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**Comments on Draft 2005 IEPR Transmission Chapter –  
The Sunrise Powerlink and Alternatives for  
Moving Renewable-Generated Electricity, Relieving  
Congestion, and Assuring Reliability in  
the Service Territory of the  
San Diego Gas & Electric Company**

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Prepared by

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## Summary

The strong endorsement by the California Energy Commission (CEC) of the Sunrise Powerlink in the draft 2005 Integrated Energy Policy Report (IEPR) and associated Strategic Transmission Investment Plan, with no discussion or assessment of alternatives to achieve the same objectives, is surprising and unjustified. The San Diego public would expect that an analysis by the CEC would be comprehensive and considered. But the draft report is anything but on the specific issue of the Sunrise Powerlink.

The glaring problems with the CEC findings include:

1. A clear misunderstanding of near-term Imperial Irrigation District (IID) transmission plans;
2. The questionable availability of geothermal power in the timeframe suggested;
3. The weakness of SDG&E's congestion cost arguments;
4. The existence of reasonable and lower-cost alternatives;
5. The many flawed assumptions as to when this transmission line is needed by SDG&E.

As will be discussed in greater depth below, much of the so-called congestion cost justification for the Sunrise line is the result of Sempra's own efforts to create artificial congestion on SDGE's 500 kV Southwest Power Link (SWPL) instead of routing power to client SCE from Sempra power plants that are more favorably located from a transmission perspective.

Also, the CEC did not consider the fact that SDG&E has previously stated that the Path 45 230 kV upgrade alternative just over the border in Mexico "*..... meets most of SDGE's technical requirements.*" SDGE has refused to seriously consider anything but Sunrise in the forums the authors of this document have participated in over the last year.

It is encouraging that the CEC is putting out an RFP to take a look at Path 45 and integrating more effectively with the Comisión Federal de Electricidad (CFE). However, there is not a word about this in the draft 2005 IEPR chapter on transmission or the Strategic Transmission Investment Plan. At a minimum there needs to be a brief discussion in both documents that notes that SDGE has identified potential alternatives to building a greenfield 500 kV line and that the CEC is letting a contract to study the potential for taking advantage of Path 45 in Mexico. Otherwise the Path 45 study, no matter how good and no matter how advantageous the Path 45 option may prove to be, will have no impact on 2005 IEPR transmission recommendations.

SDGE has announced a contract to build a 300 MW solar thermal project in Imperial County. This is a laudable step, especially given that most good solar thermal sites in the San Diego County and Imperial County area would appear to be less environmentally sensitive than good wind sites. However, this step is offset by SDGE's premature commitment to running a 500kV line through the 69 kV corridor in Anza Borrego State Park. Unless that solar thermal project will be located on or immediately next to the 500 kV line, the transmission interconnect costs could be so high as to kill the project. Ultimately solar thermal could be used to pass Sunrise off as a renewables line, just as it is now being promoted as a geothermal line, when in fact the true

role of this proposed line will be to move combined-cycle power from Sempra's power projects in Mexicali and Palo Verde, Arizona.

## **Why the CEC Recommendation Is Flawed**

### **A. Misunderstanding of IID Transmission Plans**

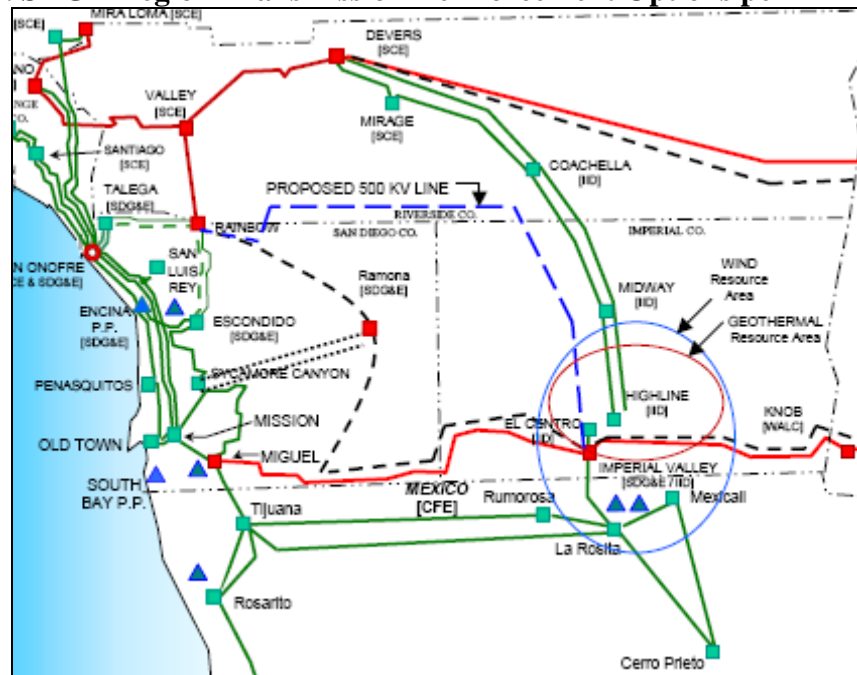
The CEC's strong endorsement of SDGE's proposed 500 kV Sunrise Powerlink in the draft 2005 IEPR is to a large degree based on the supposed benefits of the line for moving geothermal power from Imperial County to San Diego. The stated objective of the CEC's Imperial Valley Study Group (IVSG) process is to move 2,000 MW of renewable power, all of it presumed to be geothermal power during the course of the IVSG study period, from Imperial County to coastal load centers. The ability to move a minimum of 2,000 MW of renewable power was established as a minimum transmission requirement at the first IVSG meeting in November 2004. This minimum objective was set without an assessment of the reasonableness of assuming every potential MW of geothermal power in Imperial Valley would be in production and deliverable over the transmission line in a reasonably foreseeable period of time.

In reality, Imperial Valley geothermal potential is much lower than the 2,000 MW minimum transmission requirement established arbitrarily by the IVSG at its first meeting. The document cited by the CEC as the basis for geothermal power potential in Imperial Valley is the May 24, 2004 GeothermEx report prepared for the CEC titled "*Geothermal Resources Available to the California Market.*" This document estimates geothermal reserves in the Imperial Valley at somewhere between 1,350 to 1,950 MW potential. Based on the GeothermEx report it would be fair to identify 1,350 MW of incremental geothermal capacity as "proven," and 1,950 MW as "probable." Proven geothermal reserves in Imperial Valley are actually 70 percent of the 1,950 MW figure cited in the final IVSG report.

It is important to note that approximately half of the 1,350 to 1,950 MW of this geothermal potential cannot be accessed by current geothermal drilling technology as it is over water. Of the seven Salton Sea Ecosystem Restoration alternatives currently under consideration (as identified on the DWR's Salton Sea homepage at [www.saltonseawater.ca.gov](http://www.saltonseawater.ca.gov)) five alternatives would leave the south shoreline where it is now, meaning the over water geothermal assets would remain over water for the foreseeable future. The high selenium content of Salton Sea sediments and potential for negative health impacts that may result from windblown sediments make development of the over water geothermal assets problematic even if the Salton Sea is allowed to recede in the geothermal resource area. It would be unrealistic to assume that more than 600 to 800 MW of additional geothermal power will be available from Imperial County in the foreseeable future.

One 500 kV transmission proposal that was being promoted as optimum for the SDGE service territory in 2002 looks very similar to the route that will be followed (in part) by the proposed LADWP-IID 500 kV line. Shell Trading gave a presentation at the first Southwest Transmission Expansion Plan (STEP) meeting on November 1, 2002 that addressed transmission upgrade options under consideration in the Long Term Regional Study (LTRS) process. The graphic showing potential transmission reinforcement routes in the SDGE and SCE service territories is shown below as Figure 1.

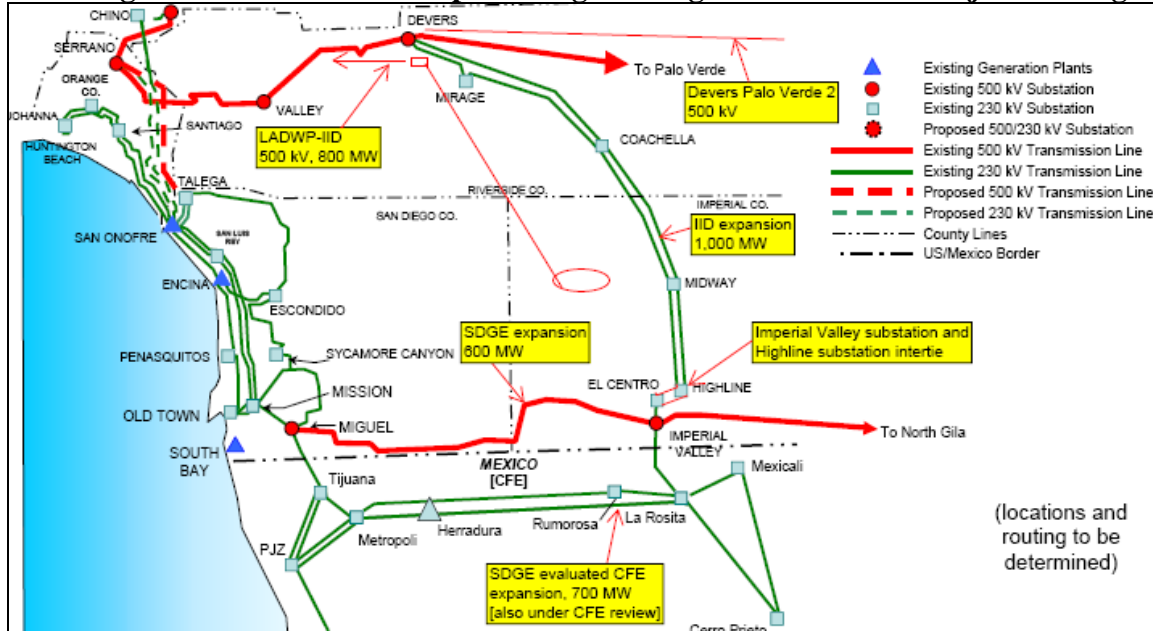
**Figure 1. SDGE Region Transmission Reinforcement Options per LTRS Process**



The 500 kV LADWP-IID transmission line, which roughly follows the dashed blue line in Figure 1, is a superior alternative to the proposed Sunrise Powerlink for moving renewables out of Imperial Valley. It uses an existing 230 kV corridor that passes through lands of minimum environmental sensitivity, fully consistent with the Garamendi principle regarding transmission corridor selection. In contrast, the Sunrise Powerlink is effectively a greenfield 500 kV line that will traverse the Anza Borrego State Park and relatively undeveloped San Diego County backcountry.

It is also important to point out that the strip of land including the Mexican border up to the DVP1 transmission line will be quite saturated with high voltage transmission lines even without the Sunrise Powerlink. Current and proposed transmission projects, not including the Sunrise Powerlink, are shown in Figure 2.

**Figure 2. Current and Proposed High Voltage Transmission Projects in Region**



As shown in Figure 2, SDGE already has two transmission outlets from Imperial Valley to move renewables – the newly upgraded 500 kV SWPL (upgraded from 1,300 to 1,900 MW) and the two 230 kV transmission lines 10 to 15 miles south of SWPL in Mexico. SWPL will be available to move renewables from Imperial Valley as soon as the interconnection with IID Path 42 at the Imperial Valley substation is complete. This interconnection is a component of IID’s planned transmission upgrade project.

Two other high voltage paths move renewable power north and west from Imperial Valley. These are 1) the existing IID Path 42 interconnect with SCE at Devers, and 2) the proposed 500 kV LADWP-IID transmission link. The Sunrise Powerlink will be the fifth transmission link to the Imperial Valley renewables area in a distance of approximately 100 miles.

It is important to note that SDGE can move all the renewables they can access in Imperial Valley over SWPL and the Mexico 230 kV lines if SDGE chooses to do so. Also, the concept of renewable energy credits (RECs) is under consideration. RECs would allow individual utilities to avoid building potentially redundant transmission lines to access renewables while still getting credit for renewables generation. The CEC should require SDGE to explore the RECs concept as an element of the Certificate of Public Convenience and Necessity (CPCN) that SDGE indicates it will file with the California Public Utilities Commission (CPUC) for Sunrise Powerlink by the end of 2005.

The CEC’s misunderstanding of IID transmission plans leads to the likelihood of redundant renewables transmission capability. There is no point in LADWP and IID teaming to build a transmission network to access all foreseeable geothermal in Imperial Valley and have SDGE build what essentially will be a parallel line to get at the same resources. It is wasteful and unnecessary.

SDGE asserts that the Miguel substation in the southeastern outskirts of San Diego, the western terminus of the SWPL, cannot be further debottlenecked beyond its new capacity of 1,900 MW. This is the reason given for not simply increasing the capacity of SWPL to handle additional renewables development to the east. However, SDGE has not yet approached SCE about the cost and effort that will be necessary to debottleneck or expand the proposed terminus of the Sunrise Powerlink, the Sorrento Valley substation in SCE territory. The CEC has not justified why it would be any less costly to upgrade Sorrento Valley to accept a 2,200 MW 500 kV line than to significantly increase the capacity of SWPL at Miguel substation to accept significantly more (renewable) power.

The IVSG objective was based on the Tehachapi Study Group objective – develop a well thought-out renewable energy collector system for the renewable resource in the region. A phased approach was used in both cases. Both the Tehachapi Study Group and the IID component of the IVSG effort appear to have followed a logical phased approach to developing the available renewable resource. The disjunct occurs with the Sunrise Powerlink component of the IVSG process. In the case of Sunrise, a dramatic shift is made from the logical phased approach to a “build it very big and they will come” approach. Insisting that any interconnecting transmission line to Imperial Valley must be supersized upfront eliminates from consideration numerous other renewables export options, like the LADWP-IID line, that are more consistent with the phased approach.

There are in fact a few power plants that are already operational and ready to utilize the Sunrise Powerlink. However, none of these plants are renewable energy facilities. Immediate beneficiaries of the Sunrise Powerlink will be owners of merchant power plants in Palo Verde, Arizona and Mexicali, Mexico that export power to Southern California. The Sempra Energy plants in Palo Verde (Mesquite, 1,250 MW) and Mexicali (Termoeléctrica de Mexicali 650 MW) are obvious beneficiaries. Much of the output from these plants is generated to meet the long-term Department of Water Resources (DWR) contract signed in 2001 at the peak of the state’s energy crisis. The contract expires in 2011. The Intergen export plant in Mexicali (550 MW) will also benefit if that plant is not absorbed into the federal Mexican utility monopoly prior to 2010. Ultimately the Sunrise Powerlink may serve as little more than a ratepayer-financed 500 kV line that is essentially dedicated to moving power from SDGE’s unregulated parent Sempra Energy to markets in Southern California.

There are ample solar thermal resources in Imperial County and eastern San Diego County to augment the limited amount of geothermal power that will be available to supply the 2,000 MW capacity of the Sunrise Powerlink. However, we know where the geothermal assets are and IID is designing its staged transmission upgrade project around assets with an exact location. The location of the solar thermal project is not established. If the Sunrise Powerlink is not located within a few miles of the proposed solar thermal development area the project developer may be faced with transmission interconnect costs that are so high they kill the project.

Based on the reticence FERC has shown to approving the ratebasing of the Tehachapi renewables transmission collector system, there is no reason to assume that if the Sunrise Powerlink is out of position to access the most favorable sites for solar thermal development that SDGE can simply pass on to ratepayers the cost of feeder transmission lines from the solar thermal sites to the Sunrise Powerlink. As a result, siting of such a line should be deferred until:

1) it is reasonably certain where the solar thermal development will be located , or 2) do not presume the Sunrise Powerlink will be used to move solar thermal on a timeline that matters (next ten years). Otherwise solar thermal access will be used to promote the Sunrise Powerlink as a renewables line when in fact the line will be used primarily to move combined-cycle power out of Mexicali and Arizona

The statement about the Sunrise Powerlink being potentially out-of-position to access solar thermal is even more applicable to the regional wind resource. The May 2005 CEC report “*Energy Supply and Demand Assessment for the Border Region*” notes the export wind potential immediately across the border in Mexico and the fact that the two 230 kV Path 45 transmission lines pass through the heart of the wind resource area. As noted on p. 19 and p. 20 of the report:

*“Despite its current limited use, wind power is probably the most promising renewable resource in northern Baja California after geothermal energy. . . . Figure 7 shows the wind power densities along the Juarez Mountains and in the area of La Rumorosa, located between Mexicali and Tijuana. The two double circuit 230-kV CFE transmission lines connecting the Rosita to La Herradura substations follow in proximity to the road that traverses the area and offers the highest wind potential. . . . early stages of development of a 300-MW wind power project for export initially proposed by Fuerza Eolica, a company now affiliated with Clipper Windpower. It is reported that the land use rights agreements for this project have been finalized with the local community land leaders (ejido).”*

The two 230 kV lines in Mexico are equipped with 69 kV taps at each substation. This is an ideal transmission configuration for renewable energy projects. In contrast the Sunrise Powerlink is a 500 kV line that would require major investments in step-up transformer capacity by a renewable energy project developer, even if the renewables project was literally under the Sunrise Powerlink.

SDGE identified an upgraded Path 45 as a technically viable alternative to the Valley Rainbow 500 kV transmission project in the November 2003 application for a CPCN submitted to the CPUC. However, the Path 45 option was summarily dismissed in the IVSG process as being inadequate to meet the 2,000 MW renewable power export objective. The 2,000 MW target is so high that only a greenfield 500 kV line could meet it. That appears to have been the objective of establishing such a high MW transport threshold, given a realistic assessment of the non-problematic geothermal potential in Imperial Valley is well under one-half the 2,000 MW transmission objective.

## **B. The Unavailability of Geothermal Power to SDG&E**

It is also unlikely that any developable geothermal power will be available to SDGE. It appears that virtually all reasonably foreseeable geothermal potential will be exported from IID territory via the proposed 500 kV LADWP line. The line will initially be capable of transporting up to 800 MW, of which 400 MW is expected to be geothermal power. The construction of this line will also unload 400 MW of LADWP demand that is currently moved over SCE’s 500 kV Devers to Palo Verde 1 (DPV1) transmission line. One of the assumptions in the IVSG report is that DPV1 is fully allocated and therefore moving renewable power out of IID through SCE at

DPV1 would require additional infrastructure. This argument no longer appears valid given the load on the SCE system west of Devers will be reduced by 400 MW when the 500 kV LADWP-IID line becomes operational.

### **C. SDG&E's Congestion Cost Justification is Caused by Parent Company Abuses of the Transmission System**

It is our contention that SDGE parent Sempra is deliberately congesting SWPL to extract congestion mitigation payments and create the impression of need for Sunrise to relieve this congestion. The concern that congestion gaming may be ongoing was spurred by the comments filed by SCE relating to the allocation of certain DWR contracts on March 18, 2005 in CPUC proceeding R.04-04-003. SCE suggests that Sempra Energy Resources is artificially creating congestion in the SDGE service territory to generate congestion mitigation payments that are costing SDGE ratepayers tens of millions of dollars.

It appears that SCE actually makes very few discretionary purchases from Mexico and Arizona. SCE's scheduling of power from Arizona is largely related to baseload utility-owned generation that predates restructuring and deliveries from the Sempra contract, which SCE has no authority to revise. SCE's scheduling of power from Mexico is almost exclusively the result of deliveries from the Sempra contract that Sempra dictates, not SCE. If SDGE were reallocated the Sempra contract, it may be in a position to manage congestion and related costs better than SCE. In any case, SDGE would be better positioned to determine if (and what) transmission upgrades on its system might be effective in reducing congestion resulting from deliveries under the Sempra contract. For example the ISO has used the deliveries from Sempra's Mexicali plant to SDGE territory as one of the economic benefits justifying SDGE's transmission expansion under the Miguel-Mission Project No. 2.

Our concerns were reinforced by comments made in a presentation given by SDGE (Dave Geier, Vice President Electric Transmission and Distribution) at the CEC Workshop on California-Mexico Border Energy Issues (San Diego, December 14, 2004). Mr. Geier confirmed that *"Existing transmission lines are congested, driving up the cost of power,"* and *"SDGE's transmission import capacity is now fully utilized on peak day – a new 500 kV is needed for reliability as early as 2010."* Our concern is that the congested condition may serve three purposes: 1) it may generate inter-zonal congestion mitigation payments that produce revenue for SDGE, 2) that it costs SDGE ratepayers tens of millions, and 3) it reinforces the need for a greenfield 500 kV transmission project that may be difficult to justify without demonstrable congestion issues on San Diego's existing 500 kV import transmission line. This creates a situation in which Sempra reaps economic benefits and SDGE gets the transmission upgrades that it has sought for years.

It appears that up to 600 to 900 MW of renewables, solar thermal, wind, or geothermal, can be moved over SWPL once Sempra stops artificially congesting the line. This will occur in 2011 at the latest when the DWR contract expires. This reality changes the dynamics of the congestion justification for the Sunrise Powerlink.

## **D. SDGE's 2016 Reliability Import Deficit of 700 MW Based on Exceptionally Conservative Assumptions**

The CEC's 2016 load forecast for the SDGE service area provided in the draft 2005 IEPR indicates SDGE may be overstating peak demand by 5.2 percent in 2016. This is nearly 260 MW of SDGE's 5,000 MW peak demand forecast for 2015. SDGE is currently claiming a 700 MW reliability deficit in 2015 with a G-1, N-1 event as a justification for the Sunrise Powerlink. The G-1 event is now loss of the Palomar Energy Project, all 550 MW, because there are no bypass stacks that would permit operation of the two gas turbines in simple cycle mode, which would produce nearly 350 MW in the event of some mishap with the single heat recovery steam generator. Using CEC's 2016 peak load projection for SDGE, combined with the ability to bypass the heat recovery steam generator at Palomar, essentially eliminates the reliability deficit of 700 MW that SDGE is claiming as the reliability rationale for the Sunrise Powerlink.

The 4,000 MW import requirement that SDGE has set as a minimum system G-1, N-1 design criteria has been challenged by regional transmission experts as being overly conservative in Southwest Transmission Expansion Planning meetings that the authors of this document have attended. Unfortunately no meeting notes are published for STEP functions and as a result the meetings are little more than informal information exchanges between parties working on their own dedicated projects. As a result, even though regional transmission experts participating in STEP meetings have publicly expressed doubts (to the extent that STEP meetings are public) about SDGE's overly conservative G-1, N-1 criteria, these doubts have not reached a wider audience.

## **E. Construction of Single Additional Power Plant in the San Diego Area Would Eliminate the Import Reliability Justification for Sunrise**

The construction of a \$300 to \$400 million power plant in 600 to 800 MW range in the San Diego would eliminate the need for transmission on reliability grounds for at least the next 10 to 15 years even if SDGE's claimed reliability deficit of 700 MW in 2015 is assumed to be accurate. Sunrise is a \$1 billion project with no associated power assets.

Thank you for this opportunity to comment on the draft 2005 IEPR document. Please call Bill Powers, P.E. at (619) 295-2072 or Michael Shames at (619) 696-6966 if you have any questions about the contents of this comment letter.

Regards,

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