

# California's Energy Future



# Sunrise Powerlink Commitment and Imperial Valley Renewable Energy Projects



Project Name	Technology	Location	Contract Capacity (MW)	Flowing across Sunrise Today (MW)	Project Status
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## Operating Agreements

Ocotillo Express, LLC (Pattern)	Wind	Imperial Valley, CA	265.3	265.3	Existing
Campo Verde Solar (Southern Company)	Solar PV	Imperial Valley, CA	139.0	139.0	Existing
CSOLAR IV South (Tenaska)	Solar PV	Calexico, CA	130.0	130.0	Existing
Imperial Valley Solar 1 (AES; formerly Mt. Signal Solar)	Solar PV	Imperial Valley, CA	200.0	200.0	COD declared 3/4/2014

## Approved (Not COD)

Centinela Solar Energy (LS Power)	Solar PV	Calexico, CA	125.0	125.0	Delivering Test Energy since 7/26/13
Centinela Solar Energy Expan (LS Power)	Solar PV	Calexico, CA	45.0	0.0	In Construction
CSOLAR IV West (Tenaska)	Solar PV	Imperial Valley, CA	150.0	0.0	Pre-construction; Design/Engineering
SolarGen2 Imperial Valley	Solar PV	Imperial Valley, CA	150.0	13.0	In Construction
70SM1 8ME (Gestamp- Calipatria project)	Solar PV	Calipatria, CA	20.0	0.0	Permitting
TallBear Seville (Regenerate)	Solar PV	El Centro, CA	20.0	0.0	Permitting

**Total                    1,244.3                    872.3**

# Imperial Valley Renewable Projects Under Construction

	Centinela	Campo Verde	Calexico/ Mount Signal	Tenaska South	Tenaska West	Solar Gen2	Ocotillo Wind Energy Facility	Total
<b>Construction Jobs</b>	235	191	300	870	810	180	350	2936
<b>Permanent Jobs</b>	14	12	15	13	14	20	17.5	105.5
<b>Construction Costs (millions)</b>	\$806.50	\$285.30	\$1,523	\$703.80	\$830	\$582	\$554	\$5,284.60
<b>Property Tax Revenue (millions)</b>	12.46	3.07	24	2.2	2.2	1.11	141.6	186.64
<b>Sales Tax Revenue (millions)</b>	7.75	5.325	13	2	2.25	8.4	3	41.725
<b>Other Economic Activity (millions)*</b>	699	239	500	343.35	302.1	45	442.5	2570.95
<b>Public Benefit Payment (millions)</b>	10.8	3.5	6.35	0	0	4.8	0	25.45

**Note:** Figures above are estimates based on current information. The above information was compiled from Fiscal and Economic Impact Analyses prepared in conjunction with the project approval process.

\*Approximation over thirty year life of projects (inclusive of project construction and operations).

Source: prepared by the County of Imperial.

# Southern California Reliability

Maintaining reliability in Southern California will be challenging due to:

- SCE permanently retiring the 2200 MW San Onofre Nuclear Generation Station.
- Over 5,000 MW of power plants that use once-through-cooling technology will close between 2018 and 2022.
- Load growth in Southern California is expected to average about 400 MW per year.
- Rate design that currently does not support wide spread adoption of energy efficiency.

The staffs' of the CPUC, CEC and California ISO presented a preliminary reliability plan for the LA Basin and San Diego.

- Plan identified the need for 7,600 MW of new resources or load reductions. State will look to maximize the use of "preferred resources" to meet this need.
- Preferred resources include energy efficiency, demand response, renewables and energy storage.
- The plan will still need to be fully vetted in hearings before the CPUC.

# ***System Reliability without SONGS and Once Through Cooling (OTC) Units***

***To maintain a reliable system, a portfolio of generation and transmission infrastructure and voltage support equipment, is needed: ONE SIZE DOES NOT FIT ALL.***

- Two major processes are used to approve plans and authorize SDG&E to add new transmission infrastructure or solicit resources
  - CAISO Transmission Planning Process (TPP)
    - Annual review of transmission system and needed transmission system enhancements.
  - CPUC Long Term Procurement Planning Proceeding (LTPP)
    - Commission adopts a local resource “need” finding
    - CPUC has been relying heavily on CAISO testimony when determining need
    - CPUC has been expressing a desire to meet at least 50% of the identified resource need with preferred resources (EE, DR, Renewable)

# Impact of SONGS closing on Existing Generation and GHG

- Current Situation

- Producing more power from our existing fleet of highly efficient natural gas power plants.
  - Capacity Factors up significantly since SONGS shutdown operating at efficient levels – less stops and start
  - SDG&E fleet is more modern and efficient than most other natural gas assets

- Future – mitigating factors

- Renewables

- SDG&E's RPS resource commitments exceed CPUC requirements – Over 1,000 MW of new renewable resources coming on line between now and the end of 2104
- SDG&E's rooftop solar connections now at 226 MW – approx. 50 MW more than forecast for this year

- Fossil Resources

- GHG associated with the loss of SONGS energy will be partially offset by SDG&E's coal resources expiring at the end of 2013.
- As new natural gas generation is added, overall resource efficiency will continue to improve.

# Approved Enhancements to Transmission System

- **2012/2013** CAISO Transmission Planning Process - Approved transmission projects:
  - New 230 kV Line from Sycamore to Penasquitos Substation (2017)
    - SDG&E and 4 other parties submitted bids in June 2013 to the CAISO to build this line
    - CAISO awarded project to SDG&E in March 2014
      - Process delayed due to need to change CAISO tariff
  - Additional dynamic reactive capability
    - SONGS Mesa\* - Static Var Compensator (2017)
      - Currently working on getting land control on Camp Pendleton
    - Talega Substation - Synchronous Condenser (2015)
      - Engineering and Procurement underway

***\*Provides benefits to both systems, CAISO determined SDG&E should construct and operate.***

# Approved Enhancements to Transmission System

- **2013/2014** Draft CAISO Transmission Plan – Recommend Board approval of:
  - Nine local transmission system upgrades on the 69, 138 and 230 kV system
  - Additional dynamic reactive capability
    - San Luis Rey (2 - 225 MVAR Synchronous Condenser) (2018)
- The ISO has identified the need for the following transmission projects which are eligible for competitive solicitation:
  - Imperial Valley flow controller (phase shifter or back to back HVDC convertor)
  - Suncrest SVC

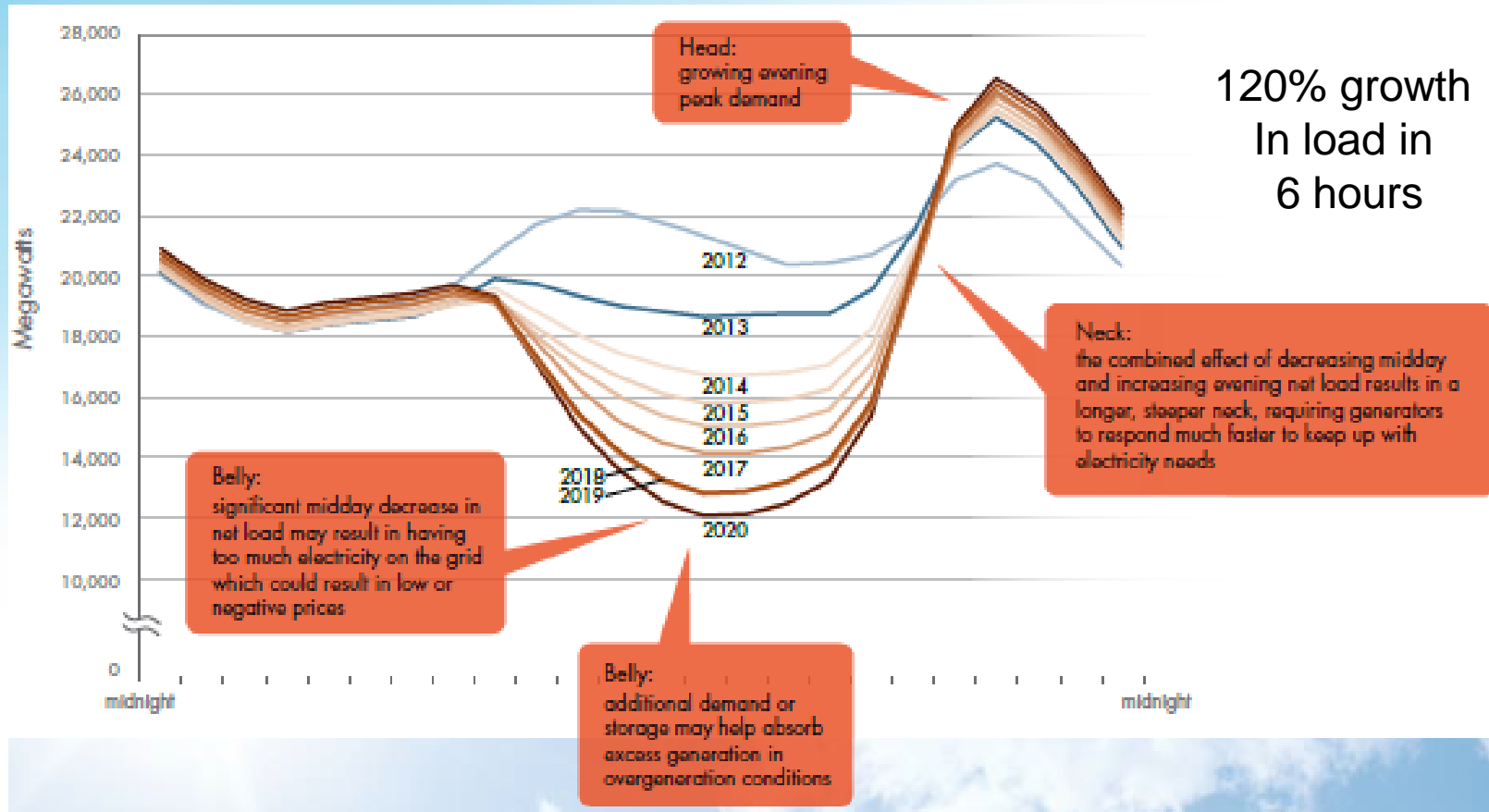


## Local Generation Needs

- In May of 2011, SDG&E filed for approval of 350 MW of new generation which SDG&E identified as needed to allow for the shutdown of Encina by the end of 2017 to meet the OTC compliance deadline
  - Need assumed SONGS remained in service.
  - In March of 2013, the CPUC only approved the 45 MW Wellhead Escondido repower and found the other 298 MW Were not needed till 2018. The decision allowed SDG&E to conduct another RFO or refile the Pio Pico Contract to meet that need.
    - The Wellhead Escondido repower is nearing the end of construction and could be commercial prior to the end of January 2014.
- In June of 2013, SDG&E filed a revise contract with Pio Pico for a 300 MW peaking plant that would come on line in September of 2015 but SDG&E's long term contract would not start till July of 2017.
  - Final Decision approving the contract was voted on at February 5 CPUC meeting.

# New Resource Need to Have Operating Characteristics To Integrate Renewables

## California “Duck Curve” For March



# SDG&E 2013 Forecasted Energy Mix

