Technical Work Group
of the Imperial Valley Study Group
Minutes of August 25, 2005 Meeting

In attendance: David Barajas, Jorge Barrientos, Mark Etherton, IID; John Kyei, CA ISO; Brad Bentley, Dave Miller, SDG&E; Phil Leung, SCE; Dale Stevens, CalEnergy; Dave Olsen, CEERT/CEC; Barrie Kokanos, APS; Mo Beshir, LADWP. The meeting convened at 2:00 PM and adjourned at 4:05 PM. Minutes were recorded by Dave Olsen.

Minutes of the August 10, 2005 TWG meeting were approved, as amended.

LADWP: Mo Beshir reported that LADWP has been exploring a connection to IID for some time. This might be a 500 kV line from the proposed Indian Hills substation to the LADWP Victorville or Upland stations. Such a line would enable LADWP to access Imperial Valley geothermal, and other generation from the east. DWP has done transmission planning studies on its line/connection alternatives; it may be able to share these results at some future time. DWP has been participating in the IVSG Permitting Work Group (PWG) and may be one of the parties to develop the IVSG programmatic EIR as now contemplated by the PWG. It was agreed that it is too late to undertake new power flow studies of the IVSG recommended transmission plan with the LADWP connection included. The IVSG report should thus say that joint studies may be needed later.

Production Simulations: John reviewed the two new sensitivities that we requested him to run at the last meeting. Adding 2,200 MW of new geothermal generation and no new transmission of course greatly increases congestion. A maximum of 820 MW of the new generation can get out, in the summer, if outages are not considered (and much less under spring-fall conditions). If outage constraints are modeled, then the geothermal output would likely fall to less than half that amount. This demonstrates that new transmission is essential for exporting the full 2,200 MW.

John also ran a sensitivity on Alt 2, with the SDG&E 500 kV line extended from SD Central to a connection to SCE at SerVal. Alt 2 includes one of SDG&E's final two preferred alternatives; this new sensitivity includes the other of these final preferred alternatives. The results show that extending the 500 kV line to SerVal slightly reduces WECC annual production cost, congestion and losses relative to Alt 2 (IV to SD Central).

Power Flow, Phase 1-2: SDG&E confirmed that with its Silvergate substation added (proposed in-service 2008), it can accept 1,000 MW in Light Autumn conditions without overloads. (Without Silvergate, it can accept 645 MW-800 MW under Light Autumn conditions). Under Summer conditions, it can accept 1,000 MW easily.

Power Flow Studies for Phase 2: As agreed at the last meeting, IID took the Phase 1-Alternative B cases, increased the loads for IID, SDG&E and SCE areas by 11% over 2010 levels to represent 2015 load, for both HS and LA periods; added 645 MW geothermal generation (in addition to the 645 MW added in Phase 1); and scheduled the power to SDG&E. If the geothermal power is connected to Banister, via Geo Sub #2 (and not to Midway), and the El Centro-San Felipe upgrade is included, there are no overloads on Path 42, at its present rating; and there is no unscheduled flow on Path 42. (With 1,290 MW of

geothermal generation on line, the flow on P42 under Heavy Summer conditions is 430 MW; under Light Autumn conditions, 480 MW). However, load growth in the Coachella area is likely to increase flow on the Coachella-Ramon-Mirage line. The closest resource will serve that load, but it is not possible to determine if that generation will be geothermal at the Salton Sea or the new thermal units proposed at Devers. In addition, SCE has proposed splitting the Mirage-Devers circuit into two radial lines, in 2008. The IVSG report should thus identify Path 42 upgrades as requiring further study.

To improve the definition of Phase 2, we decided it is necessary to know at what level of power delivery to the CAISO/SDG&E the Banister-San Felipe line is required (i.e., how much power will flow to the IV substation without the Banister-San Felipe link). Mark agreed to look at this.

Power Flow Studies for Phase 3: IID's runs assumed P42 was upgraded to 1600 MW TTC. (It's impossible to schedule 2,200 MW to SDG&E without a phase shifter). Mark agreed to document the amount of flow on Path 42 before adding the incremental 910 MW of Phase 3 geothermal generation, and to determine how much of Phase 3 generation flows across Path 42 and how much across the SDG&E system. John agreed to look at the flow on Path 42 with all IV generation scheduled to SDG&E.

IID agreed to report on these further power flow results for Phases 2-3 by COB Monday, August 29.

APS is concerned about possible flows from IID to APS at Yucca. Mark Etherton reported that we had not seen flows to Yucca. Barrie requested the TWG pre-project case and the cases for Phases 1-3. David Barajas agreed to send them to him.

TWG Final Report: the draft sections of Chapter 3 still outstanding are to be circulated to the TWG by **September 1**. Phil will review Sec. 3.8 with Mohan as soon as he returns. Dave will insert all edits in Track Changes mode so we can see all proposed changes/corrections. **Appendices**: due by Sept. 9 if to be included in the draft circulated for comment on Sept. 12.

- IID will provide a list of all new/upgraded components needed on its system, for each Phase. This is **needed ASAP** (by Sept. 1 if possible, Sept. 6 at the latest) to support the new draft of Chapter 2.
- CalEnergy will provide a map showing locations of all KGRAs in Imperial County.
- IID will provide a diagram of Phase 1, 2 and 3 upgrades. This diagram will have no geographic references (Colorado River, Salton Sea, etc., will not be indicated).
- A separate diagram should identify a possible IID-LADWP connection.
- IID will provide a one-line diagram of its proposed collector system at the Salton Sea (Geo Subs 1 and 2).
- Flows at major regional buses: IID will provide a table showing the flows at major inter-ties with IV generation added in Phases 1, 2 and 3.
- Conceptual Cost Estimates: IID will provide conceptual cost estimates for each component of the upgrades needed for each Phase. ROW and permitting costs should be included. Given uncertainty about Path 42 upgrades, no upgrades of the SCE system will be included; conceptual cost estimates of the SDG&E 500 kV line will refer to SDG&E's expected CPCN application.

We agreed that transmission planning study results should be made available in PDF format. Because of their size, they will have to be divided into separate volumes. Power flow and stability study results will not be made available for the Sept. 12 draft.

Next Meetings/Key Dates:

September 1, 2:00-4:00 PM, phone meeting. US toll-free: 1-877-842-5648; passcode #737571. (For Mexico/CFE, let Merrie Lamb know if you will participate and she will have the operator phone you to connect).

September 12: Draft of the IVSG report circulated for comment (to STEP, SDG&E and IVSG lists).

September 15, 10:30 AM-12:30 PM. We will determine if this in–person meeting is necessary on our September 1 call. Location To Be Determined. The full Imperial Valley Study Group meets that day, 1:00-5:00 PM, to take comment on our draft report. Location: SANDAG, 401 B Street, 8th Floor, San Diego.