

2013 Final LCR Study Results San Diego-Imperial Valley Local Area

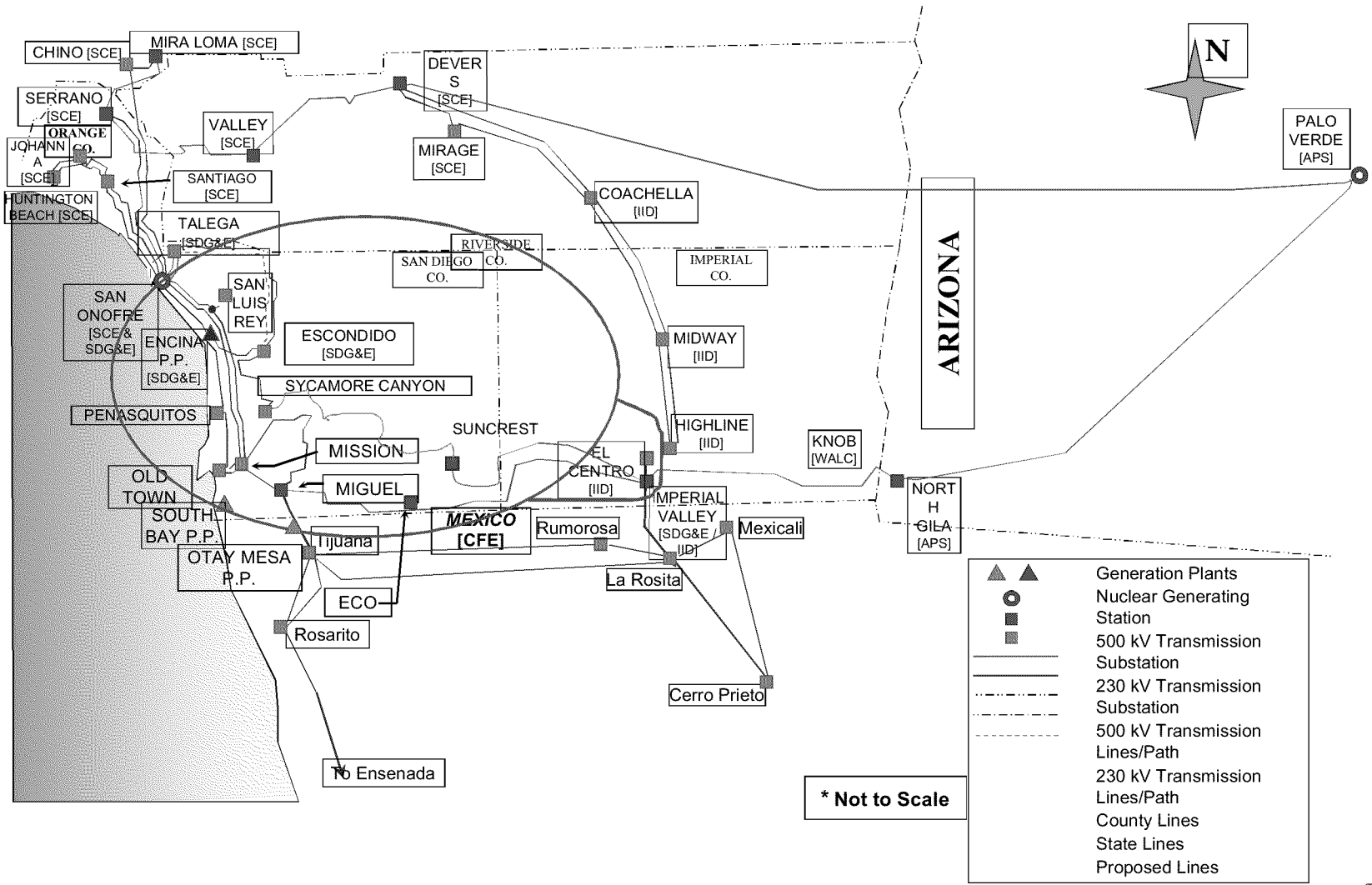
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Stakeholder Meeting

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San Diego-Imperial Valley LCR Area



Slide 2

San Diego-Imperial Valley Area Load and Resources (MW)

Total 1-in-10 Load + losses (Local San Diego Area)	5,114
Generation	
Market Gen*	3,991
Muni Gen	0
Wind Gen	7
QF Gen	151
Total Qualifying Capacity**	4,149

* Includes new peaking capacity (see next slide)

** Does not include Demand Side Management (DSM)



Major New Projects / Changes

1. Sunrise Power Link Project (Southern Route)
2. Eastgate – Rose Canyon 69kV (TL6927) Reconductor
3. New Imperial Valley – Dixieland 230kV line
4. East County 500kV Substation (ECO)



Areas and sub-areas studied

- El Cajon sub-area
- Mission sub-area
- Bernardo sub-area
- Esco sub-area
- Pala sub-area
- Miramar sub-area
- San Diego sub-area
- San Diego-Imperial Valley area

Critical Contingencies

El Cajon Sub-area

Category B:

- Contingency: loss of Miguel – Granite – Los Coches 69 kV line (TL632) with one El Cajon unit out of service.
- Limiting component: Thermal overload on the El Cajon – Los Coches 69 kV line (TL631)
- LCR: 53 MW (includes 0 MW of QF and 0 MW of deficiency)

Category C:

- Contingency: loss of the El Cajon – Jamacha 69 kV line (TL624) followed by the loss of Miguel – Granite – Los Coches 69 kV line (TL632)
- Limiting component: Thermal overload on the El Cajon – Los Coches 69 kV line (TL631)
- LCR: 83 MW (includes 0 MW of QF and 0 MW of deficiency)
- Effective Units: El Cajon GT, Calpeak El Cajon and new peaker at El Cajon 69kV

*** Reconductor of the limiting component is recommended for approval in 2011-2012 ISO Transmission Plan

Critical Contingencies (contd)

Mission Sub-area

- Contingency: Loss of Mission – Kearny 69 kV line (TL663) followed by the loss of Mission – Mesa Heights 69kV line (TL676)
 - Limiting component: Thermal overload on Mission – Clairmont 69kV line (TL670)
 - LCR: 126 MW (includes 3 MW of QF and 0 MW of deficiency)
 - Effective Units: Miramar Energy Facility units and Miramar GTs (Cabrillo Power II), Miramar Landfill unit and Kearny peakers
- *** Reconductor of the limiting component was approved in 2010-2011 ISO Transmission Plan

Critical Contingencies (contd)

Bernardo Sub-area

- Contingency: Loss of Artesian – Sycamore 69 kV line (TL6920) followed by the loss of Poway-Rancho Carmel 69 kV line (TL648)
- Limiting component: Thermal overload on the Felicita Tap – Bernardo 69 kV line (TL689)
- LCR: 110 MW (includes 0 MW of QF and 70 MW of deficiency)
- Effective Unit: Lake Hodges

Critical Contingencies (contd)

Esco Sub-area

- Contingency: the loss of Poway – Pomerado 69 kV line (TL6913) followed by the loss of Esco – Escondido 69kV (TL6908)
- Limiting component: Thermal overload on the Bernardo – Rancho Carmel 69kV line (TL633)
- LCR: 114 MW (includes 40 MW of QF and 74 MW of deficiency)
- Effective Unit: Goal line

Critical Contingencies (contd)

Pala Sub-area

- Contingency: the loss of Pendleton – San Luis Rey 69 kV line (TL6912) followed by the loss of Lilac – Pala 69kV (TL6908)
- Limiting component: Thermal overload on the Melrose – Morro Hill Tap 69kV line
- LCR: 43 MW (includes 0 MW of QF and 0 MW of deficiency)
- Effective Unit: Orange Grove Peakers

Critical Contingencies (contd)

Miramar Sub-area

Category B:

- Contingency: the loss of Otay Mesa – Miguel Tap – Silvergate 230 kV line (TL23042) overlapping with Miramar Energy Facility unit #1 or #2
- Limiting component: Thermal overload on the Sycamore – Scripps 69kV line (TL6916)
- LCR: 86 MW (includes 0 MW of QF and 0 MW of deficiency)

Category C:

- Contingency: the loss of Otay Mesa – Miguel Tap – Silvergate 230 kV line (TL23042) followed by the loss of Sycamore 230/138kV Bank #60
- Limiting component: Thermal overload on the Sycamore – Scripps 69kV line (TL6916)
- LCR: 97 MW (includes 0 MW of QF and 0 MW of deficiency)
- Effective Unit: Miramar Energy Facility units and Miramar GTs (Cabrillo Power II), Miramar Landfill unit

Critical Contingencies (contd)

San Diego Sub-area

Category B (G-1/N-1):

- Contingency: Loss of ECO-Miguel 500kV line overlapping with Otay Mesa power plant out of service
- Limiting component: Voltage collapse
- LCR: 2,192 MW (includes 158 MW of QF/Wind)

Category C (N-1-1):

- Contingency: Loss of Imperial Valley – Suncrest 500kV line followed by the loss of ECO-Miguel 500kV line
- Limiting component: Voltage collapse
- LCR: 2,570 MW (includes 158 MW of QF/Wind)
- Effective Units: All units in San Diego area

San Diego Sub-area LCR

	QF (MW)	Wind (MW)	Market (MW)	Max. Qualifying Capacity (MW)	
Available generation	151	7	2911	3069	
	Existing Generation Capacity Needed (MW)			Deficiency (MW)	Total MW LCR Need
Category B (Single)	2192			0	2192
Category C (Multiple)	2570			144	2714

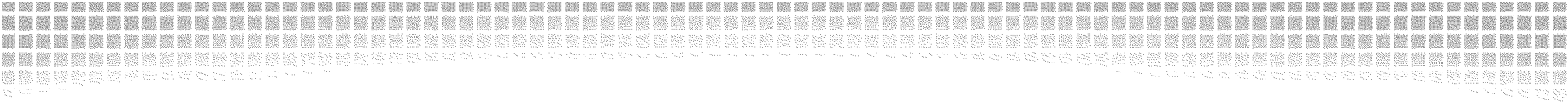
Critical Contingencies (contd)

San Diego - Imperial Valley Area Overall

- Contingency: Loss of Imperial Valley – North Gila 500kV line (TL50002) with the Otay Mesa Combined Cycle power plant out of service
- Limiting component: South of SONGS (P44) limit of 2500 MW (N->S)
- LCR: 2832 MW (includes 162 MW of QF/Wind)
- Effective Units: All units in San Diego area and IV generation

San Diego – Imperial Valley Area LCR

	QF (MW)	Wind (MW)	Market (MW)	Max. Qualifying Capacity (MW)	
Available generation	151	7	3991	4149	
	Existing Generation Capacity Needed (MW)			Deficiency (MW)	Total MW LCR Need
Category B (Single)	2832			0	2832
Category C (Multiple)	2832			144	2976



Critical Contingencies (contd)

Changes

Since last year:

- 1) Load forecast went up by 270 MW
- 2) Elimination of 1000 MVA path rating on Sunrise Power Link
- 3) Identified Esco, Pala and Miramar sub-areas with LCR requirements
- 4) Includes Imperial Valley substation due to most stringent contingency

Since last stakeholder meeting:

- 1) Updated NQC
- 2) WECC new definition of "adjacent circuit" (applies to Sunrise Power Link and South West Power Link – west of Imperial Valley)

Your comments and questions are welcome.

For written comments, please send to: RegionalTransmission@caiso.com



Non-summer season LCR

Additional Assumptions:

1. One transmission element under maintenance
2. Two resources under maintenance
3. Total 2013 load + losses = 3871 MW (this corresponds to 1-in-10 peak for the month of October)

Non-summer season LCR (contd)

San Diego Sub-area

- Transmission element planned out: Sunrise Power Link
- Contingency: Loss of Miguel – ECO 500kV line overlapping with the Otay Mesa Combined Cycle power plant out of service
- Limiting component: Voltage collapse
- LCR: 1,777 MW (includes 158 MW of QF/Wind)
- LCR (including resources out on planned maintenance): 2277 to 2377 MW (includes 158 MW of QF/Wind)
- Effective Units: All units in San Diego area

Non-summer season LCR (contd)

San Diego - Imperial Valley Area Overall

- Transmission element planned out: one of the five 230kV lines that comprise the South of SONGS path.
- Contingency: Loss of Imperial Valley – North Gila 500kV line (TL50002) overlapping with the Otay Mesa Combined Cycle power plant out of service
- Limiting component: South of SONGS (P44) limit of about 1650 MW (N->S)
- LCR: 2,498 MW (includes 158 MW of QF/Wind)
- LCR (including resources out on planned maintenance): 2,998 to 3,098 MW (includes 158 MW of QF/Wind)
- Effective Units: All units in San Diego - Imperial Valley area