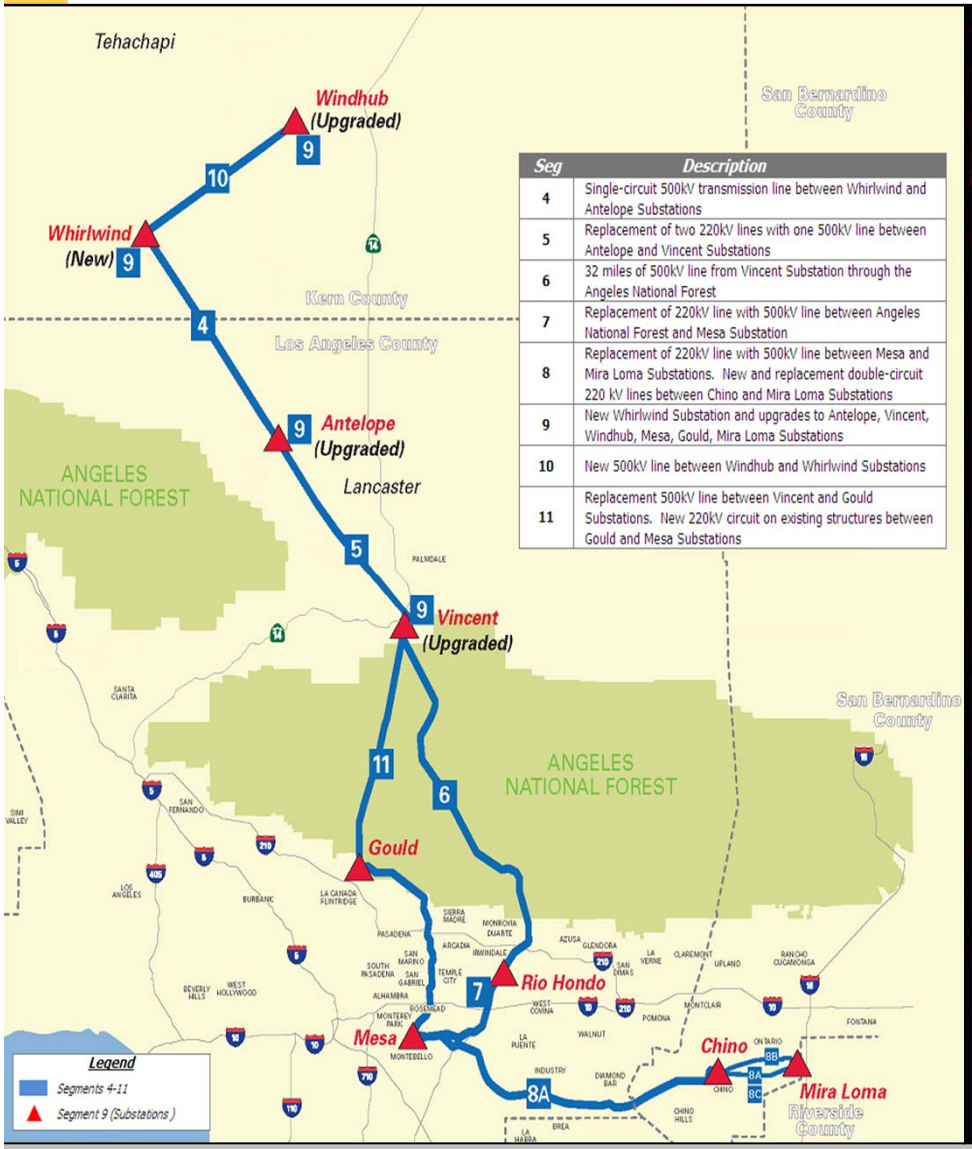
- Generalized assumptions
- Spreadsheet analysis
- A handful of transmission planners
- Analyses performed over weeks
- Outcome is # of acres needed for transmission
- Convened twice, disbanded, & may convene again

Vs.

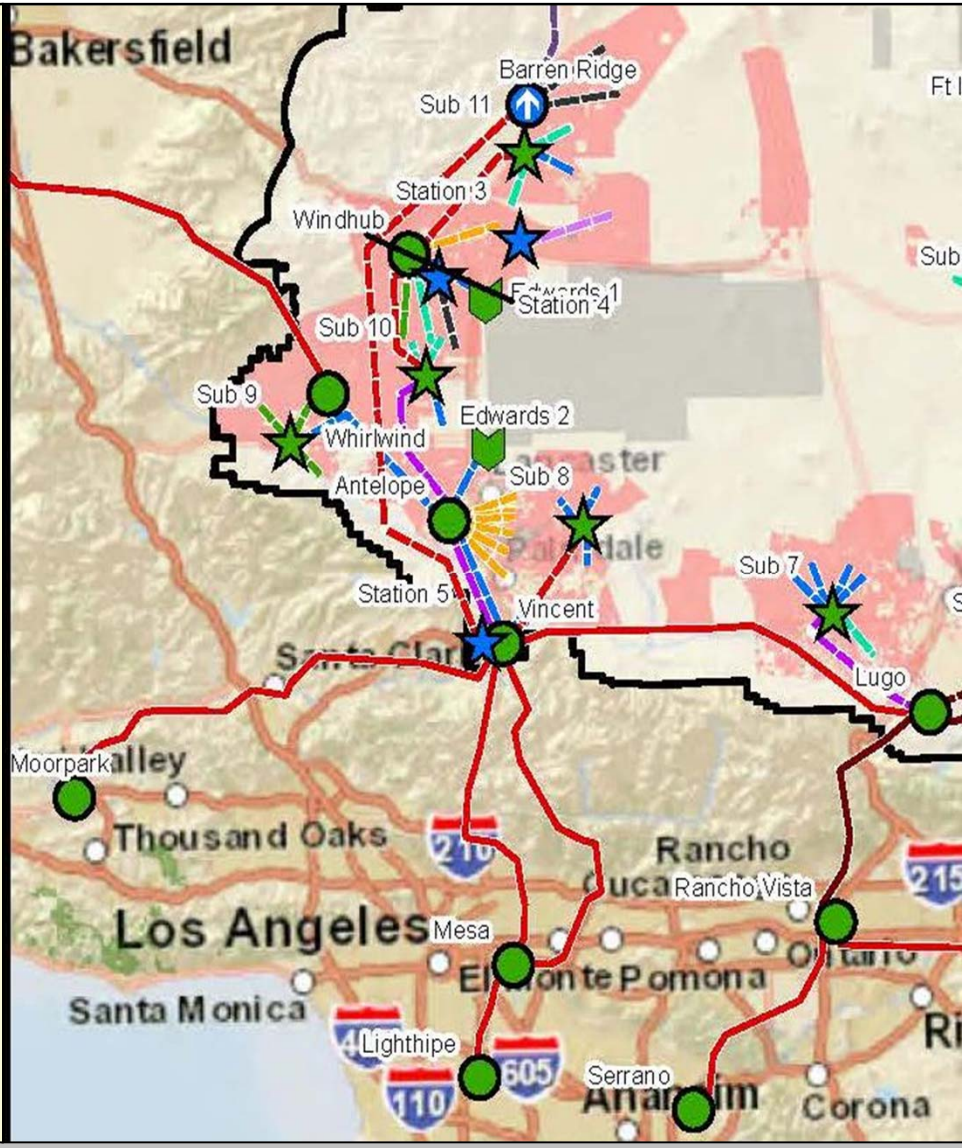
TRTP & DFA Alternative 3 Correlation

TRTP (In Construction)

DFA Alternative 3 Hypothetical Build-out*



Seg	Description
4	Single-circuit 500kV transmission line between Whirlwind and Antelope Substations
5	Replacement of two 220kV lines with one 500kV line between Antelope and Vincent Substations
6	32 miles of 500kV line from Vincent Substation through the Angeles National Forest
7	Replacement of 220kV line with 500kV line between Angeles National Forest and Mesa Substation
8	Replacement of 220kV line with 500kV line between Mesa and Mira Loma Substations. New and replacement double-circuit 220 kV lines between Chino and Mira Loma Substations
9	New Whirlwind Substation and upgrades to Antelope, Vincent, Windhub, Mesa, Gould, Mira Loma Substations
10	New 500kV line between Windhub and Whirlwind Substations
11	Replacement 500kV line between Vincent and Gould Substations. New 220kV circuit on existing structures between Gould and Mesa Substations



*The DRECP TTG report was not a siting exercise, it was meant to approximate the necessary acreage needed for transmission facilities for certain DFA scenarios.

Tehachapi Renewable Transmission Project (TRTP)

- SCE Transmission Capacity in Tehachapi area pre-TRTP: 0 MW
- TRTP Project Capacity: 4,500 MW
- CAISO Queued MW requesting TRTP interconnection: 6,822 MW
- CAISO Queued MW with agreements in progress: 2,933 MW

(Only one developer owned Sagebrush 230 kV QF line & two LADWP lines existed)

In Progress IA Status
- Serial
- Transition Cluster
- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- SGIP

Report Run Date: 04/30/2013

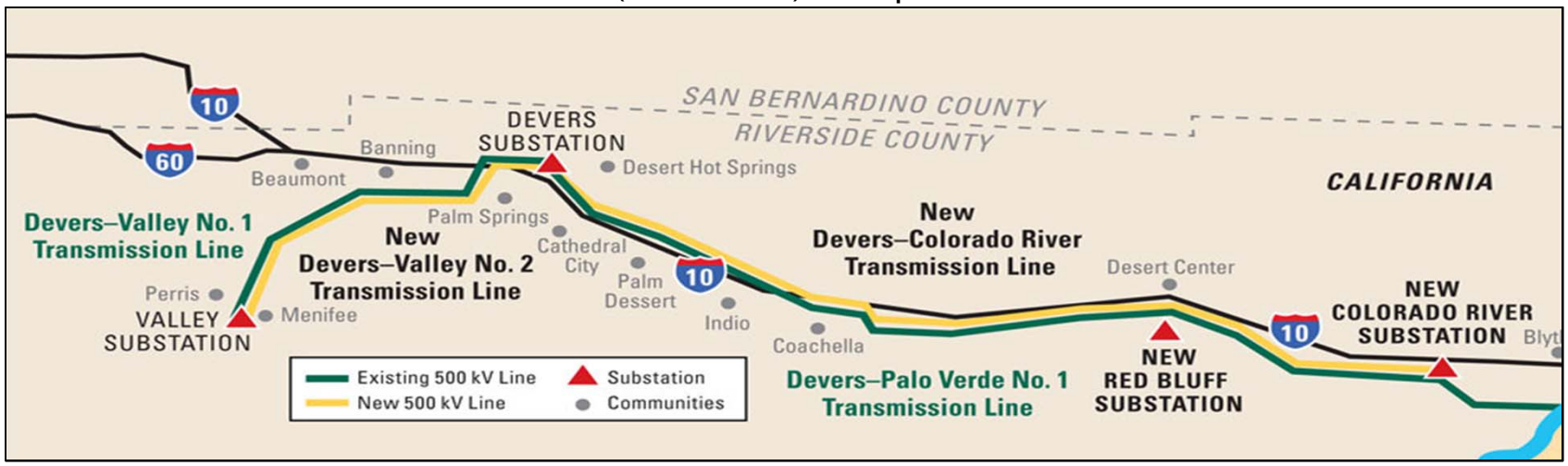
California ISO
Shaping a Renewed Future

The California ISO Controlled Grid Generation Queue - CISO Active

					Net MWs to Grid	Deliverability Status	Location		Point of Interconnection		Study Availability	
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Study Process	MW Total	Full Capacity, Partial or Energy Only (FC/P/EO)	County	State	Utility	Station or Transmission Line	Interconnection Agreement Status	
20	8/19/2003	9/4/2003	Active	AMEND 39	300		KERN	CA	SCE	Antelope	Executed	
73	6/6/2005	6/27/2005	Active	Serial	250		KERN	CA	SCE	Whirlwind Sub 230kV Bus	Executed	
84	11/22/2005	12/1/2005	Active	Serial	340		KERN	CA	SCE	Whirlwind Sub 230kV Bus	In Progress	Serial
93	2/15/2006	3/1/2006	Active	Serial	220		KERN	CA	SCE	Windhub Substation 220kV bus	Executed	
94	2/15/2006	3/1/2006	Active	Serial	180		KERN	CA	SCE	Highwind Sub 220kV Bus	In Progress	Serial
97	2/15/2006	3/1/2006	Active	Serial	160		KERN	CA	SCE	Whirlwind Sub 220kV bus	In Progress	Serial
119	8/8/2006	8/8/2006	Active	Serial	500		KERN	CA	SCE	Windhub Sub 230kV Bus	Executed	
132	9/27/2006	9/27/2006	Active	Serial	297		KERN	CA	SCE	Highwind Substation 230kV bus	Executed	
153	11/22/2006	11/22/2006	Active	Serial	100		KERN	CA	SCE	Whirlwind Substation 230kV	In Progress	Serial
175	2/21/2007	2/21/2007	Active	TC	650	FC	KERN	CA	SCE	Whirlwind Substation 230kV	In Progress	Transition Cluster
188	3/23/2007	3/23/2007	Active	TC	199	FC	KERN	CA	SCE	Windhub Substation 230kV	In Progress	Transition Cluster
407	5/30/2008	5/30/2008	Active	TC	310	FC	KERN	CA	SCE	Cottonwind-Whirlwind 230kV line	Executed	
408	5/30/2008	5/30/2008	Active	TC	276	FC	KERN	CA	SCE	Cottonwind-Whirlwind 230kV line	Executed	
412	5/30/2008	5/30/2008	Active	TC	250	FC	LOS ANGELES	CA	SCE	Whirlwind Substation 230kV	Executed	
494	7/20/2009	7/31/2009	Active	C1	150	FC	KERN	CA	SCE	Windhub Substation 230kV	In Progress	Cluster 1
506	7/30/2009	7/31/2009	Active	C1	300	FC	KERN	CA	SCE	Whirlwind Substation 230kV	In Progress	Cluster 1
513	7/31/2009	7/31/2009	Active	C1	141	FC	LOS ANGELES	CA	SCE	Whirlwind Substation 230kV	In Progress	Cluster 1
537A	11/23/2010	11/23/2009	Active	SGIP	19.5	EO	KERN	CA	SCE	Highwind Substation	In Progress	SGIP
602	1/30/2010	2/1/2010	Active	C2	150	FC	KERN	CA	SCE	Whirlwind Substation 230kV	Executed	
643R	7/30/2010	7/31/2010	Active	C3	153	FC	KERN	CA	SCE	Whirlwind Sub 230 kV Bus	In Progress	Cluster 3
643AA	7/26/2010	7/31/2010	Active	C3	200.1	FC	LOS ANGELES	CA	SCE	Antelope Sub 230kV Bus	In Progress	Cluster 3
643AJ	7/30/2010	7/31/2010	Active	C3	100	FC	KERN	CA	SCE	Whirlwind Sub 230 kV Bus		
746	3/31/2011	3/31/2011	Active	C4	300	FC	KERN	CA	SCE	Whirlwind Substation 220kV	In Progress	Cluster 4
768	3/31/2011	3/31/2011	Active	C4	330	FC	LOS ANGELES	CA	SCE	Antelope Substation 230kV bus		
795	3/31/2011	3/31/2011	Active	C4	20	FC	KERN	CA	SCE	Whirlwind Substation 230 kV bus	In Progress	Cluster 4
796	3/31/2011	3/31/2011	Active	C4	20	FC	KERN	CA	SCE	Whirlwind Substation 230 kV bus	In Progress	Cluster 4
922	4/2/2012	4/2/2012	Active	C5	291	FC	KERN	CA	SCE	Highwind Substation 230kV		
925	4/2/2012	4/2/2012	Active	C5	20	FC	KERN	CA	SCE	Windhub Substation 230kV bus		
926	4/2/2012	4/2/2012	Active	C5	550	FC	KERN	CA	SCE	Windhub Substation 230 kV		
927	4/2/2012	4/2/2012	Active	C5	45	FC	KERN	CA	SCE	Highwind Substation 230kV bus		
					6822							

DCR & WOD & DFA Alternative 6 Correlation

DCR (In Construction) & Proposed WOD



DFA Alternative 6 Hypothetical Build-out*

*The DRECP TTG report was not a siting exercise, it was meant to approximate the necessary acreage needed for transmission facilities for certain DFA scenarios.

Devers-Colorado River (DCR) & West of Devers (WOD) Projects

- SCE Transmission Capacity in I-10 Corridor: 2,300 MW* (Existing Devers-Palo Verde 500 kV T/L)
- DCR & WOD combined Project Capacity: 4,000 MW
- CAISO Queued MW requesting I-10 Corridor interconnection: 5,230 MW
- CAISO Queued MW with agreements in progress: 1,965 MW

In Progress IA Status
- Serial
- Transition Cluster
- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- SGIP

Report Run Date: 04/30/2013

California ISO
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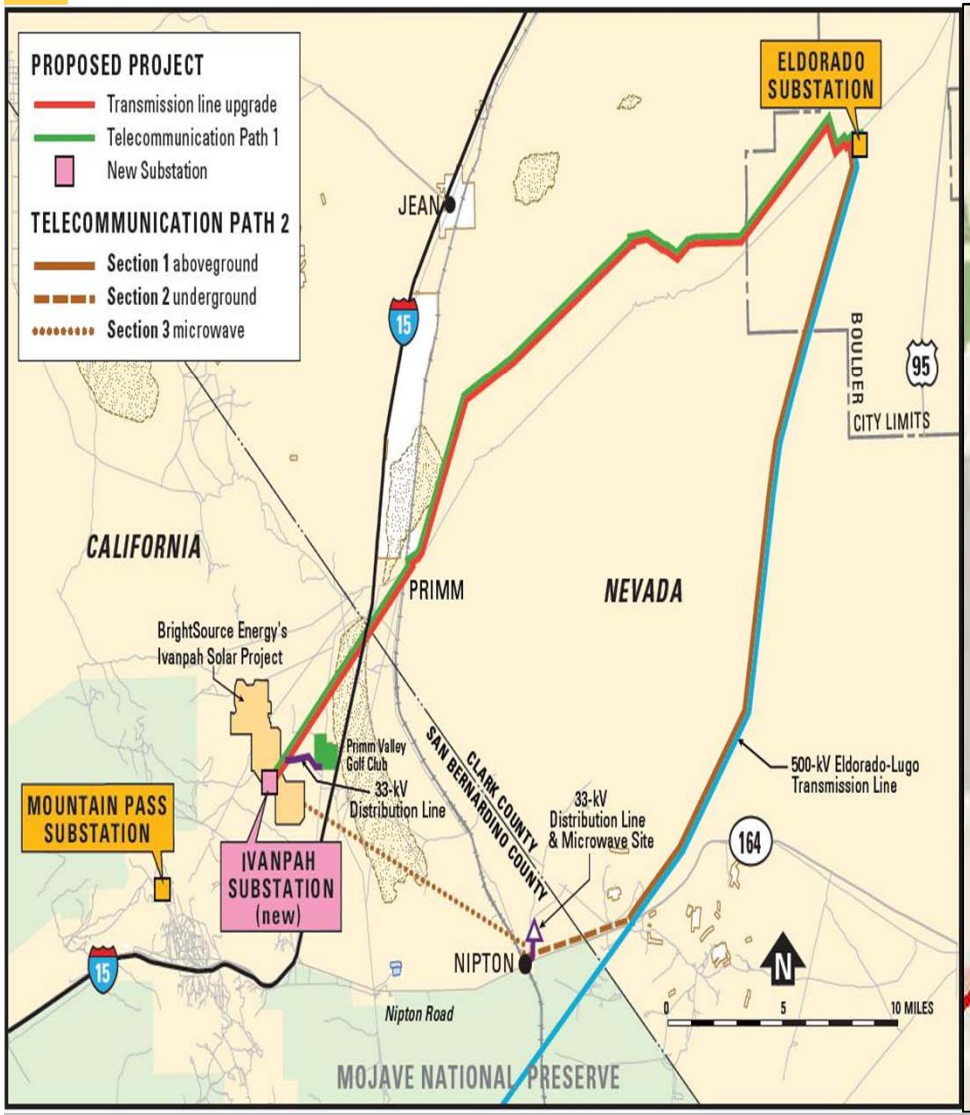
The California ISO Controlled Grid Generation Queue - CISO Active

					Net MWs to Grid	Deliverability Status	Location		Point of Interconnection		Study Availability
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Study Process	MW Total	Full Capacity, Partial or Energy Only (FC/P/EO)	County	State	Utility	Station or Transmission Line	Interconnection Agreement Status
1	9/30/1998	9/30/1998	Active	Pre- Amend. 39	16.5		RIVERSIDE	CA	SCE	Devers-Garnet 115 kV line (Tap)	In Progress
3	4/21/2000	6/14/2000	Active	Serial	850		RIVERSIDE	CA	SCE	Devers Substation 230kV Bus	Executed
17	3/18/2003	3/18/2003	Active	AMEND 39	520		RIVERSIDE	CA	SCE	Colorado River Substation 500kV bus	In Progress
49	12/14/2004	12/14/2004	Active	AMEND 39	100.5		RIVERSIDE	CA	SCE	Devers Substation 115kV bus	In Progress
138	10/23/2006	10/23/2006	Active	Serial	150		RIVERSIDE	CA	SCE	Devers-Vista 230kV #1	In Progress
146	11/16/2006	11/16/2006	Active	Serial	150		RIVERSIDE	CA	SCE	Red Bluff Substation 230kV	Executed
147	11/16/2006	11/16/2006	Active	Serial	400		RIVERSIDE	CA	SCE	Red Bluff Substation 230kV	Executed
193	3/19/2007	4/4/2007	Active	TC	500	FC	RIVERSIDE	CA	SCE	Colorado River Substation 500kV	Executed
219	5/7/2007	5/23/2007	Active	Serial	50		RIVERSIDE	CA	SCE	Colorado River Substation 500kV bus	In Progress
294	1/15/2008	1/16/2008	Active	TC	485	FC	RIVERSIDE	CA	SCE	Colorado River Substation 500kV	Executed
365	5/6/2008	5/12/2008	Active	TC	500	FC	RIVERSIDE	CA	SCE	Red Bluff Substation 230kV	Executed
421	5/30/2008	5/30/2008	Active	TC	49.5	FC	RIVERSIDE	CA	SCE	Blythe-Eagle Mountain 161 kV line	In Progress
576	1/29/2010	2/1/2010	Active	C2	224	FC	RIVERSIDE	CA	SCE	Colorado River Sub 230kV Bus	In Progress
588	1/29/2010	2/1/2010	Active	C2	200	FC	RIVERSIDE	CA	SCE	Red Bluff Substation 230kV	In Progress
632AA	5/26/2010	5/26/2010	Active	SGIP-TC	13	EO	RIVERSIDE	CA	SCE	Devers-Farrell 115kV	In Progress
643AE	7/30/2010	7/31/2010	Active	C3	150	FC	RIVERSIDE	CA	SCE	Red Bluff Sub 230kV Bus	In Progress
797	3/31/2011	3/31/2011	Active	C4	0.5	FC	RIVERSIDE	CA	SCE	Red Bluff Substation 230kV	In Progress
798	12/15/2010	3/31/2011	Active	C4	221	EO	RIVERSIDE	CA	SCE	Colorado River Substation 230kV	In Progress
831	3/31/2011	3/31/2011	Active	C4	270	FC	RIVERSIDE	CA	SCE	Colorado River Substation 230kV	In Progress
871	11/15/2011	11/15/2011	Active	C5	80	FC	RIVERSIDE	CA	SCE	Colorado River Substation 230kV	
902	4/2/2012	4/2/2012	Active	C5	150	FC	RIVERSIDE	CA	SCE	Colorado River sub, 230 kV bus	
913	4/2/2012	4/2/2012	Active	C5	150	FC	RIVERSIDE	CA	SCE	Colorado River Substation 230 kV bus	
					5230						

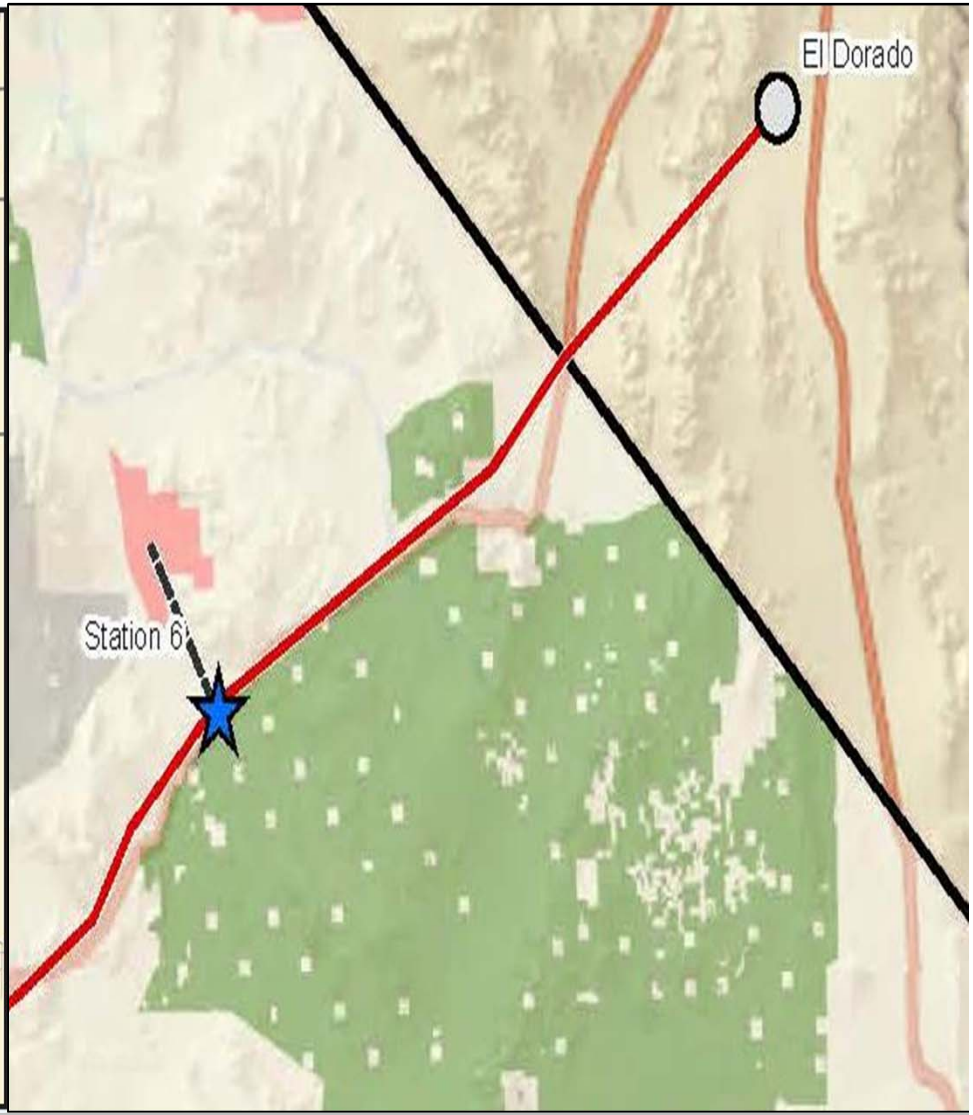
*The 2,300 MW is the line rating and there is currently existing power flowing through the line.

EITP & DFA Alternative 2 Correlation

EITP (In Construction)



DFA Alternative 2 Hypothetical Build-out*



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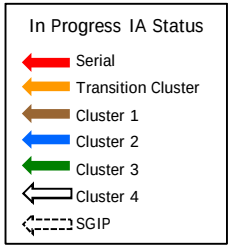
Eldorado-Ivanpah Transmission Project (EITP)

- Existing SCE Transmission Capacity pre-EITP: 82 MW* (Eldorado-Baker-Coolwater-Dunn Siding -Mountain Pass 115 kV T/L)
- EITP Capacity: 1,400 MW
- CAISO Queued MW requesting EITP interconnection: 964 MW
- CAISO Queued MW with agreements in progress: 20 MW



Report Run Date: 04/30/2013

California ISO
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The California ISO Controlled Grid Generation Queue - CISO Active

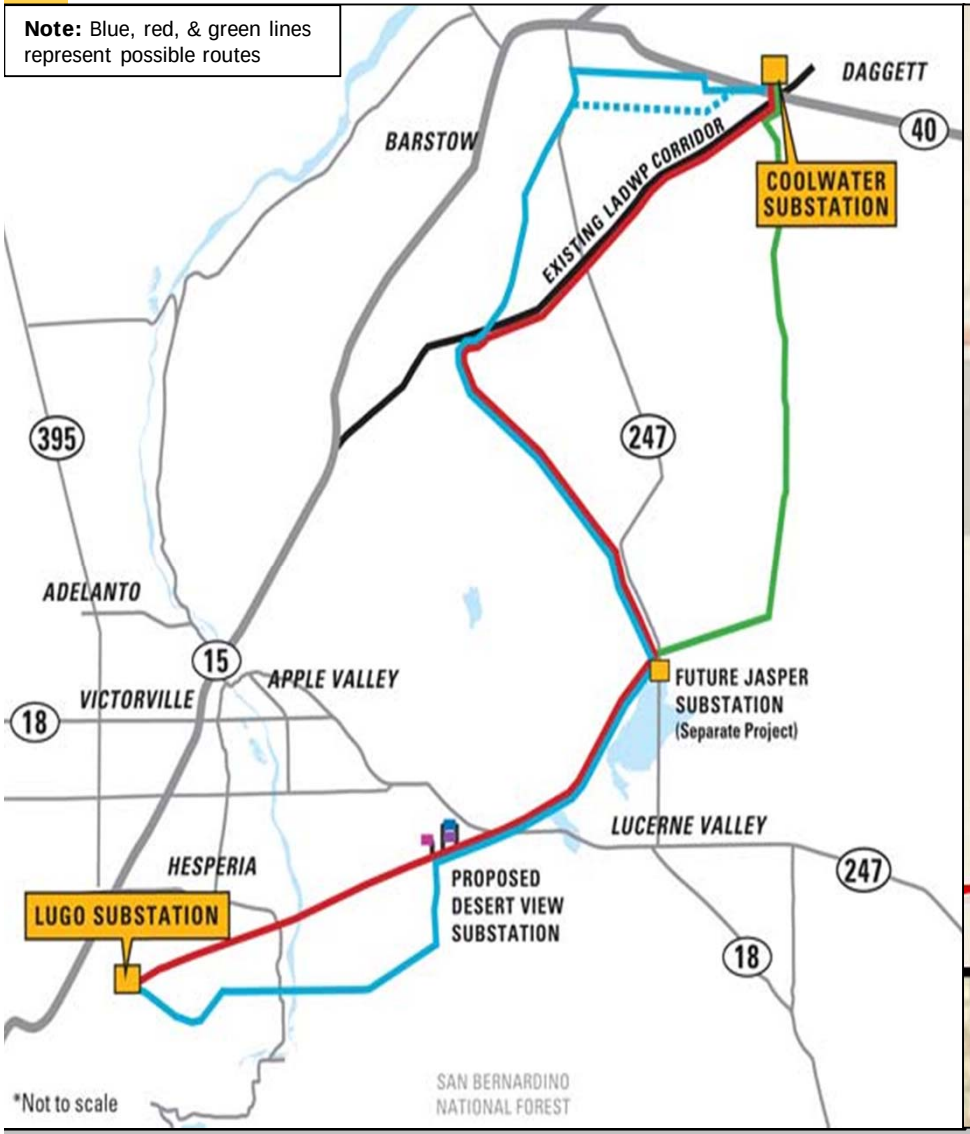
					Net MWs to Grid	Deliverability Status	Location		Point of Interconnection		Study Availability
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Study Process	MW Total	Full Capacity, Partial or Energy Only (FC/P/EO)	County	State	Utility	Station or Transmission Line	Interconnection Agreement Status
131	9/25/2006	9/25/2006	Active	Serial	100		SAN BERNARDINO	CA	SCE	Eldorado-Baker-Cool Water-Dunn Siding-Mountain Pass 115kV line	Executed
162	1/5/2007	1/5/2007	Active	Serial	114		SAN BERNARDINO	CA	SCE	Eldorado-Baker-Cool Water-Dunn Siding-Mountain Pass 115kV line	Executed
163	1/9/2007	1/9/2007	Active	TC	300	FC	SAN BERNARDINO	CA	SCE	Mountain Pass Substation 115kV	Executed
233	6/27/2007	6/27/2007	Active	Serial	200		SAN BERNARDINO	CA	SCE	Ivanpah Substation 230kV	Executed
467	5/30/2008	6/2/2008	Active	TC	230	FC	CLARK	NV	SCE	Eldorado-Ivanpah 230kV line	Executed
502	7/28/2009	7/31/2009	Active	C1	20	FC	CLARK	NV	SCE	Eldorado-Ivanpah 230kV line	In Progress
					964						

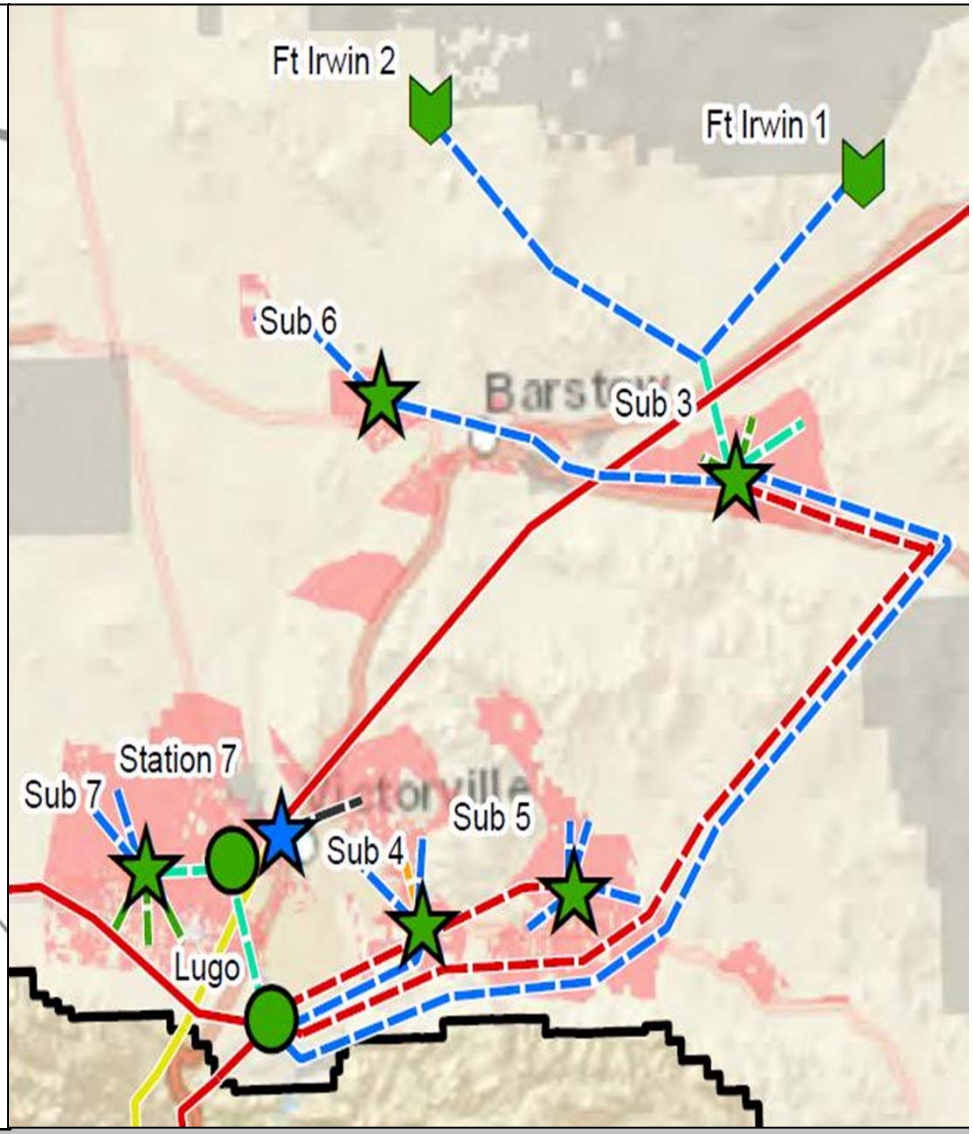
*The 82 MW is the line rating and there is currently existing power flowing through the line.

Coolwater-Lugo Transmission Project & DFA Alternative 2 Correlation

Proposed Coolwater-Lugo Transmission Project

DFA Alternative 2 Hypothetical Build-out*





*The DRECP TTG report was not a siting exercise, it was meant to approximate the necessary acreage needed for transmission facilities for certain DFA scenarios.

Coolwater-Lugo Transmission Project (CLTP)

- Existing SCE Transmission Capacity South of Kramer: ~1,120 MW (Note there is 1,624 MW of existing generation & 451 MW of existing load in the Kramer System[1])
- Existing SCE Transmission Capacity in Lucerne Valley: ~275 MW (Existing Lugo-Pisgah No.1 220 kV T/L capacity)
- Coolwater-Lugo Transmission Project Capacity for Kramer and Lucerne Valley areas: 1,000 MW
- Queued MW requesting Coolwater-Lugo Transmission Project Capacity: 856 MW
- Queued MW with agreements in progress: 181 MW

Report Run Date: 04/30/2013

California ISO
Shaping a Renewed Future

The California ISO Controlled Grid Generation Queue - CISO Active

					Net MWs to Grid	Deliverability Status	Location		Point of Interconnection		Study Availability
Queue Position	Interconnection Request Receive Date	Queue Date	Application Status	Study Process	MW Total	Full Capacity, Partial or Energy Only (FC/P/EO)	County	State	Utility	Station or Transmission Line	Interconnection Agreement Status
58	1/25/2005	2/22/2005	Active	AMEND 39	62		MINERAL	NV	SCE	Control 115kV Substation	Executed
125	8/22/2006	8/22/2006	Active	Serial	250		SAN BERNARDINO	CA	SCE	Coolwater-Kramer 230kv line	Executed
135	10/10/2006	10/10/2006	Active	Serial	60		SAN BERNARDINO	CA	SCE	Lugo-Pisgah 230kV line	Executed
142	11/6/2006	11/6/2006	Active	Serial	80		SAN BERNARDINO	CA	SCE	Kramer Substation 220kV	In Progress
552	10/2/2009	2/1/2010	Active	C2	60	FC	SAN BERNARDINO	CA	SCE	Lugo-Pisgah #1 230kV	In Progress
695	3/31/2011	3/31/2011	Active	C4	38	FC	CHURCHILL	NV	SCE	Control Sub 115kV Bus	
897	4/2/2012	4/2/2012	Active	C5	200	FC	SAN BERNARDINO	CA	SCE	Jasper Substation 220kV bus	
909	4/2/2012	4/2/2012	Active	C5	25	FC	SAN BERNARDINO	CA	SCE	Water Valley Substation 220kV	
					775						

SCE's WDAT & Rule 21 Current Interconnection Queue — *Updated as of 2/28/2013*

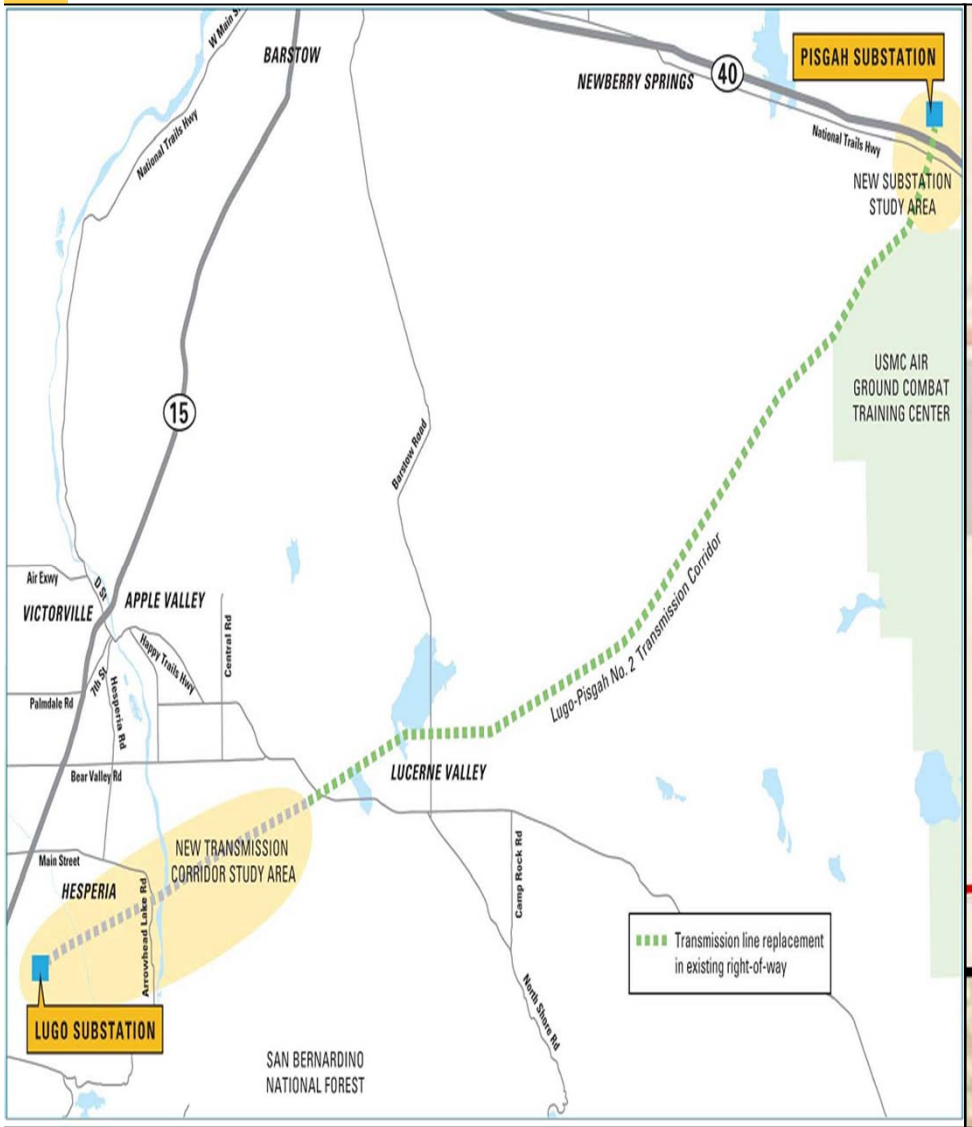
Project Number	Tariff	Request Type	Current Phase	IA Executed(Y/	Technology	Facility Max Export Req(MW)	Facility Cour	Current Point of Delivery
WDT315	WDAT	CLGIP	Interconnection Agreement	No	Geothermal	40.7	Mono	Control Substation
WDT930	WDAT	GIP - Cluster Study	Phase I	No	Photovoltaic	20	San Bernardino	Cool Water Substation 115 kV bus
WDT931	WDAT	GIP - Cluster Study	Phase I	No	Photovoltaic	20	San Bernardino	Tortilla Substation 115 kV bus
						80.7		

In Progress IA Status
- Serial
- Transition Cluster
- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- SGIP

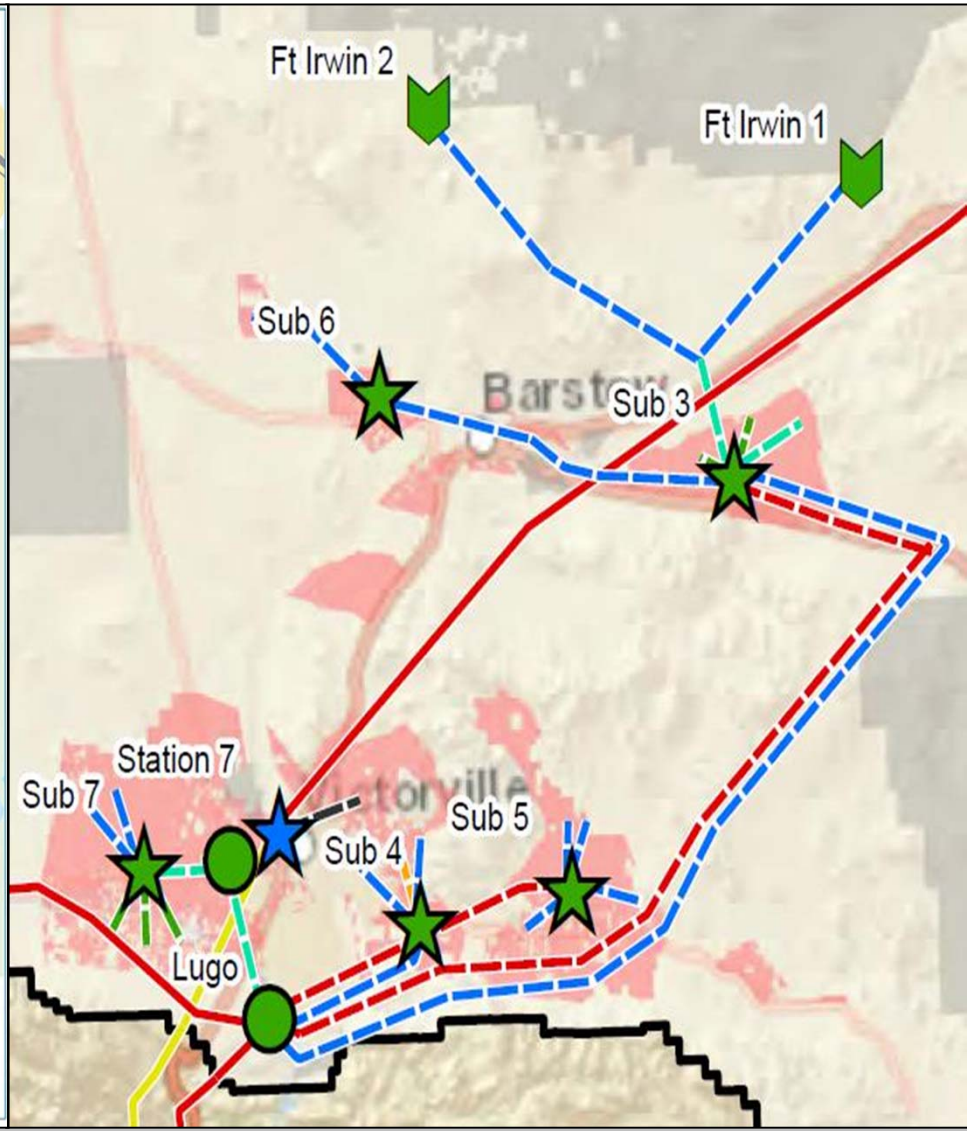
1: http://www.caiso.com/Documents/Board-approvedISO2011-2012-TransmissionPlan.pdf (pp. 162-163)

Lugo-Pisgah Project & DFA Alternative 2 Correlation

Proposed Lugo-Pisgah Project



DFA Alternative 2 Hypothetical Build-out*



*The DRECP TTG report was not a siting exercise, it was meant to approximate the necessary acreage needed for transmission facilities for certain DFA scenarios.

Lugo-Pisgah Project

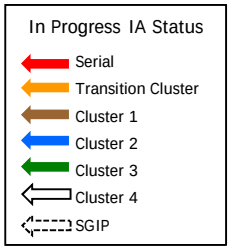
- Existing SCE Transmission Capacity west of Pisgah Sub: ~550 MW* (Existing Lugo-Pisgah No.1 & No.2 220 kV T/Ls)
- Lugo-Pisgah Project Capacity: 1,400 MW
- CAISO Queued MW requesting Lugo-Pisgah Project interconnection: 1,790 MW
- CAISO Queued MW with agreements in progress: 800 MW

Report Run Date: 04/30/2013

California ISO
Shaping a Renewed Future

The California ISO Controlled Grid Generation Queue - CISO Active

				Net MWs to Grid	Deliverability Status	Location		Point of Interconnection		Study Availability
Interconnection Request Receive Date	Queue Date	Application Status	Study Process	MW Total	Full Capacity, Partial or Energy Only (FC/P/EO)	County	State	Utility	Station or Transmission Line	Interconnection Agreement Status
3/30/2005	5/11/2005	Active	Serial	850		SAN BERNARDINO	CA	SCE	Pisgah Sub 230 kV Bus	Executed
7/12/2007	7/12/2007	Active	Serial	400		SAN BERNARDINO	CA	SCE	Pisgah Sub 230kV	In Progress
7/12/2007	7/12/2007	Active	Serial	400		SAN BERNARDINO	CA	SCE	Pisgah Sub 230kV	In Progress
3/31/2012	4/2/2012	Active	C5	140	FC	SAN BERNARDINO	CA	SCE	Pisgah Substation 220kV bus	
				1790						



*The 550 MW is the approximate combined line rating and there is currently existing power flowing through the lines.

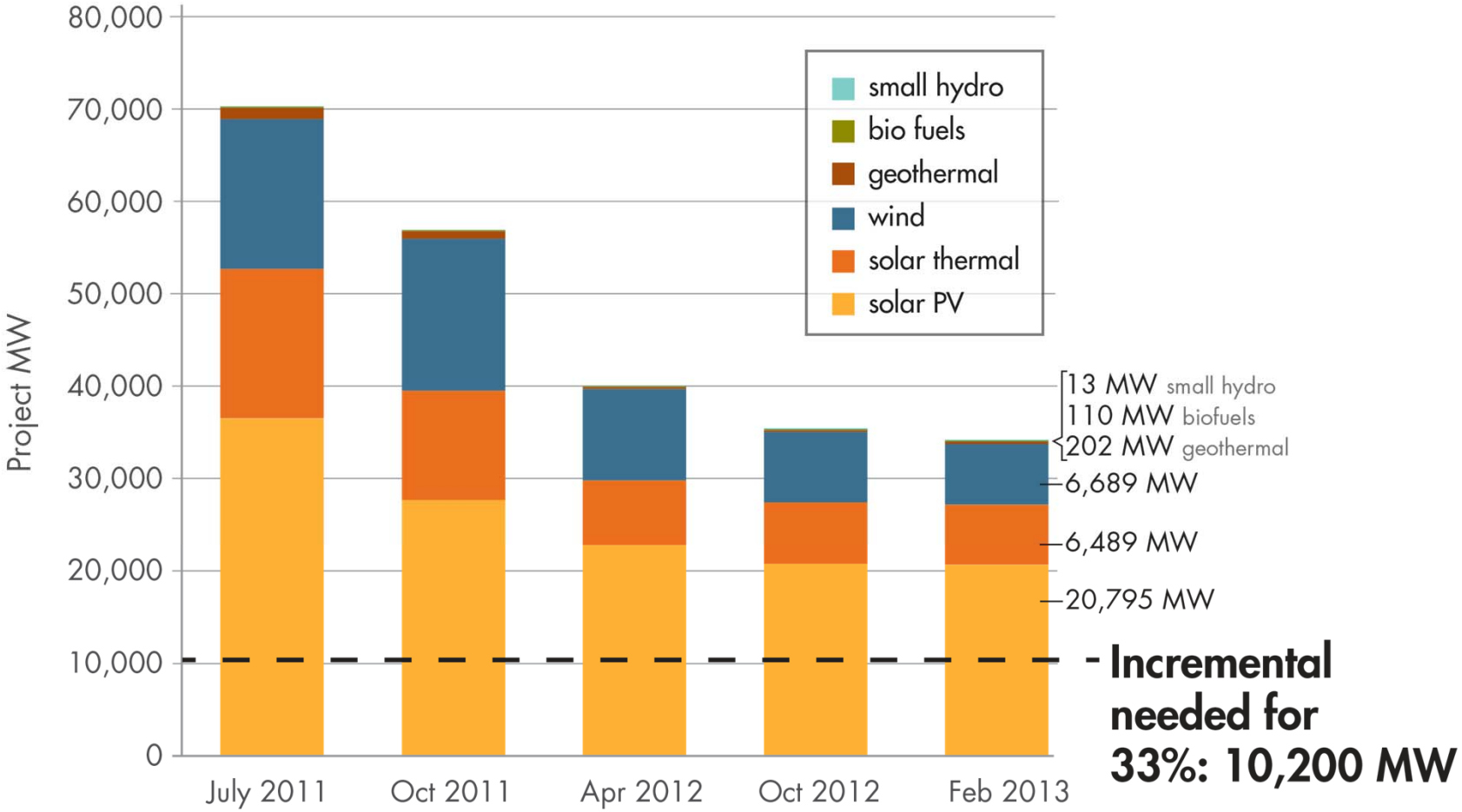
Transmission Capacity / Queued MW

Transmission Capacity / Queued MW				
Transmission Project	**Approximate Pre-Project MW Capacity**	**Approximate Project MW Capacity**	**Total Queued MW**	**Queued MW with Agreements "In Progress"**
TRTP	0	4,500	6,822	2,933
DCR & WOD	2,300	4,000	5,230	1,965
EITP	82	1,400	964	20
Coolwater-Lugo	275[1]	1,000	856	181
Lugo-Pisgah[2]	550	1,400	1,790	800
Totals	**3,207**	**12,300**	**15,662**	**5,899**

Additional capacity created from these SCE Projects = ~9,093 MW (12,300 – 3,207)

1: The existing south of Kramer capacity of ~1,120 MW is not listed because it is currently used up by the 1,624 MW of existing generation in the Kramer System
2: Removed from CAISO Basecase - PPA terminated, LGIA suspended

Renewable Capacity in the ISO Queue



SCE's Queued Generation Summary

Note: SCE's peak electrical demand was 23,303 MW in August 2007

SCE Zone	County Areas	MW
Northern Bulk	Fresno, Tulare, west Kern, Santa Barbara, Ventura, & northwest Los Angeles	8,799
East of Lugo	Mono, Inyo, east Kern, & San Bernardino	6,537
Eastern Bulk	Riverside, southwest San Bernardino	6,485
Metro	Los Angeles & Orange	3,579
	SCE's CAISO Generation Queue =	22,259 MW[1]
	SCE's WDAT Generation Queue =	3,141 MW[2]
	SCE's Total Queued Generation =	**25,400 MW[3]**

1: CAISO Queue: http://www.caiso.com/Documents/ISOGeneratorInterconnectionQueueExcel.xls

2: SCE WDAT Queue: http://www.sce.com/nrc/aboutsce/regulatory/openaccess/wdat/wdat_queue.xls

3: Queued MWs are dynamic due to new requests & withdrawals

Generation Queue Challenges

- The Generation Interconnection Process has a high failure rate
- This failure rate may be an impediment to projects that could otherwise move forward
- SCE currently has 93 projects totaling 8,539 MW that have not signed generation interconnection agreements
- SCE must consider all queued generation projects "real" until they officially withdraw
  - Lingering speculative projects can create unrealistic study results

All SCE Projects with Generation Interconnection Agreements "In Progress"		
Study	**# of Projects**	**# of MW**
CAISO SCE Serial	16	3,127
SCE WDAT Serial	17	214
CAISO SCE Transition Cluster	17	1,562
SCE WDAT Transition Cluster	1	41
CAISO SCE Cluster 1	6	685
SCE WDAT Cluster 1	0	0
CAISO SCE Cluster 2	4	544
SCE WDAT Cluster 2	0	0
CAISO SCE Cluster 3	4	803
SCE WDAT Cluster 3	0	0
CAISO SCE Cluster 4	12	1,385
SCE WDAT Cluster 4	16	178
Total =	**93**	**8,539**

Overview of GIDAP structure (starting with Cluster 5)

- Phase 1 study assesses deliverability for reasonable MW amounts (based on TPP portfolios) when queue is very large
- Each project makes a choice in entering phase 2:
  - Option A: Project requires rate-based TP deliverability
  - Option B: Project is willing & able to pay for delivery upgrades
- Phase 2 study identifies delivery upgrades only for Option B, assuming Option A & prior clusters use TP deliverability
- ISO allocates TP deliverability to the most viable projects
  - Rank projects based on development milestones
  - Both A and B are eligible for allocation
  - Option A not allocated may "park" until next cycle
  - Projects allocated must demonstrate retention milestones

Challenges to Transmission Planning

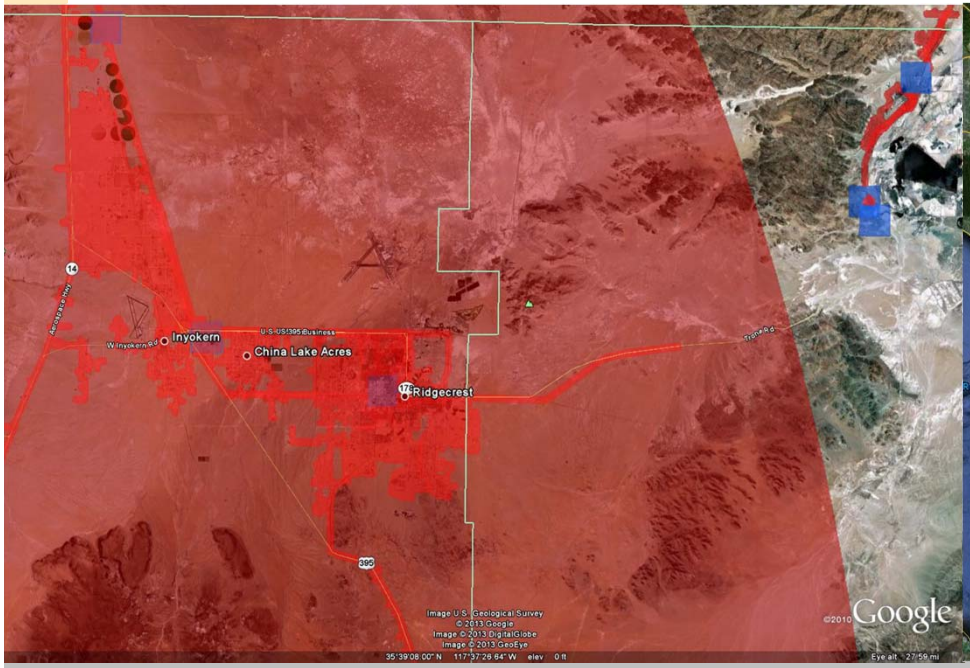
- Proximity to transmission facilities does not guarantee transmission capacity
- The existing electric grid was designed to serve customers, not generators
- Transmission upgrades can be very expensive and take a long time
- New renewable generation doesn't always easily replace non-renewable generation
- SCE's system must be able to operate reliably all the time
- Multiple generators pursuing interconnection into the same substation can challenge county franchise distribution and also under utilize substation capacity
- The Generation Interconnection Process (GIP) is constantly changing
- The GIP may produce upgrades inconsistent with prudent long-term planning
- The traditional ten-year planning window also challenges prudent long-term planning

SCE's Interconnection Maps

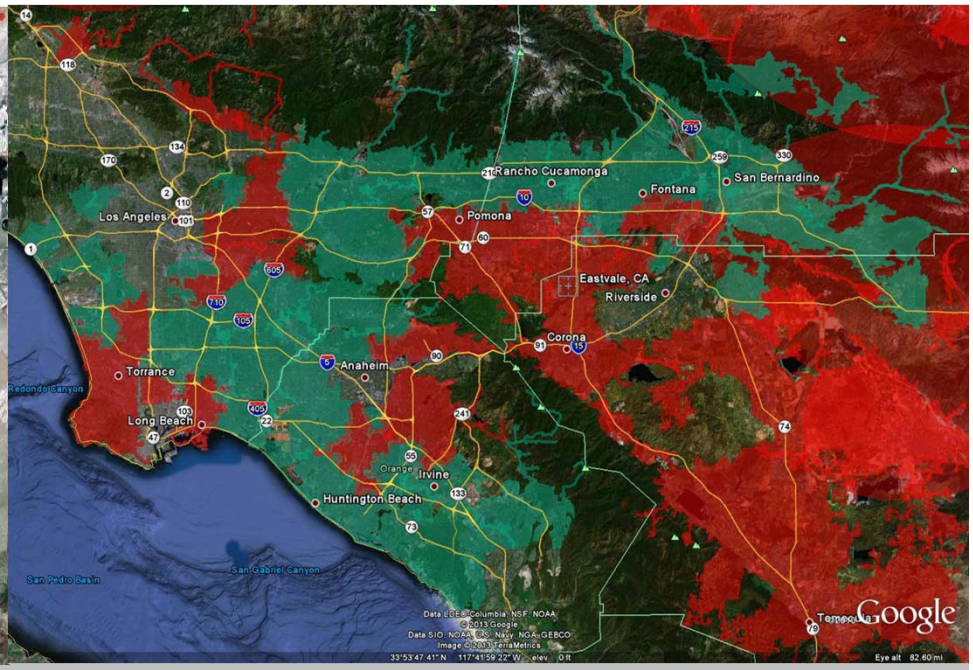
www.sce.com->Wholesale Energy Procurement->Renewable & Alternative Power Contract Opportunities->Renewable Auction Mechanism

- Google Earth ".KMZ" file available to provide transmission and distribution system capacity info
  - https://www.sce.com/wps/wcm/connect/3025afc6-0483-4979-87b4-2be56b759e5a/SCEGenerationInterconnection.kmz?MOD=AJPERES
- As existing and proposed SCE transmission and distribution projects are constructed, these maps will be updated
- "Preferred" locations rendered in green
- "Not Preferred" locations rendered in red

Ridgecrest Area



Los Angeles Basin



Pre-Scoping Meetings

Developers can contact SCE to request a pre-scoping meeting to learn about a specific area's transmission capacity and constraints before they submit an interconnection application to connect to SCE's electric grid

Contact Us

Should you have any questions regarding SCE's Open Access Information, please contact us via one of the following methods:

Website: https://www.sce.com/wps/portal/home/regulatory/open-access-information/

Email: interconnectionQA@sce.com
Phone: (626) 302-3688

Mailing Address:

Grid Interconnection & Contract Development
Southern California Edison
2244 Walnut Grove Ave
PO Box 945
Rosemead, CA 91770

Summary

- Transmission to support 33% RPS has been approved and is underway
  - Approximately 9,093 MW of new/expanded capacity planned in SCE territory
  - SCE to upfront fund more than $5 billion new/expanded transmission
  - Approved and proposed transmission high correlation with DFAs

- Generator Interconnection Queue is oversubscribed to meet 33% RPS
  - 40,001 MW of generation in the CAISO queue, 22,259 MW in SCE's territory
  - Additional 3,141 MW of generation in the SCE's WDAT queue
  - Only 10,200 MW renewable generation needed to meet 33% per CAISO

- Generator Interconnection Queue oversubscription creates challenges for all
  - CAISO queue reform efforts underway
  - Further reform may be needed to facilitate timely renewable development
  - Transmission capacity and constraint information available to developers