

***VIA ELECTRONIC MAIL***

October 25, 2013

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**Re: ISO Response to the Fourth Set of Data Requests Related to Track 4 of The Utility Reform Network in Docket No. R.12 03 014**

Dear Mr. Freedman and Mr. Woodruff:

Enclosed please find the California Independent System Operator's response to the fourth set of data requests served by The Utility Reform Network (TURN) in Track 4 of the LTTP proceeding.

Please feel free to call me if you have any questions.

Sincerely,  
***/s/ Judith B. Sanders***  
Judith B. Sanders  
Senior Counsel  
California Independent System  
Operator Corporation

BEFORE  
THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate  
and Refine Procurement Policies and  
Consider Long Term Procurement Plans.

R.12 03 014

RESPONSE OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION  
TO THE FOURTH SET OF DATA REQUESTS RELATED TO TRACK 4 OF  
THE UTILITY REFORM NETWORK

Below are responses to the fourth set of Data Requests served by The Utility Reform Network (TURN) in Track 4 of the LTTTP proceeding.

RESPONSE

**Request No. 3.**

Provide all written communications and/or summaries of oral communications CAISO management and staff have had with the Board of Governors within the past two years that made the Board of Governors “aware of the ISO’s historic practices in regard to the consideration of N 1 1 contingencies”, as cited at 10:2 3 of the Millar Track 4 Rebuttal Testimony.

### ISO RESPONSE TO No. 3.

*The ISO's practice with respect to load shedding as a long term mitigation solution in densely populated areas in response to Category C contingencies has been addressed in non privileged public Board of Governors meetings through the presentation of the following materials:*

- *The Summer 2013 presentation at the September 13 and 14, 2012, Board of Governors meeting set out that the "Focus is on non generation alternatives to mitigate load shed risk for multiple contingency events" and set the stage for the ISO Board of Governors approving an RMR contract for the Huntington Beach 3&4 synchronous condensers. Management also briefed the Board of Governors about the approval of the Barre Ellis reconfiguration and the installation of four capacitor banks in SCE's system (see attached presentation).*
- *Additional dynamic reactive support (Talega and SONGS area) was approved at the March 20 and 21, 2013, Board of Governors meeting as an additional measure in the event SONGS did not return to service and if the Huntington Beach synchronous condensers did not materialize. The category C overlapping outages that were identified as the limiting contingencies were discussed on page 172 of the draft transmission plan presented for approval. See final 2012/2013 Transmission Plan at [http://www.caiso.com/Documents/2012 2013%20transmission%20planning%20process%20 %20Board approved%20plan%20and%20appendices](http://www.caiso.com/Documents/2012%202013%20transmission%20planning%20process%20%20Board%20approved%20plan%20and%20appendices).*
- *The Summer 2013 briefing presentation to the Board of Governors at the March 20 and 21, 2013, meeting reiterated the objective of reducing load shed risk for multiple contingency outages (see attached presentation).*

*To the extent there has been any privileged communications, such communications are not discoverable under CPUC Procedural Rule 10.1.*

## ATTACHMENT 2

### ISO Response to the Fourth Set of Data Requests of The Utility Reform Network

#### Response to Number 3 First Bullet Point

*California ISO  
Briefing on Summer 2013 Outlook SONGS Mitigation Planning  
Board of Governors Meeting General Session  
September 13 – 14, 2012*



California ISO  
Shaping a Renewed Future

# Briefing on Summer 2013 Outlook – SONGS Mitigation Planning

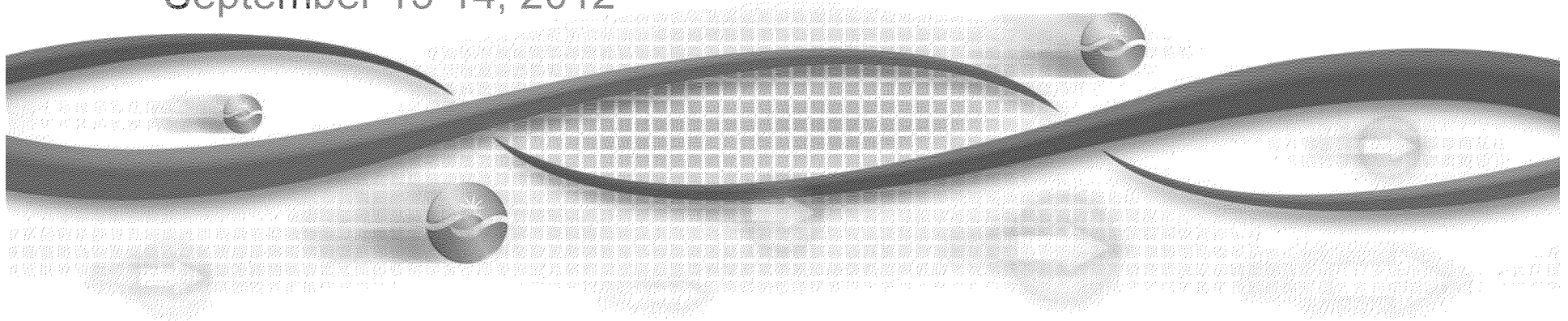
Neil Millar

Executive Director, Infrastructure Development

Board of Governors Meeting

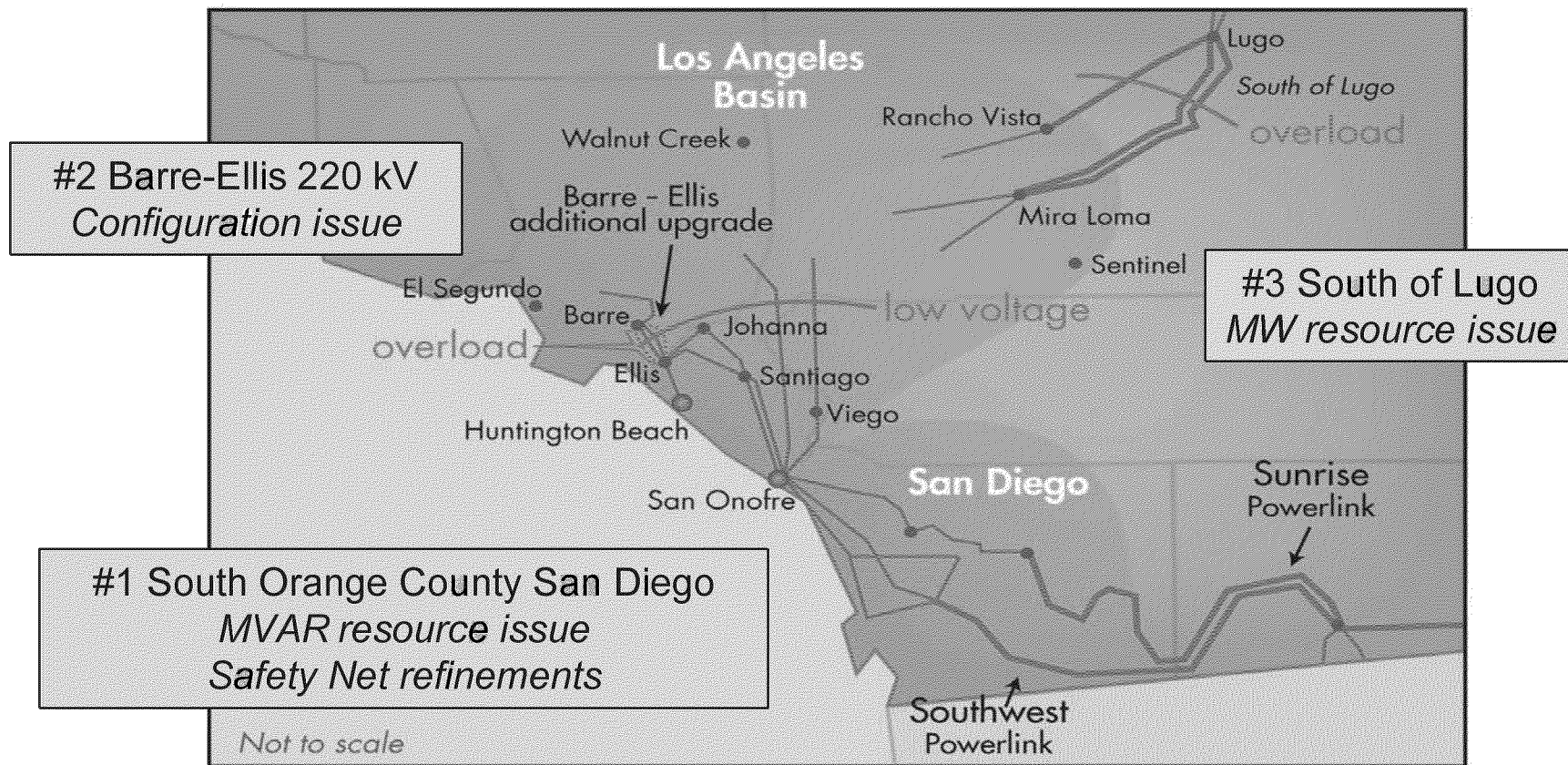
General Session

September 13-14, 2012



# Meeting CEC forecast demand without SONGS or Huntington Beach presents reliability challenges.

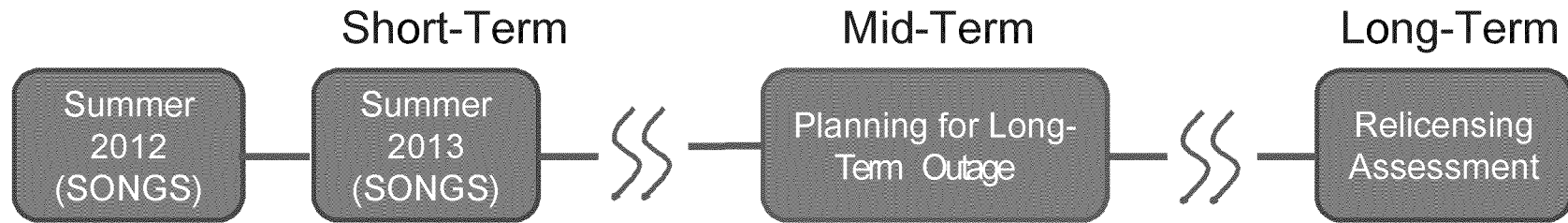
Focus is on non-generation alternatives to mitigate load shed risk for multiple-contingency events



The solutions being pursued balance reliability needs without excessive reliance on load-dropping schemes.

1. Convert Huntington Beach 3&4 into synchronous condensers
2. Install capacitors
  - 80 MVAR each at Santiago and Johanna
  - 160 MVAR at Viejo
3. Split Barre-Ellis 220 kV circuits (from 2 to 4 lines)
4. Confirm new resources South of Lugo
  - El Segundo and Sentinel in addition to Walnut Creek
5. Refinements to load curtailment safety nets
6. Continue to explore demand response

Short-term efforts are directed toward solutions that are viable over the long-term.



- Maintain reliability
  - Address short-term uncertainty in timely manner
  - Enable transition to long-term solution
- Consider alternatives and changing conditions
  - Factor in variability of demand and resource availability
- Consistent with long-term needs
  - Don't foreclose future options
  - Consider impacts of once-through cooling resources, voltage support required



# Next Steps

## Synchronous condensers

- Local Capacity Requirements addendum
- Board of Governors briefing and decision (September)
  - Reliability must-run negotiations
  - FERC consideration

## Transmission improvements (Capacitors and Barre-Ellis)

- Reliability needs posted with 2012/2013 transmission plan reliability needs
- Management approval of reliability projects less than \$50 million to be considered after September stakeholder session

## Additional communication regarding demand side management

## **ATTACHMENT 3**

### **ISO Response to the Fourth Set of Data Requests of The Utility Reform Network**

#### **Response to Number 3 Third Bullet Point**

*California ISO  
Briefing on Summer 2013 Outlook  
and Update on SONGS Mitigation Planning  
Board of Governors Meeting General Session  
March 20 – 21, 2013*



California ISO  
Shaping a Renewed Future.

# Briefing on Summer 2013 Outlook & Update on SONGS Mitigation Planning

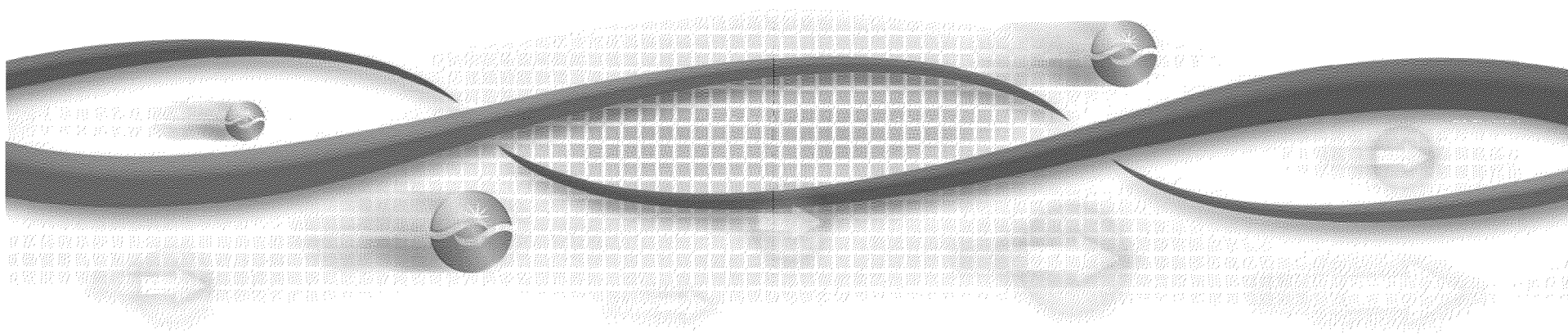
Neil Millar

Executive Director, Infrastructure Development

Board of Governors Meeting

General Session

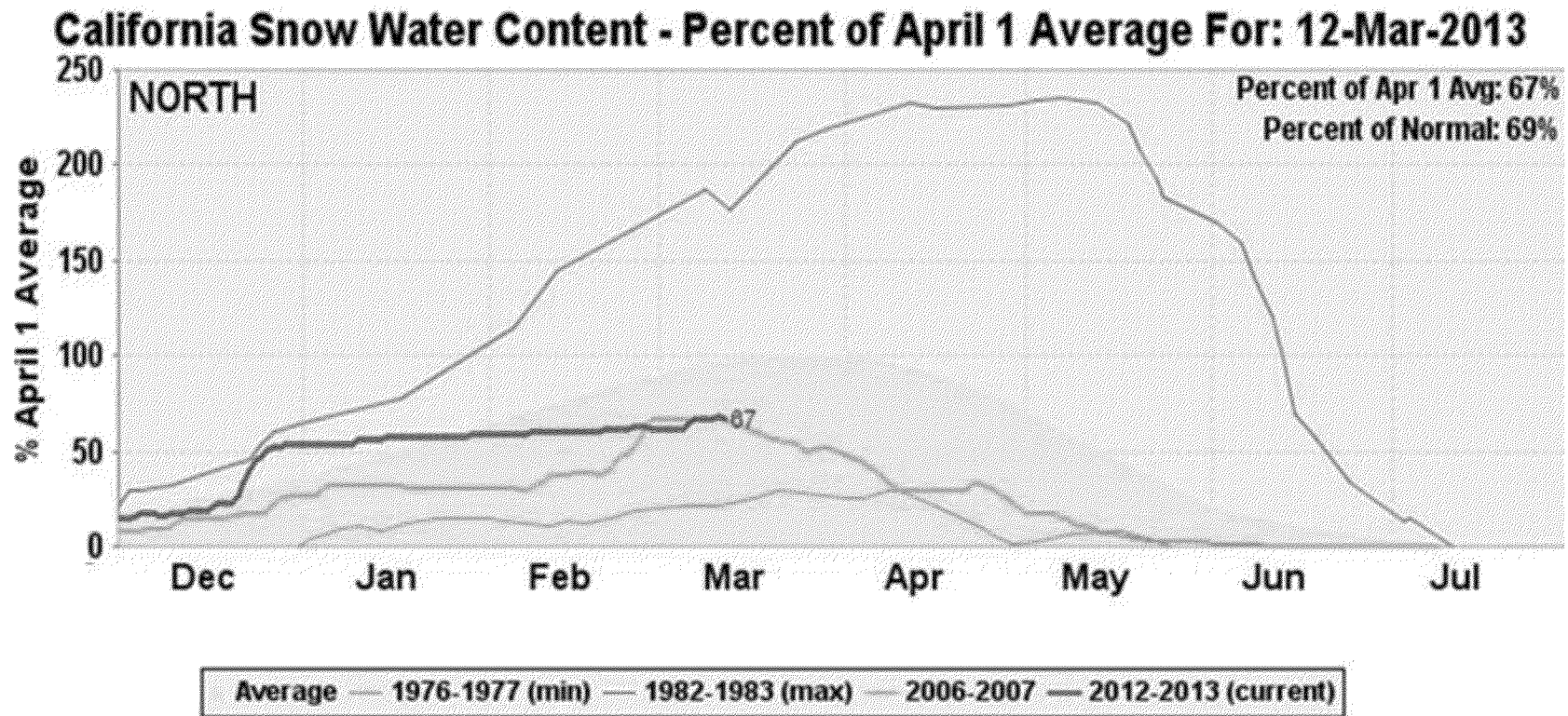
March 20-21, 2013



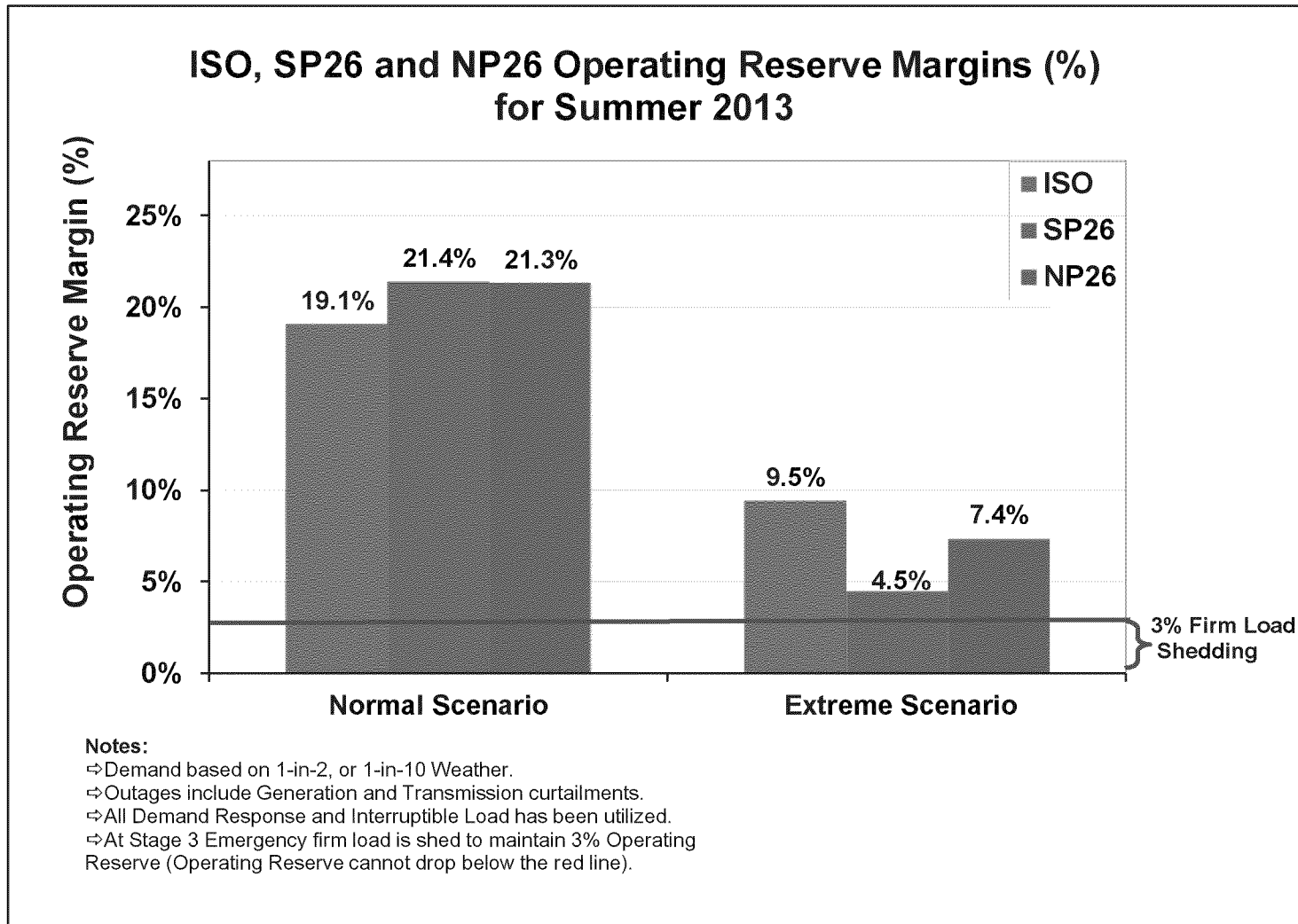
# 2013 Summer Assessment

- Summer assessment deferred to May Board meeting to incorporate evolving hydro situation
- Preliminary results indicate ample summer supply margins for the overall system and in northern California
- Summer supply margins over the entire southern California region are also ample but reliability concerns remain for South Orange County and San Diego due to continued outage of San Onofre Nuclear Generating Station

Preliminary hydro situation showing below-average expectations, as observed by the north conditions

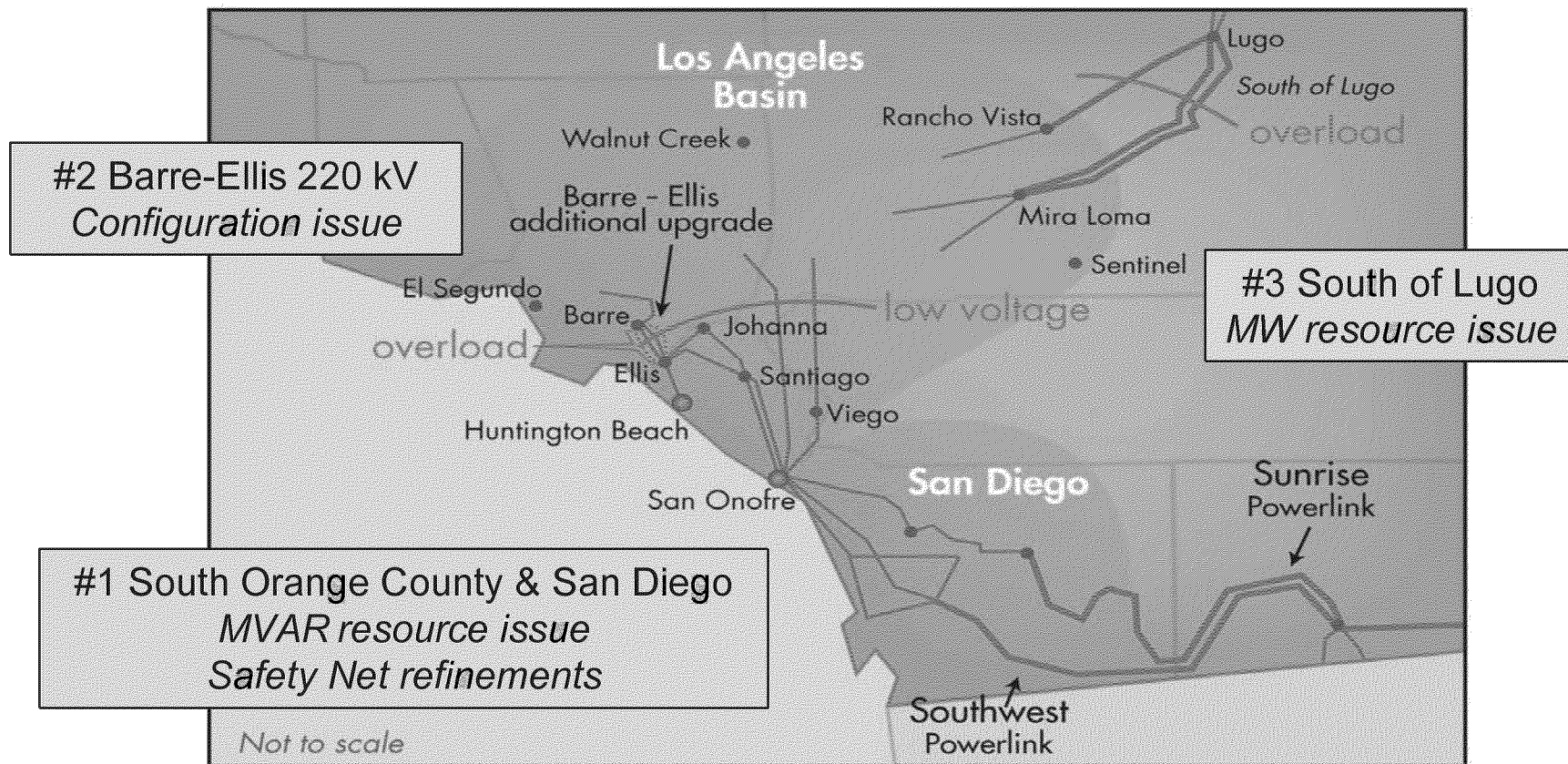


# Overall reserve margins in northern and southern California remain healthy



# Supply into southern Orange County and San Diego with SONGS off-line remain the primary concern

Focus is on non-generation alternatives to mitigate load shed risk for multiple-contingency events



The solutions address 2013 reliability needs without excessive reliance on load-dropping schemes:

- 1) Convert Huntington Beach units 3 & 4 into synchronous condensers
- 2) Install capacitors (80 MVAR each at Santiago and Johanna, 160 MVAR at Viejo)
- 3) Split Barre-Ellis 220 kV circuits (from 2 to 4 lines)
- 4) Confirm new resources South of Lugo
- 5) Support adequate funding for Flex Alerts and continue to explore applicable demand response



## Next Steps

- Continue to press forward with 2013 mitigation plan
- Seek Board approval later today for additional mid-term mitigation:
  - South Orange County Dynamic Reactive Support
  - Talega area Dynamic Reactive Support
  - Sycamore – Penasquitos 230 kV transmission line
- Continue analysis on additional longer-term needs

# 2012-2013 TRANSMISSION PLAN



**California ISO**  
Shaping a Renewed Future

March 20, 2013

Approved by ISO Board of Governors  
Prepared by: Infrastructure Development

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The following is the summary of these study results:

- For the LA Basin LCR area, the most critical contingency is the overlapping Category C (N-1-1) contingency of Sunrise Powerlink, system readjusted, followed by the outage of the Southwest Powerlink (SWPL) 500 kV line. This contingency would cause post-transient voltage instability in the southern region.
- For the Western LA sub-LCR area, the most critical contingency is the Category C contingency of overlapping outage of Serrano – Lewis #1 and Serrano – Villa Park #2 230 kV lines, causing Serrano – Villa Park #1 230 kV line to be overloaded. However, the area has sufficient generation to mitigate this loading concern.
- For the Ellis sub-LCR area, the most critical contingency is the Category C contingency of N-2 of either Barre-Ellis #1 & #2 230 kV lines, or Barre-Ellis #3 & #4 lines, overloading the adjacent Barre-Ellis double circuit tower lines. The area, however, has sufficient generation to mitigate this loading concern.
- For the San Diego sub-LCR area, the following critical reliability concerns were identified:
  - Normal overloads on the Miguel – Bay Blvd. 230kV line, causing a generation deficiency of about 2,132 MW (this overload was also identified in generation interconnection studies and in the policy-driven transmission need assessment);
  - Post transient voltage instability because of overlapping outage of Sunrise Powerlink, followed by SWPL line. With this constraint, this sub-LCR area has a generation deficiency of about 1,835 MW;
  - Thermal overloading concerns for 19 various facilities with voltages from 69 kV to 230 kV. This is due to the absence of SONGS and San Diego northwest generation (for a combined total of 3,211 MW of generation).
- For the San Diego-Imperial Valley LCR area, the most critical contingency is the Category B outage with overlapping G-1 of Otay Mesa and Imperial Valley – North Gila 500 kV line, causing post-transient voltage deviation at SCE-owned Viejo substation. This area, however, has sufficient generation to mitigate the identified reliability concern.

The following are the mid-term mitigation alternatives.

Mitigations (for both Alternative 1 and Alternative 2 below)

Table 3.5-8 lists the transmission facility loading concerns identified in the study with and without various mitigation measures. Two alternative mitigation plans were designed during the course of the study that would mitigate the voltage and facility loading concerns identified. The two alternative mitigation plans were designed with the intent of representing a reasonable range of possible alternatives. Also, during the course of the study the ISO discovered that two particular mitigation measures were highly effective at mitigating a large number of the loading and voltage concerns. It was found that continued reactive support was needed at Huntington Beach in both identified mitigation scenarios. It was also found that over half of the identified loading concerns could be mitigated with a new transmission line connected between the Sycamore and Penasquitos substations. Therefore the following projects listed below are identified as common mitigations to both of the alternative mitigation plans:



- The ISO assumed that the Huntington Beach synchronous condensers will be available for the intermediate (i.e., 2018) time frame and will assume their continued use or equivalent support. This was identified as part of the need for the SONGS absence scenario for summer 2013.
- Installation of 80 MVAR of shunt capacitor each for Johanna and Santiago Substations, and 160 MVAR of shunt caps for Viejo Substation. This was identified as part of the mitigation for the SONGS absence scenario for summer 2013
- Reconfiguration of the Barre – Ellis 230kV lines from two to four circuits. This was also identified in the SONGS absence scenario for summer 2013.
- Constructing an 11-mile 230 kV line from Sycamore to Penasquitos will mitigate over half of the identified thermal loading concerns. This was identified as common mitigation for the Mid-Term alternatives.

Given the long lead time for the Sycamore to Penasquitos line and the need for this line in a reasonable range of possible alternative mitigation plans, next steps for proceeding with the development of this line would need to commence immediately to address the identified mid-term and long-term needs. It is also important to note that, although it was assumed that the Huntington Beach synchronous condensers would be available through 2018, it is still uncertain if this project can be completed. In addition, the ISO has identified that a dynamic reactive support located at SONGS would provide equivalent reactive support. Therefore, in addition to a mid-term and long-term need for dynamic reactive support at SONGS, there is also a potential short-term need as a backup project to the Huntington Beach synchronous condenser project.

#### Mid-Term Alternative #1

- Add new or replace 820 MW of northwest San Diego generation.
- Add new 300 MW of generation in the southeast San Diego area.
- Install a total of 650 MVAR of dynamic reactive support (i.e., static VAR compensator or synchronous condensers) at SONGS (or its proximity) and San Luis Rey<sup>20</sup> Substations.
- Common mitigations (Huntington Beach synchronous condensers and Sycamore-Penasquitos 230 kV transmission line)

#### Mid-Term Alternative #2

- Add new or replace 965 MW of northwest generation in San Diego.
- Install a total of 1,460 MVAR of SVC or SC for dynamic reactive support at SONGS, Talega, Penasquitos, San Luis Rey and Mission Substations.
- Common mitigations (Huntington Beach synchronous condensers and Sycamore-Penasquitos 230 kV transmission line)

The figure below provides an illustration of the above mitigation alternatives.

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<sup>20</sup> San Luis Rey is the first preferred location; if this is not feasible, second preferred location is Talega Substation. SDG&E submitted the proposed Talega synchronous condensers into the ISO Request Window.

Figure 3.5-3: Mid-term mitigation alternatives for loss of SONGS

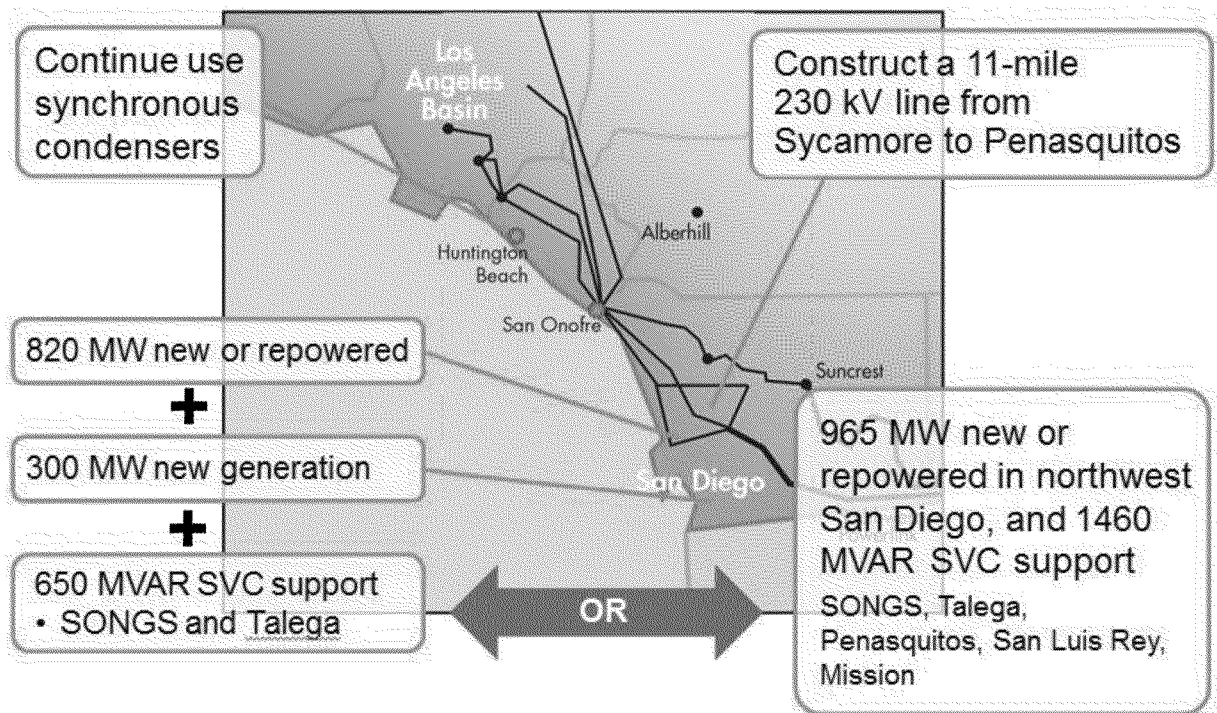


Table 3.5-7: 2018 Local reliability assessment of LA Basin and San Diego areas

	LA Basin	W. LA	Ellis	San Diego	SD/IV
Total Generation (MW)	10,918	6,540		2,135	4,361
<b>Category A</b>	N/A	N/A	N/A	Normal conditions	N/A None other than the ones identified in the San Diego sub-area
Identified Reliability Concerns				Normal overloads on Miguel - Bay Blvd. 230kV line (20%)	
Required Generation (MW)				4,267	
Deficiency (MW)				(2,132)	
<b>Category B</b>	N/A Category C contingency is the overriding contingency for LCR need for this area	N/A Category C contingency is the overriding contingency for LCR need for this sub-area	N/A	G-1/N-1: Palomar CCGT/Miguel-Mission 230kV #1 line	G-1/N-1: Otay Mesa/IV-N.Gila 500kV
Identified Reliability Concerns	Category C reliability concerns established LCR needs	Category C reliability concerns established LCR needs	Category C reliability concerns established LCR needs	Emergency overloads on Miguel - Bay Blvd. 230kV line (10%)	Post-transient voltage deviation beyond 7% at SCE's Viejo 230kV
Required Generation	See notes above	See notes above	See notes above	3,382	4,191
<b>Category C</b>	N-1-1: Sunrise, system adj., followed by SWPL	N-1-1: Serrano-Lewis #1, followed by Serrano-Villa Park #2 230kV	N-2: Barre-Ellis #1&2 or Barre-Ellis #3&4 230kV lines	N-1-1: Sunrise, system adj., followed by SWPL	Category B contingency is the overriding contingency for LCR need for this area
Identified Reliability Concerns	Post-transient voltage instability	Overloading concern on the Serrano-Villa Park #1 230kV line	Overloading of the remaining DCTL Barre-Ellis 230kV lines	Post-transient voltage instability	See notes above

	LA Basin	W. LA	Ellis	San Diego	SD/IV
Description of Mitigations	<p>(1) Continue using HB synchronous condensers AND replace or add new generation in San Diego (820 MW in the northwest and 300 MW in the southeast) AND install 650 MVAR of SVC/SC support at SONGS and Talega;</p> <p>(2) Continue using HB synchronous condensers AND replace or add new 965 MW generation in the northwest San Diego AND install total of 1460 MVAR of SVC/SC support at SONGS, Talega, Penasquitos, San Luis Rey and Mission</p>	<p>Existing generation is adequate to mitigate identified reliability concerns</p>		<p>(1) Replace or add new generation in San Diego (820 MW in the northwest and 300 MW in the southeast) AND install 650 MVAR of SVC/SC support at SONGS and Talega;</p> <p>(2) Replace or add new 965 MW generation in the northwest San Diego AND install total of 1460 MVAR of SVC/SC support at SONGS, Talega, Penasquitos, San Luis Rey and Mission</p>	
LCR Area's Total Required Generation	<p>(1) Total 10,846 MW (included 251 MW DG) - Option 1</p> <p>(2) Total 10,846 MW - Option 2</p>	Total 4,931 MW (included 251 MW D.G.)	48 MW	<p>(1) 3,255 MW (=2,135 + 820 + 300)</p> <p>(2) 3,100 MW (=2,135 + 965)</p>	See notes above
Deficiency (MW)	<p>(1) None - Option 1</p> <p>(2) None - Option 2</p>	None	None	<p>If there is no mitigation measure, the local area would be subject to a deficiency of (1,835) MW</p> <p>(1) None if mitigating 1,120 MW generation deficiency (820 MW northwest and 300 MW southeast)</p>	See notes above

	LA Basin	W. LA	Ellis	San Diego	SD/IV
				(2) None if mitigating 965 MW generation deficiency (northwest S/D generation)	