



California ISO
Shaping a Renewed Future

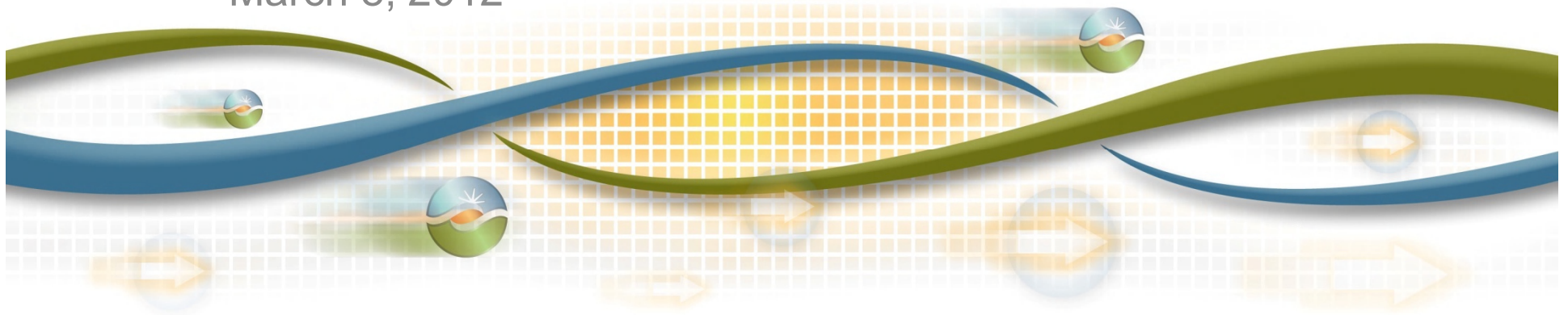
2013 Draft LCR Study Results San Diego Local Area

Sushant Barave

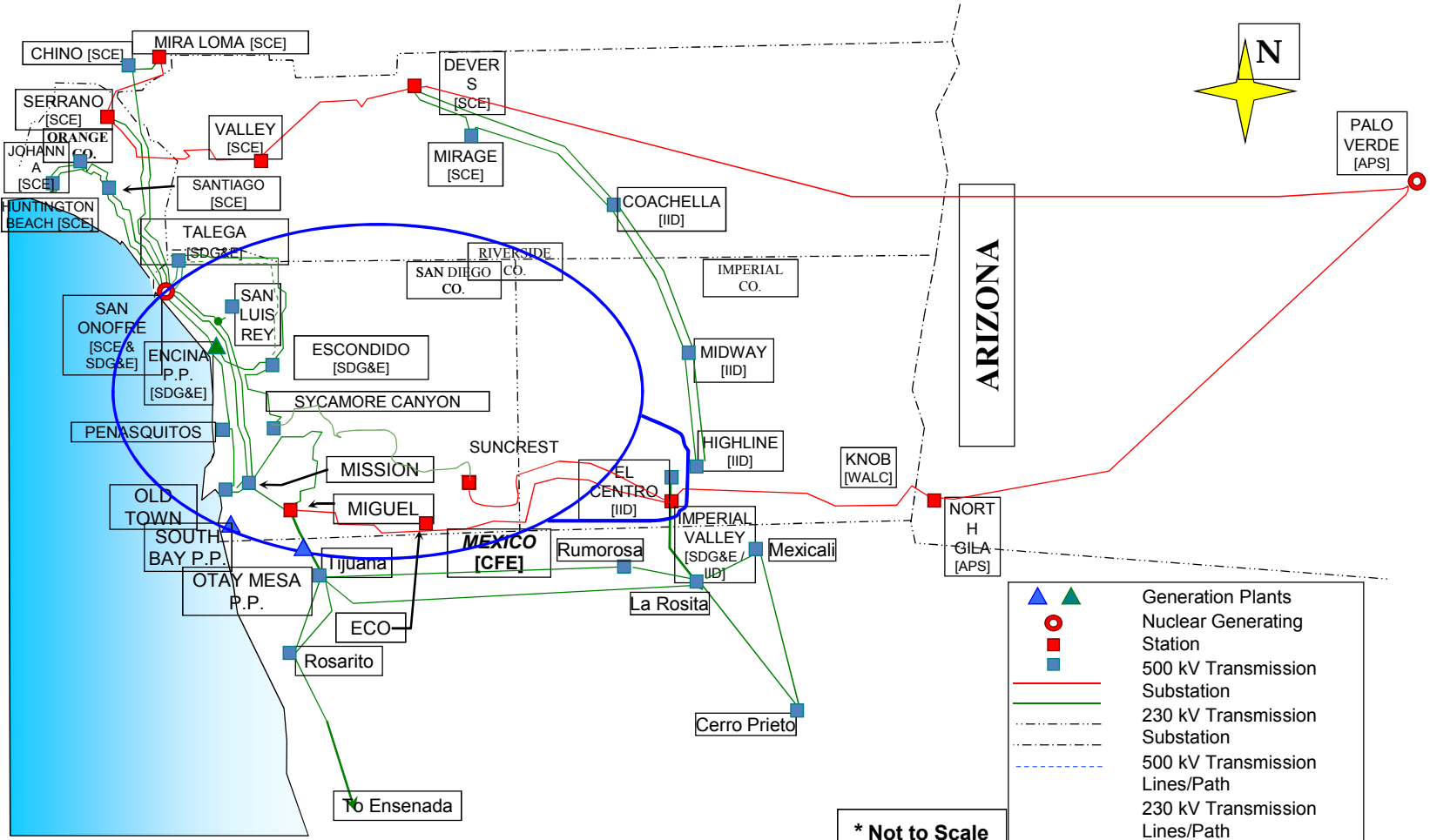
Senior Regional Transmission Engineer

Stakeholder Meeting

March 8, 2012



San Diego LCR Area



* Not to Scale

- ▲ ▲ Generation Plants
- Nuclear Generating Station
- Substation
- 500 kV Transmission
- 230 kV Transmission
- - - 500 kV Transmission Lines/Path
- - - 230 kV Transmission Lines/Path
- - - County Lines
- - - State Lines
- - - Proposed Lines

San Diego Area Load and Resources (MW)

| | |
|---|-------------|
| Total 1-in-10 Load + losses (Local San Diego Area) | 5072 |
| | |
| Generation | |
| Market Gen* | 2925 |
| Muni Gen | 0 |
| Wind Gen | 6 |
| QF Gen | 156 |
| Total Qualifying Capacity** | 3087 |

* 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



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-ECO area
- Greater IV-San Diego area

Critical SDG&E Area Contingencies

El Cajon Sub-area

Category B:

- Contingency: 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: 5 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 SDG&E Area 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 SDG&E Area 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 SDG&E Area 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 44 MW of QF and 70 MW of deficiency)
- Effective Unit: Goal line

Critical SDG&E Area 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 SDG&E Area Contingencies (contd)

Miramar Sub-area

Category B:

- Contingency: the loss of Otay Mesa – Miguel Tap – Silvergate 230 kV line (TL23042)
- Limiting component: Thermal overload on the Sycamore – Scripps 69kV line (TL6916)
- **LCR: 38 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 SDG&E Area Contingencies (contd)

San Diego-ECO Area

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

- Contingency: Loss of Southwest Power Link with the Otay Mesa Combined Cycle power plant out of service (RAS will trip all the generation at IV)
- Limiting component: Voltage deviations
- **LCR: 2093 MW** (includes 162 MW of QF/Wind)

Category C (G-1/N-2):

- Contingency: Loss of Southwest Power Link and Sunrise Power Link with the Otay Mesa Combined Cycle power plant out of service (RAS will trip all the generation at IV)
- Limiting component: Voltage collapse
- **LCR: 2863 MW** (includes 162 MW of QF/Wind)
- **LCR: 2454 MW**
- Effective Units: All units in San Diego area

Assuming no load shed SPS for N-2

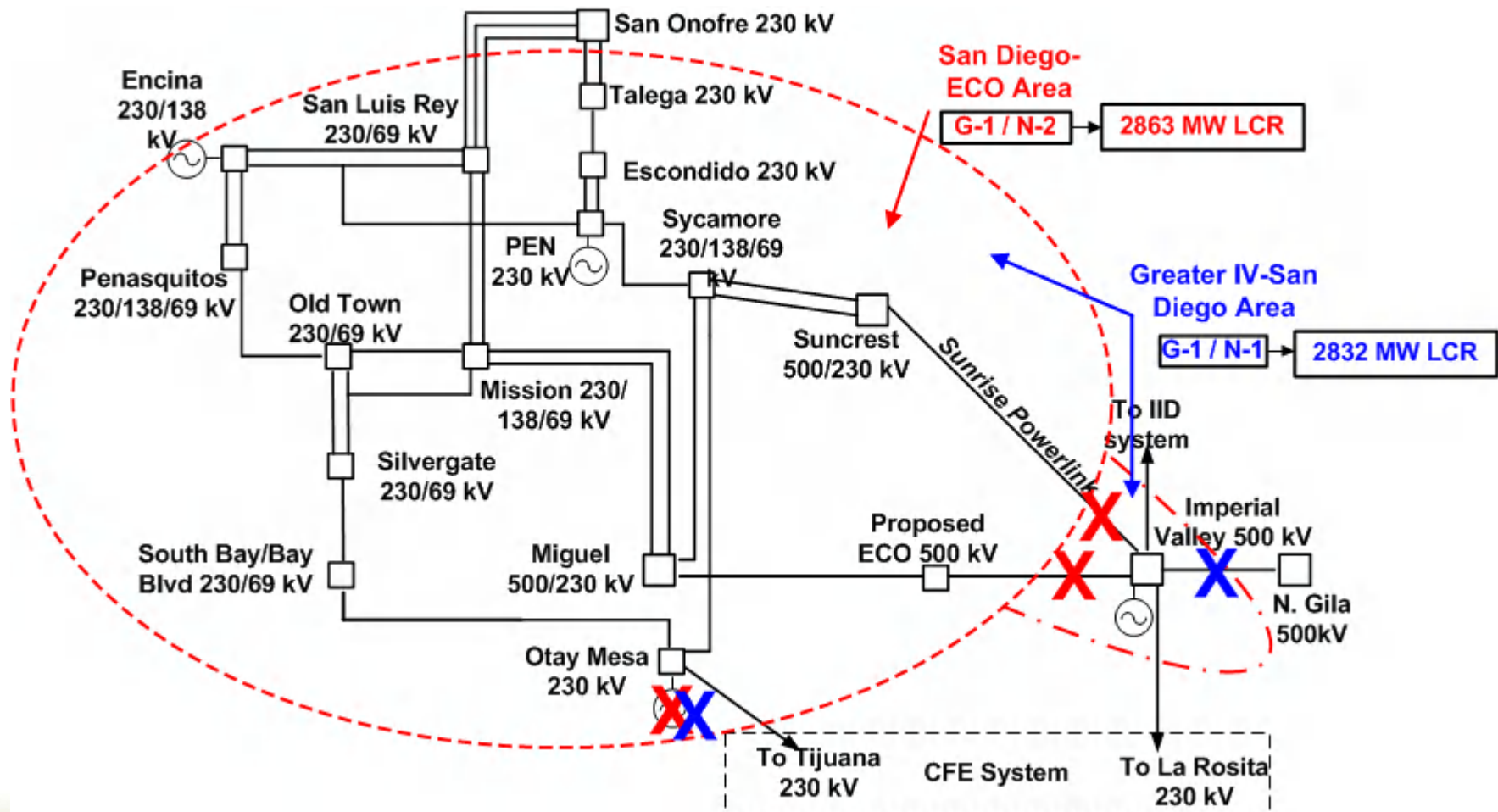
Assuming approx. 400 MW load shed SPS for N-2

Critical SDG&E Area Contingencies (contd)

Greater IV-San Diego Area

- 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

Critical SDG&E Area Contingencies (contd)



San Diego Area LCR

| | QF (MW) | Wind (MW) | Market (MW) | Max. Qualifying Capacity (MW) | |
|----------------------|---|--------------|-----------------|----------------------------------|----------------------|
| Available generation | 156 | 6 | 2925 | 3087 | |
| | | | | | |
| | Existing Generation Capacity Needed (MW) | | Deficiency (MW) | | Total MW LCR Need |
| Category B (Single) | 2863 | | 0 | | 2863 |
| Category C (Single) | 2863 | | 140 | | 3003 |

Changes since last year

- 1) Load forecast went up by 228 MW
- 2) Elimination of 1000 MVA path rating on Sunrise Power Link
- 3) No load shedding SPS assumed for N-2 contingency of Southwest Power Link and Sunrise Power Link
- 4) Identified Esco, Pala and Miramar sub-areas with LCR requirements
- 5) Total existing capacity needed for LCR increased by 14 MW

Your comments and questions are welcome.

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