

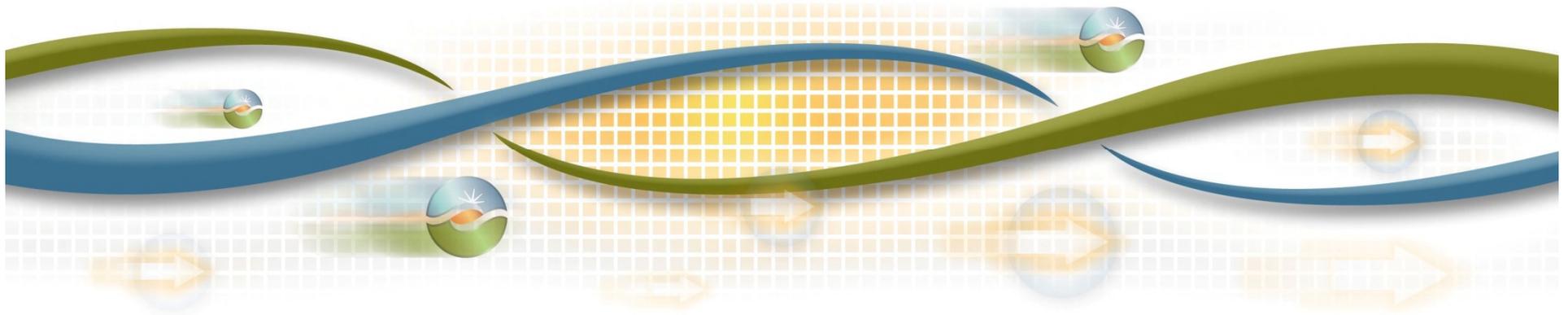
2014 and 2018 Draft LCR Study Results - San Diego-Imperial Valley

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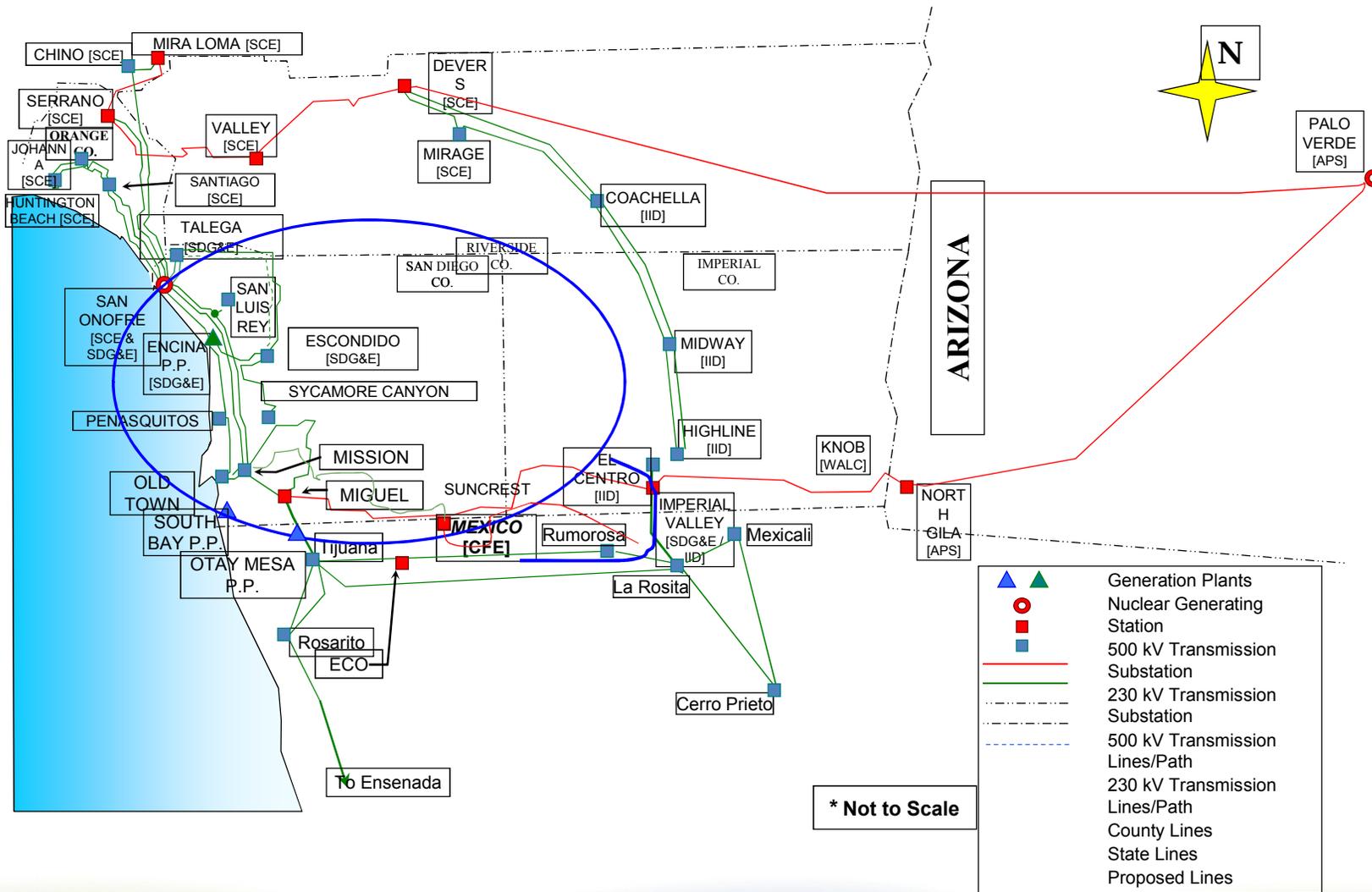
Senior Regional Transmission Engineer

Stakeholder Meeting

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San Diego-Imperial Valley LCR Area



San Diego-Imperial Valley Area Load and Resources

		2014	2018
Load	=	5,073	5,497
Transmission Losses	=	127	166
Total Area Load	=	5,200	5,663
Market Generation	=	4,767	4,767
Muni Generation	=	0	0
Wind Generation	=	7	87
QF Generation	=	151	151
Total Qualifying Capacity	=	4,925	5,005



Major New Transmission Upgrades Modeled

2014 Base Case

1. El Cajon – Los Coches 69 kV (TL631) Rewiring
2. New Imperial Valley – Dixieland 230kV line
3. East County 500kV Substation (ECO)

2018 Base Case

1. Mission-Clairmont 69 kV (TL670) Rewiring
2. Bernardo-Rancho Carmel 69 kV (TL633)



Areas and sub-areas studied

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

El Cajon Sub-area Critical Contingencies

Category B:

Contingency: loss of Miguel-Granite-Los Coches 69 kV (TL632) with one El Cajon unit out of service.

Limiting component: El Cajon-Los Coches 69 kV (TL631) overloaded

2014 LCR need: 54 MW (includes 0 MW of QF generation)

2018: no requirement due to El Cajon-Los Coches 69 kV (TL631) Rewiring

Category C:

Contingency: loss of El Cajon-Jamacha 69 kV (TL624) followed by the loss of Miguel – Granite – Los Coches 69 kV (TL632) or vice versa

Limiting component: El Cajon-Los Coches 69 kV (TL631) overloaded

2014 LCR need: 85 MW (includes 0 MW of QF generation)

2018: no requirement due to El Cajon-Los Coches 69 kV (TL631) Rewiring



Mission Sub-area Critical Contingency

Category C:

Contingency: Loss of Mission-Kearny 69 kV (TL663) followed by the loss of Mission-Mesa Heights 69kV (TL676)

Limiting component: Mission-Clairmont 69kV (TL670) overloaded

2014 LCR need: 219 MW (includes 3 MW of QF and 120 MW of deficiency)

2018: no requirement due to Mission-Clairmont 69 kV (TL670) Rewiring

Category B:

No requirement.



Bernardo Sub-area Critical Contingency

Category C:

Contingency: Loss of Artesian-Sycamore 69 kV (TL6920) followed by loss of Poway-Rancho Carmel 69 kV (TL648)

Limiting component: Felicita Tap-Bernardo 69 kV (TL689) overloaded
2014 LCR need: 120 MW (includes 0 MW of QF and 80 MW of deficiency)

2018: no requirement due to Felicita Tap-Bernardo 69 kV (TL689)
Rewiring

Category B:

No requirement.

Esco Sub-area Critical Contingency

Category C:

Contingency: loss of Poway-Pomerado 69 kV (TL6913) followed by loss of Esco-Escondido 69kV (TL6908)

Limiting component: Bernardo-Rancho Carmel 69kV (TL633) overloaded
2014 LCR need: 110 MW (includes 40 MW of QF generation and 70 MW of deficiency)

2018 LCR need: 65 MW (includes 40 MW of QF generation and 25 MW of deficiency)

Category B:

No requirement.

Pala Sub-area Critical Contingency

Category C:

Contingency: loss of Pendleton-San Luis Rey 69 kV line (TL6912)
followed by loss of Lilac-Pala 69kV (TL6908)

Limiting component: Melrose-Morro Hill Tap 69kV (TL694)
overloaded

2014 LCR need: 35 MW (includes 0 MW of QF generation)

2018 LCR need: 58 MW (includes 0 MW of QF generation)

Category B:

No requirement.

Encinitas Sub-area Critical Contingency

Category C:

Contingency: loss of Escondido-OMWD 69 kV (TL6930) followed by loss of North City-Penasquitos 69kV (TL6952)

Limiting component: Penasquitos-Del Mar 69 kV (TL666) overloaded

2014 LCR need: no requirement due to lower load

2018 LCR need: 20 MW (includes 0 MW of QF generation)

Category B:

No requirement.

Border Sub-area Critical Contingency

Category C:

Contingency: loss of Bay Boulevard-Otay 69 kV #1 (TL645) followed by loss of Bay Boulevard-Otay 69 kV #2 (TL646)

Limiting component: Imperial Beach-Bay Boulevard 69 kV (TL647) overloaded

2014 LCR need: 60 MW (includes 0 MW of QF generation)

2018 LCR need: 55 MW (includes 0 MW of QF generation)

Category B:

No requirement.

Miramar Sub-area Critical Contingencies

Category B:

Contingency: loss of OtayMesa-MiguelTap-Silvergate (Miguel-South Bay)
230 kV (TL23042) overlapping with Miramar Energy Facility unit #1 or #2

Limiting component: Sycamore-Scripps 69 kV (TL6916) overloaded

2014: 96 MW (includes 0 MW of QF and 0 MW of deficiency)

2018: 98 MW (includes 0 MW of QF and 2 MW of deficiency)

Category C:

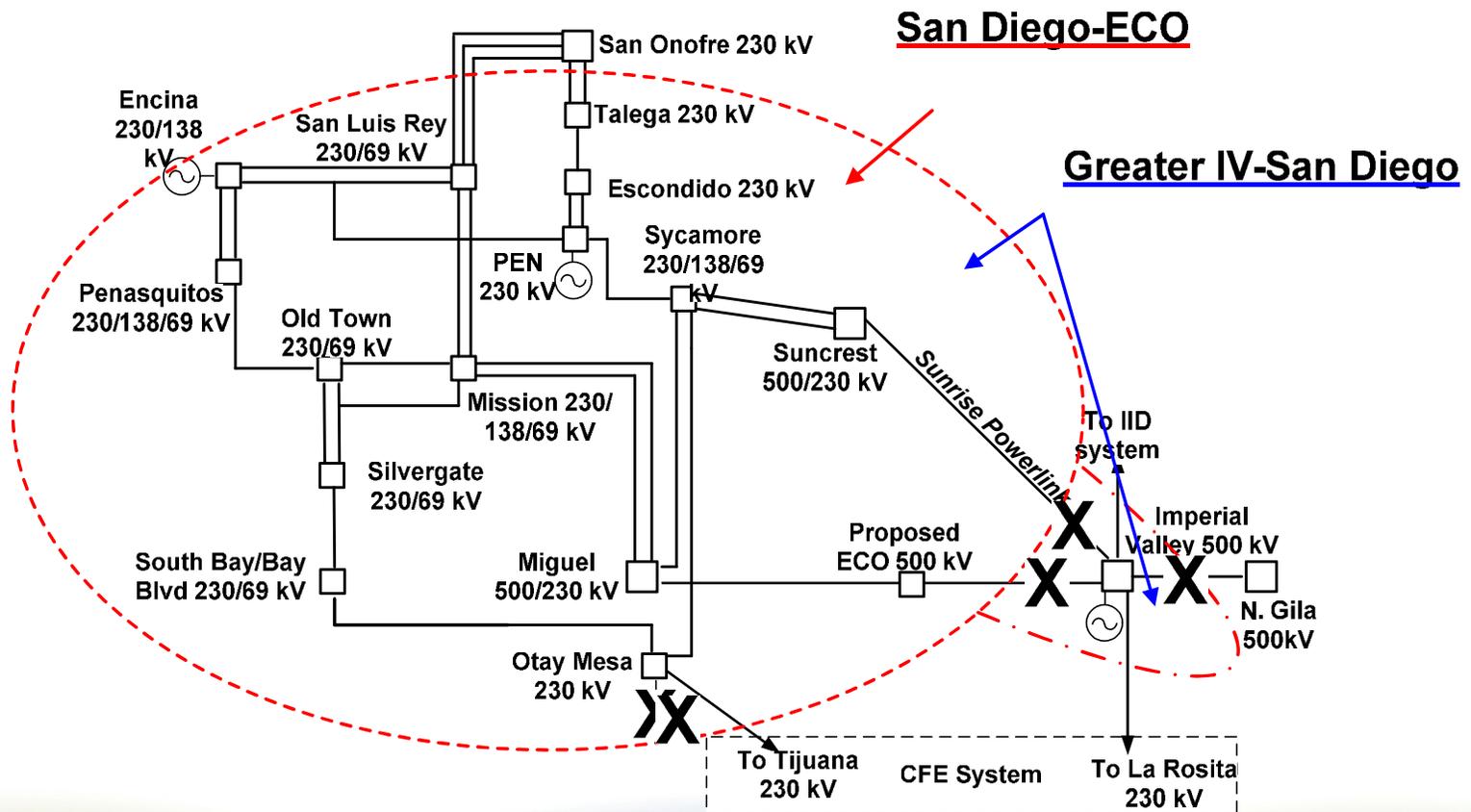
Contingency: loss of OtayMesa-MiguelTap-Silvergate (Miguel-South Bay)
230 kV (TL23042) followed by loss of Sycamore 230/138kV Bank

Limiting component: Sycamore-Scripps 69kV (TL6916) overloaded

2014: 128 MW (includes 0 MW of QF and 32 MW of deficiency)

2018: 120 MW (includes 0 MW of QF and 24 MW of deficiency)

San Diego Sub-area and San Diego-Imperial Valley Area



San Diego Sub-area Critical Contingencies

Category B:

Contingency: Loss of Imperial Valley-North Gila 500 kV line (TL50002) overlapping with Otay Mesa plant out of service

Limiting component: Reactive Margin

2014:

- With SONGS #1: 2,295 MW (includes 158 MW of QF/Wind)
- With 70% of SONGS #2: 2,625 MW (includes 158 MW of QF/Wind)
- Without SONGS: 3,119 MW (includes 158 MW of QF/Wind, and 207 MW of deficiency)

2018:

- With SONGS #1: 2,782 MW (includes 158 MW of QF/Wind)

San Diego Sub-area Critical Contingencies (contd.)

Category C:

Contingency: Loss of Imperial Valley – Suncrest 500kV line followed by the loss of ECO-Miguel 500kV line

Limiting component: Reactive Margin

2014:

- With SONGS #1: 2,385 MW (includes 158 MW of QF/Wind)
- With 70% of SONGS #2: 2,683 MW (includes 158 MW of QF/Wind)
- Without SONGS: 3,270 MW (includes 158 MW of QF/Wind, and 358 MW of deficiency)

2018:

- With SONGS #1: 2,961 MW (includes 158 MW of QF/Wind)

San Diego-Imperial Valley Area Critical Contingencies

Category B:

Contingency: Loss of Imperial Valley-North Gila 500 kV line (TL50002) overlapping with Otay Mesa plant out of service

Limiting component:

- With SONGS Unit#1: 2500 MW Limit @ Path 44 (N to S)
- With 70% of SONGS Unit #2: 2500 MW Limit @ Path 44 (N to S)
- Without SONGS: Reactive Margin

2014:

- With SONGS Unit#1: 2,945 MW (includes 158 MW of QF/Wind)
- With 70% of SONGS Unit #2: 2,820 MW (includes 158 MW of QF/Wind)
- Without SONGS: 3,635 MW (includes 158 MW of QF/Wind)

2018:

With SONG Unit #1&2: 3,310 MW (includes 158 MW of QF/Wind)

Category C:

Same as above.

San Diego – Imperial Valley Area LCR

Available Generation	Qualifying Capacity	Wind	Market	Max Qualified Capacity
	MW	MW	MW	MW
2014	151	7	4767	4925
2018	151	87	4767	5005
Study Year	Contingency Type	Generation Capacity Needed	Deficiency	Total LCR
		MW	MW	MW
2014	Category B (Single)	2945	0	2945
	Category C (Multiple)	2945	302	3247
2018	Category B (Single)	3310	2	3312
	Category C (Multiple)	3310	49	3359

Changes

2014 LCR compared to 2013:

- Load forecast went up by 86 MW.
- Overall LCR need has increased by 155 MW.
- Includes LCR sensitive studies with three SONGS scenarios.

2018 LCR compared to 2017:

- Load forecast went up by 157 MW.
- Overall LCR need has increased by 204 MW.

Your comments and questions are welcome.

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