TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Rate Design (Chapter 3)

1. Did SDG&E consider the difference between fueling costs related to VGI rates and conventional gas when estimating the rate that would induce drivers to charge off-peak? If so, please describe in detail the nature of the consideration.

SDG&E Response:

No, the VGI rate design is based on the costs associated with providing utility service to these customers and thereby reflects the recovery of SDG&E's authorized revenue requirements.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

2. Why has SDG&E not included rate components related to energy regulation and ramp? Please provide a detailed explanation.

SDG&E Response:

These costs are already included in the commodity rates that provide the basis for the VGI rate.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

3. Regarding p. CF-7, please explain how SDG&E plans to test the following within the proposal, as currently written:
    a. The effect of differing VGI C-CPP Hourly Adder (lines 14-15) on charging behavior. Please include in your response, but do not necessarily limit it to an indication of whether SDG&E would have test groups that would receive different adder amounts or no adder at all. If SDG&E would not have such groups, please explain why.
    b. The effect of differing surplus energy credits (lines 16-17) on charging behavior. Please include in your response, but do not necessarily limit it to, an indication of whether SDG&E would have test groups that would receive different credit amounts or no credit at all. If SDG&E's proposal is to not construct such groupings, please explain why.

SDG&E Response:

a. SDG&E is not proposing to test the behavior impacts of a differing C-CPP adder on different test groups as a part of the VGI pilot proposal. SDG&E's proposal is for a C-CPP adder that is a single value offered to the customer group as a whole.
b. SDG&E is not proposing to test the behavior impacts of differing surplus energy credits on different test groups as a part of the VGI pilot proposal. SDG&E's proposed surplus energy credit that would be offered to customers within the VGI pilot is intended to reflect accurate prices and will be determined based on CAISO day ahead and day of pricing differentials, and will be the same for all applicable participants.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

4. How are you testing differing VGI rates within TOU periods? TURN is not interested in the differences between periods, e.g., between off-peak vs. super off-peak, but rather within periods. In other words, does SDG&E plan to test the effect on charging behavior of differing super-off-peak rates? If SDG&E has not proposed such testing of the charging implication of differing VGI rates, why not?

SDG&E Response:

SDG&E's proposed VGI rate is not a TOU rate but an hourly rate. In addition, SDG&E is not proposing to test the behavior impacts of differing VGI rates within TOU periods as a part of the VGI pilot proposal. However, described on pages JCM-35 to 37, SDG&E intends to conduct measurement and evaluation studies on the VGI Pilot Program. After two years of implementation, load impact studies will be conducted according to the Load Impact Protocols that were adopted in D.08-04-050. D.08-04-050 further requires that every demand response activity be evaluated every year and that the load impact reports be filed with the CPUC on April 1st of each year. (See Chapt. 6, JCM-35 to 37)

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

5. How did SDG&E calculate the magnitude of the proposed energy credit?

SDG&E Response:

As noted in Attachment A.5 of the Revised Testimony of Cynthia Fang, the magnitude of the proposed surplus energy credit is calculated based on the difference between the CAISO's day-ahead hourly price and the CAISO's day-of hourly price. If the day-of price is lower than the day-ahead price for a given hour by 1 cent/kWh or more, the day-of price is used in the VGI rate for that hour.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

6. Please identify the derivation of the C-CPP and D-CPP prices referenced in Cynthia Fang's Chapter 3 Testimony.
   a. Regarding page CF-16, line 10, please explain if SDG&E will separately forecast the top 200 hours for the specific circuit on which the charging station is located.
   b. Please explain whether SDG&E intends to calculate a single D-CPP for all circuits
   c. Does SDG&E intend to use the same distribution peak price (D-CPP) for all circuits or will they be individually calculated?
   d. Please provide the work papers for the derivation of the circuit load profile shown in chart CF-4. At a minimum please explain if data from one or more actual circuits were used for the illustrative circuit profile.

SDG&E Response:

a. SDG&E will separately forecast each specific circuit's load on which the charging station will be located in order to be able to identify the top 200 hours for each circuit.
b. Yes, SDG&E's proposal is for a single value for the D-CPP adder, which will be applied to the appropriate hours on the circuit level.
c. SDG&E's proposal is for a single value for the D-CPP adder, which will be applied to the appropriate hours on the circuit level.
d. The circuit load profile is from a single illustrative circuit and is a rank and order approach commonly used in creating load duration curves. The rank and order approach takes the hourly annual load profile for the specific circuit and orders (sorts) the observations from the highest magnitude to lowest magnitude. Hourly data from the circuit are sorted by their magnitude from highest to lowest MWh.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

7. Is the system load duration curve in chart CF-4 the SDG&E system or some other load duration curve?

SDG&E Response:

The system load duration curve in chart CF-4 is the SDG&E system load duration curve for 2014.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Cost-Effectiveness/Benefit Analysis (Chapter 6)

8. Regarding SDG&E's Testimony, page JCM-33, Table 6-12:
    a. Please provide the largest difference in EV capacity charged [clarification provide by TURN after this data request was submitted: the highest/max delta in EV kW] during a high priced hour between the VGI Rate Scenario and the Flat Rate Scenario.
    b. For the hour identified in response to subpart a. above please provide the total number of EVs and load assumed to be charging under each scenario.
    c. Please explain why it is appropriate to include Federal Tax credits in the 'benefits' assumed for the SCT? Has SDG&E removed the cost of supplying such credits to the EV customer anywhere in its model? If not, why not?
    d. Please explain why it is inappropriate to include State Tax credits in the 'benefits' assumed for the SCT.
    e. Why has SDG&E not included a Utility/Program Administrator Cost Test (UCT/PAC) in its cost-benefit analysis?
    f. Please add a column to the table for UCT/PAC for both the VGI Rate Scenario and Flat Rate Scenario and fill in the columns with the appropriate and accurate values.
    g. Why would the value of the 'Societal Benefits' be the same under the VGI and Flat rate scenarios? Please include in your discussion, but do not limit it to, how differences in charging availability and rate design might affect the societal benefit level.

SDG&E Response:

a. The largest difference in EV charged kW occurs on all weekdays from 7-8 pm and 8-9 pm, from 2018 through 2028, totaling 255.1 kW in the SDG&E VGI Rate Scenario, and totaling 264.5 kW in the Non-utility Flat Fee Scenario, with a net delta of 9.4 kW between the two scenarios. The Total EV charging on all weekdays from 7-8 pm and 8-9 pm in 2028, total 89,370 in the SDG&E VGI Rate Scenario, and total 92,808 in the Non-utility Flat Fee Scenario, with a net difference of 3,438 EVs charging between the two scenarios (This net difference in EVs charging holds from 2018 through 2028).
b. Please see response to part a. above.
c. "The VGI Pilot Program supports state policy and law encouraging efforts which increase the environmentally beneficial use of electricity as transportation fuel…" (Chapt. 6, JCM-3), therefore 'society' is defined as California. Federal tax credits provided to California EV drivers reduce Federal tax disbursements from California, therefore benefiting California. The RIM test does not include Federal Tax credits.
d. "The VGI Pilot Program supports state policy and law encouraging efforts which increase the environmentally beneficial use of electricity as transportation fuel…" (Chapt. 6, JCM-3), therefore 'society' is defined as California. State Tax credits are considered in-state transfer payments, thus resulting in no net cost or benefit to California as a whole in the SCT.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Response to Question 8 (Continued)

e. Please see response to UCAN-DR4 Question 10.
f. Please see response to UCAN-DR4 Question 10.
g. Societal Benefits are consistent between the two EV Market Scenarios ('SDG&E VGI Rate' and 'Non-utility Flat Fee') because both scenarios assume the same quantity of Gasoline displacement, therefore they both have the same benefits for Avoided Gasoline CO2, Low Carbon Fuel Standard (LCFS) Credits, and Criteria Pollutants, all three derived from avoided Gasoline use, regardless of charging availability and rate design.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

9. SDG&E Testimony, page JCM-29, lines 11-12, state that cost-effectiveness tests "…are intended to quantify the costs and benefits of SDG&E **market** level EV adoption and charging [emphasis added]"
    a. Please reproduce all cost-effectiveness calculations just for the proposed pilot program (i.e., not at the market level).
        i. Please provide sensitivity analyses for cost-effectiveness calculations varying "pilot charger utilization" from .33 to 1 in .33 increments (.33, .66, 1).
    b. Please explain why SDG&E believes a market-level cost-effectiveness analysis is appropriate to evaluate ratepayer and societal impacts of an individual program?

SDG&E Response:

a. Please see the three tables below for Cost Effectiveness illustrative sensitivity results isolating costs and benefits only for the Pilot EV Chargers (not at the market level), with Pilot Charger Utilization at 0.33, 0.66 and 1.0. The illustrative results indicate that the Participant Cost Test is positive for all three Pilot Charger Utilization assumptions. The SDG&E VGI Rate scenario has relatively higher cost test results than the Non-utility Flat Fee scenario, for the PCT test in all three Pilot Charger Utilization sensitivities. The SDG&E VGI Rate scenario has relatively higher cost test results than the Non-utility Flat Fee scenario, for the TRC and SCT tests where Pilot Charger Utilization is greater than 0.33. The SDG&E VGI Rate scenario would have relatively higher cost test results than the Non-utility Flat Fee scenario, if the non-utility entity's charger infrastructure and administrative costs estimated at $72 Million NPV were funded by ratepayers, and where Pilot Charger Utilization is greater than 0.33.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Response to Question 9a (Continued)

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - Results only for Pilot Chargers: Pilot Charger Utilization = 1.00)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($24.9)	($24.9)	($24.9)		($24.9)	($24.9)	($24.9)
	Utility Bills	$12.8	($12.1)			$14.2	($3.3)		
	Commercial Charging Fees		($1.8)				($28.9)		
	Gasoline Savings		$40.0	$40.0	$40.0		$40.0	$40.0	$40.0
	Federal Tax Credits		$14.4	$14.4	$14.4		$14.4	$14.4	$14.4
	State Tax Credits		$4.7				$4.7		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			$0.0	$0.0			($72.0)	($72.0)
	Customer Charger Costs		($0.6)	($0.6)	($0.6)		($0.6)	($0.6)	($0.6)
Electric Supply Costs		$0.7		$0.7	$0.7	($16.1)		($16.1)	($16.1)
Societal Benefits	Avoided Gasoline CO2				$2.1				$2.1
	LCFS Benefit				$4.2				$4.2
	Criteria Pollutant Benefit				$1.8				$1.8
Grand Total		($65.6)	$19.6	($49.6)	($41.6)	($1.9)	$1.3	($59.2)	($51.2)
Total Costs		$78.4	$39.5	$104.0	$104.0	$16.1	$57.7	$113.6	$113.6
Total Benefits		$12.8	$59.1	$54.4	$62.4	$14.2	$59.1	$54.4	$62.4
C/B Ratio		0.2	1.5	0.5	0.6	0.9	1.0	0.5	0.5

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - Results only for Pilot Chargers: Pilot Charger Utilization = 0.66)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($16.5)	($16.5)	($16.5)		($16.5)	($16.5)	($16.5)
	Utility Bills	$8.5	($8.0)			$9.3	($2.2)		
	Commercial Charging Fees		($1.2)				($19.0)		
	Gasoline Savings		$26.4	$26.4	$26.4		$26.4	$26.4	$26.4
	Federal Tax Credits		$9.5	$9.5	$9.5		$9.5	$9.5	$9.5
	State Tax Credits		$3.1				$3.1		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			$0.0	$0.0			($72.0)	($72.0)
	Customer Charger Costs		($0.4)	($0.4)	($0.4)		($0.4)	($0.4)	($0.4)
Electric Supply Costs		$0.4		$0.4	$0.4	($10.6)		($10.6)	($10.6)
Societal Benefits	Avoided Gasoline CO2				$1.4				$1.4
	LCFS Benefit				$2.8				$2.8
	Criteria Pollutant Benefit				$1.2				$1.2
Grand Total		($70.2)	$12.9	($59.6)	($54.3)	($1.3)	$0.9	($63.6)	($58.3)
Total Costs		$78.7	$26.1	$95.5	$95.5	$10.6	$38.1	$99.5	$99.5
Total Benefits		$8.5	$39.0	$35.9	$41.2	$9.3	$39.0	$35.9	$41.2
C/B Ratio		0.1	1.5	0.4	0.4	0.9	1.0	0.4	0.4

Response to Question 9a (Continued)

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - Results only for Pilot Chargers: Pilot Charger Utilization = 0.33)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($8.2)	($8.2)	($8.2)		($8.2)	($8.2)	($8.2)
	Utility Bills	$4.2	($4.0)			$4.7	($1.1)		
	Commercial Charging Fees		($0.6)				($9.5)		
	Gasoline Savings		$13.2	$13.2	$13.2		$13.2	$13.2	$13.2
	Federal Tax Credits		$4.7	$4.7	$4.7		$4.7	$4.7	$4.7
	State Tax Credits		$1.5				$1.5		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			$0.0	$0.0			($72.0)	($72.0)
	Customer Charger Costs		($0.2)	($0.2)	($0.2)		($0.2)	($0.2)	($0.2)
Electric Supply Costs		$0.2		$0.2	$0.2	($5.3)		($5.3)	($5.3)
Societal Benefits	Avoided Gasoline CO2				$0.7				$0.7
	LCFS Benefit				$1.4				$1.4
	Criteria Pollutant Benefit				$0.6				$0.6
Grand Total		($74.6)	$6.5	($69.4)	($66.7)	($0.6)	$0.4	($67.8)	($65.1)
Total Costs		$78.9	$13.0	$87.3	$87.3	$5.3	$19.0	$85.7	$85.7
Total Benefits		$4.2	$19.5	$17.9	$20.6	$4.7	$19.5	$17.9	$20.6
C/B Ratio		0.1	1.5	0.2	0.2	0.9	1.0	0.2	0.2

b. Discrete project evaluation is less applicable for price-based EV charging programs, due to the unique flexibility of EV charging decisions. (Chapt. 6, page JCM-4) Cost-effectiveness methodology is used to model EV charging in SDG&E's service territory under two sets of hypothesized assumptions, including assumptions on SDG&E's VGI Pilot Program. Results are used to infer market level insights into the cost and benefits of deploying EV charging at workplace and multi-unit dwelling (MuD) locations. (Chapt. 6, page JCM-2). The difference in costs and benefits between the SDG&E VGI Rate scenario and the Non-utility Flat Fee scenario are not affected by using a market level approach because the same level of market vehicles and vehicle charging is assumed in both scenarios.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

10. SDG&E Testimony, page JCM-17, Table 6-5, shows the EV population forecast for 2014-2030. These forecasts are utilized in SDG&E's cost-effectiveness calculations, illustrative results of which are displayed in Table 6-12 on page JCM-33.
    a. Please reproduce the calculations in Table 6-12 assuming a range of EV population forecasts, from 20% of forecasted EV's to 80% of forecasted EV's in increments of 20% (i.e. 20% of the forecast, 40% of the forecast, etc.).

SDG&E Response:

a. Please see the four tables below for Cost Effectiveness illustrative sensitivity results for EV Population Forecast from 80% to 20% used in Table 6-12. The illustrative results indicate that the Participant Cost Test is positive in all four EV Population Forecast assumptions. The SDG&E VGI Rate scenario has relatively higher cost test results than the Non-utility Flat Fee scenario, for the PCT test in all four EV Population Forecast assumptions. The SDG&E VGI Rate scenario has relatively higher cost test results than the Non-utility Flat Fee scenario, for the TRC and SCT tests where EV Population Forecast assumptions is greater than 40%. The SDG&E VGI Rate scenario would have relatively higher RIM cost test results than the Non-utility Flat Fee scenario, if the non-utility entity's charger infrastructure and administrative costs estimated at $72 Million NPV were funded by ratepayers, and where EV Population Forecast assumptions is greater than 40%.

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - 80% of EV Population Forecast used in Scenarios)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($431.0)	($431.0)	($431.0)		($431.0)	($431.0)	($431.0)
	Utility Bills	$394.7	($383.8)			$395.8	($376.8)		
	Commercial Charging Fees		($28.7)				($50.3)		
	Gasoline Savings		$769.1	$769.1	$769.1		$769.1	$769.1	$769.1
	Federal Tax Credits		$240.1	$240.1	$240.1		$240.1	$240.1	$240.1
	State Tax Credits		$72.9				$72.9		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($30.1)	($30.1)			($102.1)	($102.1)
	Customer Charger Costs		($100.7)	($100.7)	($100.7)		($100.7)	($100.7)	($100.7)
Electric Supply Costs		($229.3)		($229.3)	($229.3)	($242.7)		($242.7)	($242.7)
Societal Benefits	Avoided Gasoline CO2				$40.2				$40.2
	LCFS Benefit				$80.1				$80.1
	Criteria Pollutant Benefit				$34.8				$34.8
Grand Total		$86.3	$137.8	$138.9	$294.0	$153.1	$123.3	$132.6	$287.7
Total Costs		$308.4	$944.2	$870.2	$870.2	$242.7	$958.8	$876.5	$876.5
Total Benefits		$394.7	$1,082.0	$1,009.2	$1,164.3	$395.8	$1,082.0	$1,009.2	$1,164.3
C/B Ratio		1.3	1.1	1.2	1.3	1.6	1.1	1.2	1.3

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Response to Question 10a (Continued)

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - 60% of EV Population Forecast used in Scenarios)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($323.3)	($323.3)	($323.3)		($323.3)	($323.3)	($323.3)
	Utility Bills	$296.1	($287.9)			$296.9	($282.6)		
	Commercial Charging Fees		($21.5)				($37.7)		
	Gasoline Savings		$576.8	$576.8	$576.8		$576.8	$576.8	$576.8
	Federal Tax Credits		$180.1	$180.1	$180.1		$180.1	$180.1	$180.1
	State Tax Credits		$54.7				$54.7		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($22.6)	($22.6)			($94.6)	($94.6)
	Customer Charger Costs		($75.5)	($75.5)	($75.5)		($75.5)	($75.5)	($75.5)
Electric Supply Costs		($172.0)		($172.0)	($172.0)	($182.0)		($182.0)	($182.0)
Societal Benefits	Avoided Gasoline CO2				$30.2				$30.2
	LCFS Benefit				$60.1				$60.1
	Criteria Pollutant Benefit				$26.1				$26.1
Grand Total		$45.0	$103.4	$84.4	$200.7	$114.8	$92.5	$81.5	$197.8
Total Costs		$251.1	$708.1	$672.5	$672.5	$182.0	$719.1	$675.4	$675.4
Total Benefits		$296.1	$811.5	$756.9	$873.2	$296.9	$811.5	$756.9	$873.2
C/B Ratio		1.2	1.1	1.1	1.3	1.6	1.1	1.1	1.3

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - 40% of EV Population Forecast used in Scenarios)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($215.5)	($215.5)	($215.5)		($215.5)	($215.5)	($215.5)
	Utility Bills	$197.4	($191.9)			$197.9	($188.4)		
	Commercial Charging Fees		($14.3)				($25.1)		
	Gasoline Savings		$384.5	$384.5	$384.5		$384.5	$384.5	$384.5
	Federal Tax Credits		$120.0	$120.0	$120.0		$120.0	$120.0	$120.0
	State Tax Credits		$36.4				$36.4		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($15.1)	($15.1)			($87.1)	($87.1)
	Customer Charger Costs		($50.3)	($50.3)	($50.3)		($50.3)	($50.3)	($50.3)
Electric Supply Costs		($114.7)		($114.7)	($114.7)	($121.3)		($121.3)	($121.3)
Societal Benefits	Avoided Gasoline CO2				$20.1				$20.1
	LCFS Benefit				$40.0				$40.0
	Criteria Pollutant Benefit				$17.4				$17.4
Grand Total		$3.6	$68.9	$29.9	$107.5	$76.6	$61.6	$30.3	$107.9
Total Costs		$193.8	$472.1	$474.7	$474.7	$121.3	$479.4	$474.3	$474.3
Total Benefits		$197.4	$541.0	$504.6	$582.1	$197.9	$541.0	$504.6	$582.1
C/B Ratio		1.0	1.1	1.1	1.2	1.6	1.1	1.1	1.2

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Response to Question 10a (Continued)

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - 20% of EV Population Forecast used in Scenarios)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($107.8)	($107.8)	($107.8)		($107.8)	($107.8)	($107.8)
	Utility Bills	$98.7	($96.0)			$99.0	($94.2)		
	Commercial Charging Fees		($7.2)				($12.6)		
	Gasoline Savings		$192.3	$192.3	$192.3		$192.3	$192.3	$192.3
	Federal Tax Credits		$60.0	$60.0	$60.0		$60.0	$60.0	$60.0
	State Tax Credits		$18.2				$18.2		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($7.5)	($7.5)			($79.5)	($79.5)
	Customer Charger Costs		($25.2)	($25.2)	($25.2)		($25.2)	($25.2)	($25.2)
Electric Supply Costs		($57.3)		($57.3)	($57.3)	($60.7)		($60.7)	($60.7)
Societal Benefits	Avoided Gasoline CO2				$10.1				$10.1
	LCFS Benefit				$20.0				$20.0
	Criteria Pollutant Benefit				$8.7				$8.7
Grand Total		($37.7)	$34.5	($24.6)	$14.2	$38.3	$30.8	($20.8)	$17.9
Total Costs		$136.4	$236.0	$276.9	$276.9	$60.7	$239.7	$273.1	$273.1
Total Benefits		$98.7	$270.5	$252.3	$291.1	$99.0	$270.5	$252.3	$291.1
C/B Ratio		0.7	1.1	0.9	1.1	1.6	1.1	0.9	1.1

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

11. Regarding SDG&E Chapter 6 (J.C. Martin) Testimony, to what extent are cost effectiveness calculations (Sections II.A.3, D; III) based on methodology described in E3's "California Transportation Electrification Assessment Phase 2 Grid Impacts" Report ("E3 Report")?
    a. Please explain if the methodology utilized in E3's Report is generally applicable to Chapter 6 of SDG&E's Testimony.
    b. Was the same model from the E3 Report used to develop Chapter 6 of SDG&E's Testimony?
    c. If a different model was used to develop SDG&E's Testimony please explain what the major similarities and differences are between the two models.
    d. If a different model was used to develop SDG&E's Testimony please explain what the major similarities and differences are between the assumptions utilized for each model.
    e. Please provide all related worksheets and spreadsheet models used in these analyses if not previously provided.

SDG&E Response:

SDG&E Chapter 6 Testimony does not rely on the methodology described in the CalETC sponsored "California Transportation Electrification Assessment Phase 2 Grid Impacts" Report ("CalETC Report"), prepared by ICF and E3. The CalETC Report was published October 23, 2014, approximately six months after SDG&E submitted testimony for A.14-04-014. SDG&E understands the CalETC model assumes fixed charging profiles, while the VGI model optimizes VGI charging based on rates in the VGI model, among other potential methodology differences

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

12. SDG&E Testimony, page JCM-16, lines 3-4, states that calculations "assume on average 6 incremental EV adoptions per VGI site installation – higher for MuD and lower for the workplace." What is the numerical assumption for each type of location, MuD and workplace? How was this assumption determined? Please provide all related sources and workpapers.

SDG&E Response:

SDG&E assumes an average of 2 incremental EV adoptions per Workplace VGI site installation and 10 incremental EV adoptions per MuD VGI site installation. These assumptions are used to allocate the additional 3,300 EVs added to the CalETC forecast, in recognition that a workplace and MuD charging project of the size proposed in the SDG&E VGI Pilot application will result in additional EV adoptions by drivers. (see Chapter 6, pages JCM-15 & 16)

Two countervailing modeling assumptions lead to the higher number of incremental EVs at MuD locations. One, the MuD population of EVs is assumed to be zero at the start of the VGI Pilot Program, due to very low deployment of EV charging facilities at these locations. Two, the pilot charger utilization (the number of EVs that utilize the EV charging equipment each day) is assumed to be one in the EV Market Scenarios analyzed. Therefore MuD located VGI installations with 10 chargers require 10 incremental EVs to achieve a pilot charger utilization of one. Two incremental EVs are attributed to Workplace locations to maintain the assumed 3,300 total incremental EV additions. These assumptions are included in the VGI Cost-Benefit Model workpapers.

Please note that EV adoption due to the presence of workplace and MuD charging is a hypothesis to be tested by SDG&E's VGI Pilot Program. Expected EV adoptions by drivers is part of SDG&E's site selection criteria to evaluate and prioritize VGI Pilot Program siting. SDG&E's Research Plan intends to replace hypothesized assumptions used in the illustrative cost effectiveness results with observed results in order to more rigorously evaluate the cost-effectiveness of SDG&E's VGI Pilot Program (see Chapter 6, pages JCM-35 to JCM-37).

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

13. SDG&E Testimony, page JCM-32- 35, Tables 6-11 through 6-15, describe "illustrative" results. What does the term illustrative mean in this context and what, if any, other results were produced? Please provide all necessary supporting workpapers and spreadsheets.

SDG&E Response:

The model output is illustrative only and is not intended to be predictive. (Chapt. 6, page JCM-2) The results in Chapter 6 Section IV testimony illustrate the costs and benefits derived from hypothesized assumptions described in Chapter 6 Section I. The purpose of the testimony, and of using hypothesized assumptions, is to show how the proposed cost effectiveness test would use program data, not to predict results from program operation. All modeling results are included in the VGI Cost-Benefit Model work papers and prior data requests.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

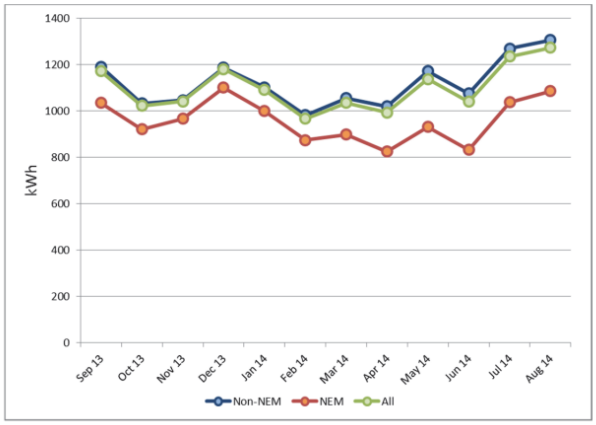
14. Page JCM-13, lines 16-18 states, "These DR prices are weighted averages of the DR rate tiers. Fifty percent of all SF residential EV charging is assumed to occur under the DR rate and 50% under EV-TOU-2."
    a. What are the average DR prices weighted by and why is the weighting reasonable?
    b. What is the basis for the 50%-50% split between DR and EV-TOU-2? Why is the assumption reasonable? If SDG&E has any underlying data/calculations to support the assumption, please provide them.
    c. If it turns out to be more accurate that 25% of residential charging is done using DR (and 75% using TOU), what does SDG&E expect the resulting effect on the cost-benefit analysis to be both directionally and by approximate magnitude, if available?

SDG&E Response:

a. The Weightings for the DR rate tiers are 20% for Tier 1, 20% for Tier 2, 30% for Tier 3 and 30% for Tier 4. This assumption is based on average usage of about 1,100 kWhrs per month for total residential usage that includes EV charging in SDG&E's Inland Climate Zone. Average Monthly usage for singe-meter customers is generally greater than 1,100 kWhrs per month as presented in the Joint IOU Electric Vehicle Load Research Report Filed on December 23, 2014[1] (See SDG&E Chart 3 on page 76) and reproduced below.

The average monthly usage follows similar seasonal patterns when comparing NEM and non-NEM single-meter PEV customers. Assuming the car load is approximately 220-260 kWh, the household load for customers on EVTOU-2 is a little less than double the average residential customer load of 485 kWh per month. For comparison purposes, Chart 4 is included in Chart 5.

SDG&E Chart 3: Average Monthly Usage for Single-Meter Customers



[1] See: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M088/K489/88489523.PDF

Response to Question 14 (Continued)

b. The 50% - 50% split between DR and EV-TOU-2 is intended to reflect the residential rate split (Tiered vs. Time-of-Use) for EV drivers in SDG&E's service territory. As of October 2013, SDG&E's best estimate of the number of PEVs registered to residential customers in SDG&E service territory was 4,400, and the total number of SDG&E customers on residential EV time-of-use rates was 1821[2], representing approximately 41% of all EV customers on EV rates.

   Please note that "Each utility has an obligation to use funds to provide its customers with information regarding the choices available for metering arrangements, *rates*, demand response program, charging equipment, installation, safety, reliability, and *off-peak charging*." (D11-07-029, OP 8 emphasis added). Therefore, SDG&E will provide EV drivers with access to the information necessary to choose the most advantageous residential rate.

c. Please see response to ORA-DR6 question 1.b. Cost test results improved for both scenarios, and the relative benefit of the SDG&E VGI Rate scenario decreased by $0.4 NPV millions for the RIM test, $1.1 NPV millions for the PCT and $1.6 NPV millions for both the TRC and SCT.

[2] 2rd Joint IOU Electric Vehicle Load Research Report: December 2013, (page 9) See: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M088/K489/88489523.PDF

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

15. Re. Table 6-4 on p. JCM-17:
    a. Why would the proportion populating the SF Unavailable cohort decline in each year through 2017? Why would it then increase in each year through 2022?
    b. Why would the proportion populating the SF New cohort increase in each year through 2017? Why would it then decrease in each year through 2022? Why would there be any SF New PEV Driver groups using VGI in the years 2020-2022 given that that SDG&E would no longer be installing charging infrastructure as part of the VGI Pilot after 2019?
    c. Please provide a version of Table 6-4 that contains counts rather than percentages.

SDG&E Response:

a. The "SF Preexisting" EV Customer Group 1 and "SF Unavailable" Group 2 proportions decline in each year through 2018 reflecting the growth in proportions of vehicles in Groups 3, 4 and 5 where VGI charging installations are being installed. The "SF Preexisting" EV Customer Group 1 and "SF Unavailable" Group 2 proportions increase in each year after 2018 reflecting no additional growth of vehicles in Groups 3, 4 and 5 due to the completion of VGI charging installations in 2018.
b. The "SF New" EV Customer Group 3, as well as, Groups 4 and 5 proportions increase in each year through 2018 reflecting the growth in vehicles in these Groups where VGI charging installations occur. The "SF New" EV Customer Group 3, as well as, Groups 4 and 5 proportions decrease in each year after 2018 reflecting no additional growth of vehicles in these Groups due to the completion of VGI charging installations in 2018. The "SF New" EV Customer Group 3, as well as, Groups 4 and 5 vehicle counts remain unchanged after 2018 reflecting the continued operation of VGI charging installations.
c.

Group	Residence Type	Workplace Charging Access	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	SF	Preexisting	3,784	5,568	7,377	9,211	11,173	13,666	17,163	21,592	28,344	35,968	44,406	53,464	63,351	73,109	82,600
2	SF	Unavailable	4,443	6,483	8,357	9,760	10,916	13,842	17,948	23,148	31,074	40,024	49,928	60,562	72,169	83,624	94,766
3	SF	New	-	125	525	1,575	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750	2,750
4	MuD	Preexisting	-	33	173	604	1,265	1,265	1,265	1,265	1,265	1,265	1,265	1,265	1,265	1,265	1,265
5	MuD	Unavailable	-	39	203	709	1,485	1,485	1,485	1,485	1,485	1,485	1,485	1,485	1,485	1,485	1,485
Total			8,227	12,247	16,633	21,859	27,589	33,008	40,611	50,240	64,918	81,492	99,834	119,526	141,019	162,233	182,866

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

16. SDG&E Testimony, page JCM-33, Table 6-12, shows illustrative results for cost effectiveness tests.

    a. Please reproduce this table for each cost effectiveness scenario (RIM, PCT, TRC, SCT) utilizing a "Pilot Charger Utilization" of 0.

SDG&E Response:

a. Please find below Table 6-12 reproduced with illustrative results where Pilot Charger Utilization is zero.

Cost Effectiveness Tests - Illustrative Detailed Results
(Sensitivity Analysis - Pilot Charger Utilization = 0)
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
		RIM	PCT	TRC	SCT	RIM	PCT	TRC	SCT
EV Customer Costs & Benefits	Incremental Vehicle Cost		($513.8)	($513.8)	($513.8)		($513.8)	($513.8)	($513.8)
	Utility Bills	$480.6	($467.6)			$480.6	($467.6)		
	Commercial Charging Fees		($34.0)				($34.0)		
	Gasoline Savings		$921.4	$921.4	$921.4		$921.4	$921.4	$921.4
	Federal Tax Credits		$285.7	$285.7	$285.7		$285.7	$285.7	$285.7
	State Tax Credits		$86.4				$86.4		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($37.7)	($37.7)			($109.7)	($109.7)
	Customer Charger Costs		($125.3)	($125.3)	($125.3)		($125.3)	($125.3)	($125.3)
Electric Supply Costs		($287.3)		($287.3)	($287.3)	($287.3)		($287.3)	($287.3)
Societal Benefits	Avoided Gasoline CO2				$48.2				$48.2
	LCFS Benefit				$95.9				$95.9
	Criteria Pollutant Benefit				$41.8				$41.8
Grand Total		$114.2	$152.7	$163.9	$349.8	$193.3	$152.7	$171.0	$356.9
Total Costs		$366.4	$1,140.8	$1,043.2	$1,043.2	$287.3	$1,140.8	$1,036.1	$1,036.1
Total Benefits		$480.6	$1,293.5	$1,207.1	$1,392.9	$480.6	$1,293.5	$1,207.1	$1,392.9
C/B Ratio		1.3	1.1	1.2	1.3	1.7	1.1	1.2	1.3

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Follow-up to TURN DR-04

17. Following up on TURN DR-04-2b,
    a. Please provide a detailed explanation of the nature of engineer Randy Schimka's field experience that makes him qualified to choose the appropriate number of stations per site.
    b. Please provide all material that documents the process, assumptions, judgments, and calculations engineer Randy Schimka used to "determine the appropriate number of charging stations per VGI facility."

SDG&E Response:

Randy Schimka has worked with Electric Vehicle Service Providers and customers on charging station projects as outlined in his testimony on page RS-22. Through his field work and observations, Mr. Schimka thoroughly understands the cost and electrical sensitivities around choosing the number of charging stations per site. Note that the installation of electric vehicle charging station equipment outside the home is a recent and novel phenomenon. There are few, if any, that have the breadth and depth of Mr. Schimka's experience in this regard.

The number of charging stations per VGI site, as outlined in testimony on page RS-7, will be driven by interest on the part of the potential site host that will be backed up by a commitment to provide associated parking.

The engineering judgment applied to estimate VGI site charging station counts was gained by Mr. Schimka's experience working through such matters as site electrical capacity, infrastructure equipment capacity, site characteristics, physical space, access control capability, costs, and charging needs. Much of this work was done in the context of designing, evaluating, and supervising work done pursuant to, RFPs for charging equipment or for work necessary to connect third party charging equipment to SDG&E's facilities. Mr. Schimka used this field experience and professional judgment to arrive at his estimate of 10 charging stations per VGI site conclusion.

For project cost estimating purposes, the number of units per site was set at 10, but in practice SDG&E expects that some workplace and MuD sites will request more than 10, and some sites will request less.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

18. Following up on TURN DR-04-2c,
    a. Please provide copies of all memoranda, email, and other documentation that memorializes the "relevant knowledge necessary to realize that 10 charging stations per VGI facility would work well from a financial and operational efficiency perspective."
    b. Please define what SDG&E means by "operational efficiency" and explain in detail how the installation of 10 charging stations per VGI facility would indicate that SDG&E was meeting the definition.

SDG&E Response:

a. Mr. Schimka's testimony provides the relevant documentation. As stated in previous questions, Randy Schimka has worked with many EVSPs and customers on charging station projects. Relevant knowledge of charging stations and installations was acquired from overseeing and working on various charging station projects in San Diego. Mr. Schimka has worked on a wide variety of charging stations projects since 2011, including the following:

- 8 ECOtality (EV Project) DC Fast Charge sites at retail locations
- Approximately 100 ECOtality (EV Project) Level 2 Commercial sites, including workplace, shopping center, retail, municipal, and university / college locations
- 17 NRG eVgo Freedom Station sites (with Level 2 and DC Fast) at retail locations
- 4 Nissan Dealer / NRG eVgo DC Fast Charge sites
- 3 Green Charge Network DC Fast charge sites with energy storage at 7-11 properties
- 5 NRG eVgo Ready for EV Level 2 sites at Multi-Unit Dwellings
- 30 City of San Diego / OPConnect Level 2 charging sites at parks and libraries
- 12 County of San Diego / ChargePoint Level 2 charging sites at county properties
- 4 Tesla Supercharging sites
- 2 EV Oasis DC Fast charge sites, including the forthcoming Encinitas DC Fast charging plaza

b. SDG&E's definition of operational efficiency with respect to the VGI project means the associated charging station equipment is utilizing as much of the full capacity of the electric service and infrastructure equipment at each VGI installation as possible. Achieving this efficiency will be accomplished using the site selection criteria as discussed on page RS-7 in testimony.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

19. In response to TURN DR-04-4d, SDG&E states, "For purposes of estimating maintenance costs, SDG&E inserted EVSE and cord replacement funding in year 5 of the VGI Project. So a system installed in year 1 had a budgeted replacement in year 6. A system installed in year 3 had a budgeted replacement in year 8, and so on."
    a. Please reconcile this statement with the fact that SDG&E is using a book life for EVSE of 19 years and cable (i.e., new electric service to EVSE) of 50 years. Why is it reasonable to depreciate equipment that SDG&E expects to be replaced in as few as five years after installation over 19 and 50 years, respectively?
    b. How would deprecating such equipment over five years affect SDG&E's cost-benefit results?

SDG&E Response:

a. To clarify the response in TURN DR-04-4d, SDG&E is depreciating EVSE equipment over 19-years and begins replacing EVSE equipment after 5 years. New electric service will be depreciated over 50 years. Note that the budgeted replacement consists of a charging station with an attached cord/nozzle that plugs into vehicles.

   EVSE infrastructure was added to the appropriate FERC account which has an average service life (ASL) of 19-years. Each FERC account uses recorded history for its basis to determine its ASL, which can differ from an asset's useful life.

b. Depreciating such equipment over five years results in a cost increase of less than $0.250 Million NPV.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

20. In response to TURN-SDG&E DR-04, Question 6, SDG&E stated "SDG&E gathered data from employees before and during the implementation of its VGI demonstration facility at its Century Park campus. Input from individual employees, survey data, tracking of VGI facility kW and kWh usage data (e.g., comparing usage of low price days and high cost days), and email and discussion based feedback from employees regarding the VGI pricing app, the active use of the SDG&E employee Alternative Fuel Vehicle club for feedback and to refine all aspects of the VGI facility and pricing for refinement (e.g., a valid constructive improvement-based comment, even from one employee was given serious consideration). Timeline – first initiated in 2013 to test a static TOU rate, and then transitioned to the day ahead hourly rate for testing in 2014.
Data example from two days of SDG&E campus VGI charging (one day with higher pricing due to power system events and one day with regular pricing):
8/27/14 – Event price day - 80 cents/kWh from 0900 to 1600; 18 cents/kWh before and after
9/3/14 – Regular price day - 17 to 19 cents/Kwh from 0700 to 1900
8/28/14 – Event price day - 36 kWh consumed over 12 sessions; 9 sessions before pricing went up, 2 sessions during event pricing times, and 1 session after prices returned to normal
9/3/14 – Regular price day – 51 kWh consumed over 15 sessions, 7 sessions before 8am, balance of 8 sessions spread evenly throughout the day"
    a. How many employees (EV drivers) participated in the implementation of the VGI demonstration facility at its Century Park campus?
    b. How many individuals are in the "SDG&E employee Alternative Fuel Vehicle club"?
    c. Please clarify if the event price information listed above for 8/27/14 applies to the consumption information provided for 8/28/14.
    d. Please provide the hourly pricing for the 9/3/14 "Regular Price Day".
    e. Although SDG&E described the types of information that SDG&E collected from the on-campus prototype program, the company has not provided a response to the question posed in TURN DR 4-6, which was to "provide copies of all documents and/or analysis that contain a showing of how SDG&E used the VGI prototype charging facility to "refine this VGI Pilot Program proposal." Please do so. If SDG&E has not specifically used the information gleaned from the on-campus prototype to inform its VGI Pilot, please explain why it has not.

SDG&E Response:

a. As of 2/25/2015, there are 71 SDG&E employees based at CP that drive electric vehicles and are participating in the VGI demonstration facility at Century Park.
b. As of 2/25/2015, there are 130 members in the SDG&E AFV Club;
c. No, the prices and consumption figures listed apply to those respective days;

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Response to Question 20 (Continued)

d. Hourly Pricing for charging sessions on 9/3/14:
   0700-0800: $0.16989/kWh
   0800-0900: $0.17069/kWh
   0900-1000: $0.17210/kWh
   1000-1100: $0.17310/kWh
   1100-1200: $0.17327/kWh
   1200-1300: $0.17562/kWh
   1300-1400: $0.17875/kWh
   1400-1500: $0.18418/kWh
   1500-1600: $0.18800/kWh
   1600-1700: $0.19010/kWh
   1700-1800: $0.19091/kWh
e. There is an employee driver workplace charging survey attached in Appendix B in Randy Schimka's testimony.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

21. In response to TURN-SDG&E DR-04, Question 15, regarding if users of the charging stations installed as part of the VGI pilot program are required to be SDG&E customers, SDG&E stated, "Yes – the EV driver. There may be special cases where the host site requires host sponsored EV charging, the host will need to be an SDG&E customer as well."
    a. Will the VGI rate be applied at sites that require host sponsored EV charging?
    b. If yes, please explain how this will work. Specifically, how will EV drivers be incentivized to charge during off peak hours if they are not paying for the charging services?

SDG&E Response:

a. In the majority of cases, the EV driver must be an SDG&E customer to use VGI charging stations because the billing for their charging session will be done through their home SDG&E electric bill. In rare cases where a visiting EV driver to a VGI site is not an SDG&E customer or doesn't live in a household with an SDG&E account, such as an out of town visitor, the host site can allow that visitor to charge at their VGI site by paying for the session on the host site SDG&E bill. Although SDG&E anticipates that requests for this option will be rare, SDG&E may need to accommodate the unique needs of a given host.
b. In a case where the EV driver doesn't have access to an SDG&E account for billing, the host site would need to agree to initiate and fund the visitor charging session. The settings on the host account when the visitor session is initiated will be used to charge the visiting EV driver's car (e.g., maximum price, kWh needed, and departure time).

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

Miscellaneous

22. Please identify all situations where SDG&E owns equipment behind the customer meter in the normal course of business. For each situation, identify the type of equipment, the ratemaking treatment the Commission has authorized for it (including, but not necessarily limited to, the identification of expense vs. capital vs. regulatory asset (including authorized rates of return where relevant), relevant FERC account, book and tax depreciation rates, etc.) and the reason the Commission has allowed such treatment.

SDG&E Response:

The VGI Pilot Program does not intend to provide service behind the customer meter.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

23. Does SDG&E have data regarding the length of work commutes for participants in the Plug-in Electric Vehicle TOU Pricing and Technology Study? If so, please provide the individual data for each participant (excluding customer-identifying information). If not, please explain why SDG&E did not collect such information.

SDG&E Response:

SDG&E does not have data regarding the length of work commutes for participants in the Plug-in Electric Vehicle TOU Pricing and Technology Study (Study). Data regarding the length of work commutes was not collected at the time of the Study because the focus of the study was residential EV charging behavior (measured in kWh by time of use period) under TOU rates. These data can be used to estimate driving usage, and the kWh usage is reported in the Study.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

24. Explain precisely and in detail how SDG&E used the results of the Plug-in Electrical Vehicle TOU Pricing and Technology Study, notwithstanding the Company's response to TURN DR 4-7a.

SDG&E Response:

In addition to SDG&E's response to TURN-DR04 question 7a and question 25 below, the SDG&E's PEV Pricing and Technology Study results are also used to help define functional requirements for the VGI mobile and website applications for VGI customers participating in the VGI Pilot Program.[3]

[3] Scc Chapter 2, Section VII.B. Pricing Awareness (page RS-20).

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

25. At p. LK-11, SDG&E states, "This proposal builds off the results of SDG&E's current PEV Pricing and Technology Study, the results of which indicate that pricing and enabling technology play a strong role in influencing charging time decisions." Please provide a specific and detailed explanation of each way that this proposal builds off of the PEV Pricing and Technology Study. In so doing, please provide, but don't limit your answer to, the type of information and answers regarding charging behavior the VGI Pilot will provide that is an improvement over the information and answers that SDG&E produced in the Plug-in Electric Vehicle TOU Pricing and Technology Study.

SDG&E Response:

The VGI Pilot Program builds off of the SDG&E's PEV Pricing and Technology Study (Study),[4] in at least three ways; Pricing, Location and Technology. A key finding of the Study is that, "Participant EV charging behavior responds to price signals" (Study page 4). However, "The [*Study's price*] elasticities are defined as applying to EV charging during the [*three*] TOU time periods. However, customer decision-making probably takes place at a more granular level of time."[5] The VGI Pilot Program utilizes the VGI Pilot Rate described in Chapter 6, which is an hourly variable rate, testing customer decision-making more granular than three period TOU prices, thus building off the rates applied in the Study. The Study rates were applied to EV charging at Single Family residential locations; the VGI Pilot Program applies the VGI Pilot Rate to EV charging at MuD residential locations and at Workplace locations, thus building off of the location considered in the Study. The Study technology referred to the timers in the EV or EVSE, and the Study concludes that "The majority of participants appear to consistently use (program) the timers to control the time of day when EV charging occurs."[6] The VGI Pilot Program uses more sophisticated technology to help participants control when and at what prices EV charging occurs,[7] thus building off of the technology used in the Study.

[4] Nexant, Inc. Final Evaluation for San Diego Gas & Electric's Plug-in Electric Vehicle TOU Pricing and Technology Study. SDG&E.COM/EV. N.p., 20 Feb. 2014. Web. 01 Jan. 2015. <https://www.sdge.com/sites/default/files/documents/1681437983/SDGE%20EV%20%20Pricing%20&%20Tech%20Study.pdf?nid=10666>
[5] Nexant, Inc. Study page 32 (italics added for context). Supplemental Testimony, page A-2.
[6] Nexant, Inc. Study page 3.
[7] See Randy Schimka's testimony, Chapter 2, Appendix C – High level VGI system description and specification of functional requirements.

TURN DATA REQUEST
TURN-SDG&E-DR-05
SDG&E VEHICLE GRID INTEGRATION PROJECT
A.14-04-014
SDG&E RESPONSE
DATE RECEIVED: FEBRUARY 13, 2015
DATE RESPONDED: MARCH 2, 2015

26. Please provide all information SDG&E has gathered regarding the size of MuDs in its service territory. Please also provide any information SDG&E has regarding the current deployment levels of charging stations at MuDs.

SDG&E Response:

Med to Large MuD communities: 2,600
Source: CA Association of Community Managers, 2012
Owner occupied under HOA
>25 units

Small MuD communities: 2,200
Source: CA Association of Community Managers, 2012
Owner occupied under HOA
<25 units

Rental communities: 10,700 (86,882 units)
Source: CA Apartment Association, 2012

SDG&E has knowledge of only 14 MuDs with installed charging stations.