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"The scoping memo for SDG&E's application expressed concern about the size of SDG&E's program and its characterization as a "pilot:"

> *"SDG&E's request for expedited treatment of its Application is predicated in large measure on the assertion that the proposed VGI program is a pilot program. However, SDG&E's Application includes at least three defining characteristics that make expedited treatment inappropriate. First, the size of the estimated cost is over $103 million, of which approximately $55 million represents a potential capital investment for which SDG&E seeks rate base treatment…It is also on par with the size of a fully developed utility program, not an initial experimental pilot. Second, it is a utility program. Third, SDG&E's Application proposes to implement the new program over ten years and collect the costs in rates until 2037. Taken together, these factors go beyond typical pilot programs and put the SDG&E Application on par with a full program business model, rather than an initial, research-oriented test project. These factors require the Commission to allow adequate time to meaningfully assess the reasonableness of a request of this length, cost and complexity."*

UCAN's questions relate to the length, cost and complexity of the pilot, CE results and alternatives.

1. How does SDG&E define a "pilot" program in terms of scale?

SDG&E Response:

Please see Supplemental Testimony Section III, A Size on page ST-45 for a discussion on the size or scale of the VGI Pilot Program. This size or scale is intended to be sufficiently large to attract numerous venders and/or contractors to bid on the work, thus encouraging a more competitive bidding process and potentially reducing the cost per VGI site to ratepayers. Also a portion of the VGI investment is fixed costs regardless of the number of VGI sites, so the more VGI sites the lower the fixed costs per VGI site. As the size increases, the net benefits increase, SDG&E circuit representation increases and scale economies improve.

The VGI Pilot Program is designed with a sufficiently large sample size to ensure that the results will have sufficient statistical validity, since the VGI rate has a circuit load condition feature to it. This discussion is found on page ST-45 to 46, and illustrated in Appendix A.

There is one additional feature of the proposal pertaining to concerns about the size of the pilot. Size is self-regulated in that it is driven by customer demand for VGI facilities and a process contemplated to verify that EVs will use the VGI facilities. Furthermore, since property managers typically are reluctant to give up parking for charging facilities, this will tend to ensure

that VGI facilities are used and useful. The balancing account proposed will allow for tracking the adoption rates of the VGI offering. Volume proposed is a “not to exceed” target.

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2. Please provide SDG&E's rationale for a pilot of this size (i.e., 550 charging stations, $55million capital cost, $103 million in total costs and recovery of costs through 2037, i.e., 22 years.

SDG&E Response:

In addition to the answer provided above to Q1, please see Supplemental Testimony Chapter 3, Section III entitled "Is SDG&E's Program Too Large? The Scope of SDG&E's Proposal: Size, Duration, Focus, Locations and Rate of Installation" on pages ST-45 through ST-50. This section further describes the features of this pilot and why it is considered a pilot.

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3. SDG&E's witness Pulliam states that the pilot represents a 20% market share using the narrow market definition, i.e., excluding single-family, and a 5% market share using the broader market definition, i.e., including single-family. Does a 20% market share satisfy SDG&E's definition of a pilot? Please explain how a 20% market share in a pilot program meets the definition of a pilot.

SDG&E Response:

Market share information was provided in the context of a discussion of competitive impacts. SDG&E is unaware of any definition of a Pilot Program that references market share. SDG&E notes however, that Pilot Programs are intended to be a test of introductory programs. In this regard, they could constitute up to 100% of a market at times, depending on the market.

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4. UCAN understands that it will take 22 years to recover all the associated pilot costs. However, assuming the pilot continues as planned, when is the pilot considered over? For example, is the pilot over once acceptable CE results are obtained? When is the pilot's expected end date?

SDG&E Response:

Randy Schimka's testimony states on page RS-3 that VGI Pilot Program sign-ups and contracting are proposed to take place over 4 years and installations to take place over 5 years. JC Martin's revised testimony outlines SDG&E's research plan on page JCM-35 and JCM-36. Data collection will begin in the first year of the pilot, load impact analysis and reporting will begin after two years of implementation, and a cost-effectiveness analysis will take place 18 months after the final VGI facility is installed.

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5. What decision criteria (decision rules) has SDG&E established to determine whether to continue the pilot as currently designed, whether to refine specifications or when to terminate the pilot?

SDG&E Response:

SDG&E has not established decision criteria to refine specifications or terminate the pilot. The research plan described on pages JCM-35 to 36 describe the duration of the pilot, and the data that will be collected to complete the evaluation of the pilot. These results will help to inform policy in light of the demonstrated net benefits that pilot programs of this nature can deliver to all ratepayers.

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6. Has SDG&E set specific off-ramps to exit the pilot if the results are not promising? Are these off ramps prior to, during or after installing all 550 stations? Please provide details.

SDG&E Response:

SDG&E has not set specific off-ramps to exit the pilot. The results can be monitored during the five year deployment, but the final results will be calculated about 2 years after the installations have been completed in year five, as described on pages JCM-35 to 36, and as noted below in Q7.

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7. In what year does SDG&E expect to have any actionable CE results for the pilot? How many of the 550 charging stations will have been installed by this date?

SDG&E Response:

As stated in JC Martin's testimony "Data collection will begin the first year of the pilot (2015), load impact analysis and reporting will begin after two year of implementation (2017), and a cost-effectiveness analysis 18 months after the final VGI facility is installed (2019)". (Page JCM-35) The installation schedule, as state in witness Schimka's testimony (Page RS-3) is:

"VGI Pilot Program sign-ups and contracting are proposed to take place over 4 years, and installations to take place over 4 to 5 years, with a goal of VGI installations at a blend of workplace and MuD host sites as follows:

- Year 1 (2015) – 50 site installations of 10 charging stations
- Year 2 (2016) – 100 site installations of 10 charging stations
- Year 3 (2017) – 200 site installations of 10 charging stations
- Year 4 (2018) – 200 site installations of 10 charging stations"

Depending on how one defines "actionable CE results", actionable results could be available as early as the first year of the pilot, but because it takes a few months for customers to learn and respond to this new rate design, and it is necessary to study the behavioral persistence in charging patterns, it would be premature to draw definitive conclusions with limited years of data.

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8. Would a smaller-scale pilot, e.g., two years of installations with 50-100 charging stations each, yield sufficient and reliable cost effectiveness results? If so, please explain. If not, please explain why not.

Table 6-11: Cost Effectiveness Tests – Illustrative Results

Scenario	RIM	PCT	TRC	SCT
SDG&E VGI Rate	$127.7	$172.3	$193.4	$387.3
Non-utility Flat Fee	$191.4	$154.1	$183.8	$377.7
VGI Net Impact	($63.7)	$18.2	$9.6	$9.6
VGI % of Flat Fee	67%	112%	105%	103%

SDG&E Response:

A smaller-scale pilot, over two years of installations with 50-100 charging stations each, would not yield sufficient and reliable cost effectiveness results. Please see the answers to Q1 and 2, above, for more detail. In addition to those points, a small-scale pilot as noted will not advance toward achieving the Governor's ZEV infrastructure and vehicle deployment goals (per Executive Order B-16-2012 (3-23-2012), **http://gov.ca.gov/news.php?id=17472**, and 2013 ZEV Action Plan, http://opr.ca.gov/docs/Governor%27s_Office_ZEV_Action_Plan_%2802-13%29.pdf) :

"It is further ordered that these entities establish benchmarks to help achieve by 2020: The State's zero-emission vehicle infrastructure will be able to support up to one million vehicles; and…". Please note that B-16-2012 also orders that "Electric vehicle charging will be integrated into the electricity grid." SDG&E made reference to this goal in testimony to focus on plug-in electric vehicles. This goal is also reiterated in the ZEV Action Plan published by the Governor's Office in February 2013 where specific action items were assigned to state agencies. The CPUC was assigned one relevant action item found in the third paragraph on page 13 directing the Commission to "pilot infrastructure system that avoid or minimize demand impacts on the grid from PEV charging…". SDG&E's Vehicle-Grid Integration filing is responsive to this specific action item.

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9. J. C Martin's revised testimony states: "The Table 6-11 above illustrative results are market level net benefits for the entire SDG&E service territory EV population. These illustrative results indicate that the SDG&E service territory EV market is beneficial to SDG&E ratepayers (RIM), EV customers (PCT), and the SDG&E service territory region in general (TRC and SCT)." [JCM-31] In preparing and reviewing the CE results.
    a. Please provide any workpapers associated with the preparation of the illustrative results.
    b. What are the most important "cost drivers" in determining the cost effectiveness results??
    c. What is the range uncertainty around the critical cost inputs? Please specify.
    d. What are the most important drivers of the benefit measures in determining cost effectiveness?
    e. What is the range of uncertainty around these critical benefit inputs? Please specify.

SDG&E Response:

a. See attached.

Data_Request_Errata 7_25_14.xlsx

b. The cost results are most sensitive to the charger installation costs (which do not vary between the SDG&E VGI Rate Scenario and the Non-utility Flat Fee Scenario) and the EV Forecast used in the Scenarios and resulting charger utilization. Fixed installation costs and program overhead costs become a larger portion of total costs with lower vehicle adoption forecasts.
c. The range uncertainty around the critical cost and benefit inputs is not available except to say EVs and EVSEs are a rapidly evolving market. How future EV and EVSE costs, benefits and adoption will change over time cannot be predicted with a high degree of certainty. A benefit of the VGI Pilot Program as described in the Research Plan (pages JCM35-36) is that it allows for observed results to replace the hypothesized assumptions used in the illustrative cost-effectiveness calculations.
d. The benefit results are most sensitive to the EV Population Forecast, and EV zero emission mileage requirements.
e. See response to c.

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10. Please calculate the Program Administrator Cost (PAC) Test for the illustrative scenarios tested in J. C. Martin's revised testimony. The PAC test, formerly the Utility Cost Test, is one of the standard cost effectiveness tests in the California Standard Practices Manual.

SDG&E Response:

The PAC test as defined in the California Standard Practices Manual (Manual)[1] measures, "the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant." (Manual page 23) Using the Manual's definition, the costs incurred in the SDG&E VGI Rate scenario are the Utility Charger and Admin Costs and the Electric Supply Costs. The costs incurred in the Non-utility Flat Fee scenario are Third Party Charger and Admin Costs estimated at $72.0 million NPV[2], and the Electric Supply Costs. The table below provides the PAC results.

The table below illustrates that the PAC test results for the SDG&E VGI Rate Scenario is $9.7 million NPV better (lower) than the Non-utility Flat Fee Scenario, translating to a per charger PAC benefit of $1,764 compared to the Non-utility Flat Fee Scenario.

Please note that SDG&E's VGI Pilot program "…is intended to result in increased electricity use and decreased fossil fuel use"[3]. More importantly, the PAC test is not applicable for such programs. Any pilot or program that increases electricity usage and decreases fossil fuel use will have a negative value PAC test result, due to the costs and benefits considered in the test. The Manual states: "For load building programs, only the RIM tests are expected to be applied. The Total Resource Cost and *Program Administrator Cost* tests are intended to *identify cost-effectiveness relative to other resource options*." (emphasis added)[4]

[1] *See* "California Standard Practice Manual" (Manual), *available at* http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1-CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf (2001).
[2] See Chapter 6, page JCM-32.
[3] See Chapter 6, page JCM-4.
[4] See Manual, page 6.

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Program Administrator Cost (PAC) Test - Illustrative Detailed Results
(NPV $ Millions)

Test Component		SDG&E VGI Rate Scenario PAC	Non-utility Flat Fee Scenario PAC
EV Customer Costs & Benefits	Incremental Vehicle Cost		
	Utility Bills		
	Commercial Charging Fees		
	Gasoline Savings		
	Federal Tax Credits		
	State Tax Credits		
EV Charger & Admin	Utility Charger and Admin Costs	($79.1)	
	Third Party Charger and Admin Costs*		($72.0)
	Customer Charger Costs		
Electric Supply Costs		($286.6)	($303.4)
Societal Benefits	Avoided Gasoline CO2		
	LCFS Benefit		
	Criteria Pollutant Benefit		
Grand Total		($365.7)	($375.4)
Total Costs		$365.7	$375.4
Total Benefits		$0.0	$0.0
C/B Ratio		-	-

*Costs for a Non-Utility entity to own charging installations at workplace and MuD EV locations and deploys them under similar assumptions as the SDG&E VGI Rate scenario. EV customers are exposed to Flat Fee prices while charging EVs in these locations.

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11. Did SDG&E produce any sensitivity analysis of the cost effectiveness results based on the most critical but uncertain inputs, i.e., uncertain inputs that have a major impact on the benefits and/or costs (see Table 6-1)?

    (This includes variables such as the EV forecast, the specification of MuD or workplace locations, charging station capital costs, and/or energy supply costs.)

    a. If so, please provide a copy of these additional cost effectiveness test results.
    b. For these sensitivity analyses, please indicate the key assumptions and variables tested.

SDG&E Response:

a. Copies of all additional cost effectiveness test results are included in the prior data requests provided by SDG&E. Sensitivity tests are presented in Chapter 6 (Table 6-13 and Table 6-15).
b. The key assumptions and variables tested are described in the questions and answers in the prior data requests provided by SDG&E.

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12. Did SDG&E attempt to validate the EV forecast shown in Table 6-5?
    a. What has been the growth rate of EV over the past ten years?
    b. What is the growth rate assumed over the duration of this EV pilot project?
    c. How does SDG&E justify the change, if any, in the trajectory of the EV forecast?

SDG&E Response:

a. Annual growth rate in SDG&E's territory was 259% between December 2010 (79 EVs) and December 2014 (13,150 EVs).
b. Annual growth rate of 22.8% between 2014 and 2028.
c. Prior to 2010 few EVs existed in SDG&E's service territory. In 2011 the first production EVs entered the greater San Diego market (e.g., Nissan LEAF and Chevy Volt).

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13. How did SDG&E translate the EV forecast into use of the SDG&E charging station facilities? i.e., what is the assumed relationship between EV forecast and use of the facilities by EV owners?

SDG&E Response:

Please see Table 6-4 (Chapter 6, page JCM-15) to see how the EV population Forecast is applied to EV Customer Groups. Five Customer Groups are defined by their residence type and access to workplace charging. Three of the five Customer Groups have access to VGI Facilities and the VGI Rate (Groups #3, 4 & 5). Pilot Charging Utilization is assumed to be one EV per charger on a given day. Pilot Charging Utilization is the number of EVs that utilize the EV charging equipment on a given day. The potential for pilot charger utilization is not tied to the EV forecast, but tied to the Site Selection Criteria, including "current and expected volume of EV drivers", at the site location. (See Chapter 2, page RS-7).

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14. In SDG&E's EV purchase forecast, how many are expected to be purchased by (a) current EV owners who live in MuDs and SF, (b) expected future EV owners who live in MuDs and SF.

SDG&E Response:

Please see Table 6-4 (Chapter 6, page JCM-15).

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15. What does SDG&E know about the number and location of charging stations (a) currently in San Diego, (b) currently in MuDs and (c) currently in workplaces?

SDG&E Response:

(a) SDG&E knows about the website www.Plugshare.com, which provides a map of the locations of EV charging stations currently in San Diego.
(b) As pointed out in SDG&E's Supplemental Testimony on page ST-48, SDG&E knows about 14 MuD locations that have installed charging stations.
(c) SDG&E also knows of 50 sites that would be broadly classified as "workplace" charging stations.

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16. When will preliminary cost effectiveness results of the actual pilot be available?

SDG&E Response:

As stated in witness J.C. Martin's testimony on page JCM-35, "Data collection will begin the first year of the pilot (2015), load impact analysis and reporting will begin after two year of implementation (2017), and a cost-effectiveness analysis 18 months after the final VGI facility is installed (2019)".

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17. When and in what form does SDG&E propose to submit to the Commission cost effectiveness numbers based on data produced from the pilot?

SDG&E Response:

As stated in witness J.C. Martin's testimony "Data collection will begin the first year of the pilot (2015), load impact analysis and reporting will begin after two year of implementation (2017), and a cost-effectiveness analysis 18 months after the final VGI facility is installed (2019)". (Chapter 6, page JCM-35) The form of the cost effectiveness numbers will similar in form to and replace the illustrative cost effectiveness provided in Chapter 6.

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18. Will these results be available in time to either terminate the pilot, modify the pilot specifications to improve the results, or reduce the number or change the location of charging station installations?

SDG&E Response:

Please see response to Question 7.

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19. Has SDG&E set pre-established off ramps to terminate the pilot if results do not meet the cost effectiveness test criteria?

SDG&E Response:

No, there are no set pre-established off ramps to terminate the pilot if results do not meet the cost effectiveness test criteria. As pointed out in JC Martin's testimony on page JCM-36 on line 12, as customer EV charging data and cost information becomes available through the VGI Pilot Program deployment and operation, observed results will replace hypothesized assumptions used in order to more rigorously evaluate the cost effectiveness of SDG&E's VGI Pilot Program with data gathered during the pilot.

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20. At what stage, presumably prior to 2037 (when all costs of the pilot are recovered), will SDG&E have produced sufficient information to determine cost effectiveness for the EV VGI pilot. How does SDG&E intend to expand this pilot into full-scale deployment of EV VGI?

SDG&E Response:

As stated in witness JC Martin's testimony "Data collection will begin the first year of the pilot (2015), load impact analysis and reporting will begin after two year of implementation (2017), and a cost-effectiveness analysis 18 months after the final VGI facility is installed (2019)". (Chapter 6, page JCM-35). One of the benefits of SDG&E's pilot is that data and results from it (e.g., the net benefits of grid-integrated charging) will help inform CPUC policy in the electric transportation market, and it is likely that discussion regarding pilot program expansion or modification and related will flow from this future policy development process or proceeding.

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21. In the illustrative CE results, the RIM test is positive (and the B/C ratio for the RIM test exceeds 1. But this result is achieved because incremental utility revenues from EV participants exceed the incremental energy supply costs. This suggests that the EV forecast and assumed use of the 550 charging stations by EV owners is the most critical assumptions in the CE analysis. Has SDG&E tested alternative EV forecast assumptions or alternative charging station use rates?

SDG&E Response:

SDG&E has not tested alternative EV forecast assumption in its testimony. Alternative charging station use rates (Pilot Charger Utilization) are used in illustrative results presented in Table 6-13 (Chapter 6, page JCM-34) and Table 6-15 (page JCM-35). Changing these assumptions does not have a material impact on the net cost-effectiveness impacts between scenarios (SDG&E VGI Rate, and Non-utility Flat Fee) since they both use the same EV Population forecast and Pilot Charger Utilization.

For data requests sensitivities on alternative EV forecast assumption, please see:

- UCAN DR-02, Question 1.
- UCAN DR-02, Question 2.
- UCAN DR-03, Question 1.

For data requests sensitivities on alternative Pilot Charger Utilization, please see:

- ORA DR-06 Question 1.C
- TURN DR-03, Question 1.C

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22. What does SDG&E anticipate will be the number of uses per station per day at MuD and workplace? What is the basis of these assumptions? How does it tie to the EV forecast?

SDG&E Response:

SDG&E assumes the number of uses per station per day (Pilot Charger Utilization) at MuD and workplace locations to be one EV per charger on a given day. The potential for pilot charger utilization is not tied to the EV forecast, but tied to the Site Selection Criteria, including "current and expected volume of EV drivers", at the site location. (See Chapter 2, page RS-7).

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23. Did SDG&E do a sensitivity analysis on the number of MuD and workplace customers who will use utility owned EV charging stations? If so, please provide those analyses.

SDG&E Response:

Sensitivity analysis on charging station use rates (Pilot Charger Utilization) are provided in illustrative results presented in Table 6-13 (Chapter 6, page JCM-34) and Table 6-15 (page JCM-35).

For data requests sensitivities on alternative MuD and Workplace usage, pleases see:

- UCAN DR-02, Question 1.
- UCAN DR-02, Question 2.
- UCAN DR-03, Question 1.

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24. Table 6-1 identifies the major "test components" for each of the cost effectiveness tests and labels them as benefits or costs. Please provide revised cost effectiveness results for each of the two scenarios (utility and non-utility sector) with the following changes: (a) **reduce** the major benefit components and **increase** cost components in Table 6-1 in each test by 10 percent, (b) **reduce** the major benefit components and **increase** cost components in Table 6-1 by 20 percent.

SDG&E Response:

See Cost Effectiveness Sensitivity tables below for two cases (a) where costs are increased and benefits decreased by 10%, and (b) where costs are increased and benefits decreased by 20%.

Please note that the SCT and RIM tests remain positive in case (a).

Sensitivity case (a)

Cost Effectiveness Sensitivity - Illustrative Detailed Results
(Costs Reduced and Benefits Increased by 10%)
(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		($592.6)	($592.6)	($592.6)		($592.6)	($592.6)	($592.6)
	Utility Bills	$445.8	($529.7)			$447.1	($520.0)		
	Commercial Charging Fees		($39.4)				($69.2)		
	Gasoline Savings		$865.2	$865.2	$865.2		$865.2	$865.2	$865.2
	Federal Tax Credits		$270.1	$270.1	$270.1		$270.1	$270.1	$270.1
	State Tax Credits		$82.0				$82.0		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($87.0)		($87.0)	($87.0)				
	Third Party Charger and Admin Costs			($41.4)	($41.4)			($120.6)	($120.6)
	Customer Charger Costs		($138.5)	($138.5)	($138.5)		($138.5)	($138.5)	($138.5)
Electric Supply Costs		($315.3)		($315.3)	($315.3)	($333.7)		($333.7)	($333.7)
Societal Benefits	Avoided Gasoline CO2				$45.2				$45.2
	LCFS Benefit				$90.1				$90.1
	Criteria Pollutant Benefit				$39.2				$39.2
Grand Total		$43.5	($82.9)	($39.5)	$135.0	$113.4	($103.0)	($50.1)	$124.4
Total Costs		$402.3	$1,300.2	$1,174.8	$1,174.8	$333.7	$1,320.3	$1,185.4	$1,185.4
Total Benefits		$445.8	$1,217.3	$1,135.3	$1,309.8	$447.1	$1,217.3	$1,135.3	$1,309.8
C/B Ratio		1.1	0.9	1.0	1.1	1.3	0.9	1.0	1.1

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Sensitivity case (b)

Cost Effectiveness Sensitivity - Illustrative Detailed Results
(Costs Reduced and Benefits Increased by 20%)
(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		($646.5)	($646.5)	($646.5)		($646.5)	($646.5)	($646.5)
	Utility Bills	$396.3	($577.8)			$397.4	($567.3)		
	Commercial Charging Fees		($43.0)				($75.4)		
	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	($94.9)		($94.9)	($94.9)				
	Third Party Charger and Admin Costs			($45.2)	($45.2)			($131.6)	($131.6)
	Customer Charger Costs		($151.0)	($151.0)	($151.0)		($151.0)	($151.0)	($151.0)
Electric Supply Costs		($343.9)		($343.9)	($343.9)	($364.0)		($364.0)	($364.0)
Societal Benefits	Avoided Gasoline CO2				$40.2				$40.2
	LCFS Benefit				$80.1				$80.1
	Criteria Pollutant Benefit				$34.8				$34.8
Grand Total		($42.6)	($336.4)	($272.4)	($117.3)	$33.4	($358.2)	($284.0)	($128.9)
Total Costs		$438.9	$1,418.4	$1,281.6	$1,281.6	$364.0	$1,440.3	$1,293.2	$1,293.2
Total Benefits		$396.3	$1,082.0	$1,009.2	$1,164.3	$397.4	$1,082.0	$1,009.2	$1,164.3
C/B Ratio		0.9	0.8	0.8	0.9	1.1	0.8	0.8	0.9

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25. Please provide a revised cost effectiveness analysis based on a reduced <u>total</u> EV forecast: (a) 25 percent reduction in the assumed total forecast of EVs, (b) reduce MuD usage at home locations by 25 percent and (c) reduce the SF and MuD usage at workplace locations by 25 percent. Assume EV vehicle types in the same proportion as the current assumed forecast.

SDG&E Response:

SDG&E interprets this question for sensitivity modeling as one case, with results presented in the table below:

A 25% reduction in total EV population from levels presented in Table 6-5 (JCM-17), causes a reduction in usage at all locations by 25% (MuD residence, Workplace and Single Family residence). All four Cost Effectiveness Tests remain positive for both EV Market Scenarios. The SDG&E VGI Rate scenario remains relatively better than the Non-utility Flat Fee scenario for three of the four cost effectiveness tests (PCT, TRC & SCT). The RIM test would also be relatively better for the SDG&E VGI Rate scenario, if the Non-utility Flat Fee scenario included ratepayers funding the $72.0 million NPV cost for a non-utility entity (third part) to implement the Flat Fee scenario.[5]

Cost Effectiveness Tests - Illustrative Detailed Results
(UCAN DR-04 Q25): Sensitivity with Total EV Population reduced by 25%)

		SDG&E VGI Rate Scenario				Non-utility Flat Fee Scenario			
Test Component		**RIM**	**PCT**	**TRC**	**SCT**	**RIM**	**PCT**	**TRC**	**SCT**
EV Customer Costs & Benefits	Incremental Vehicle Cost		($404.1)	($404.1)	($404.1)		($404.1)	($404.1)	($404.1)
	Utility Bills	$370.1	($359.8)			$371.1	($353.2)		
	Commercial Charging Fees		($26.9)				($47.2)		
	Gasoline Savings		$721.0	$721.0	$721.0		$721.0	$721.0	$721.0
	Federal Tax Credits		$225.1	$225.1	$225.1		$225.1	$225.1	$225.1
	State Tax Credits		$68.3				$68.3		
EV Charger & Admin Costs	Utility Charger and Admin Costs	($79.1)		($79.1)	($79.1)				
	Third Party Charger and Admin Costs			($28.2)	($28.2)			($100.2)	($100.2)
	Customer Charger Costs		($94.4)	($94.4)	($94.4)		($94.4)	($94.4)	($94.4)
Electric Supply Costs		($215.0)		($215.0)	($215.0)	($227.5)		($227.5)	($227.5)
Societal Benefits	Avoided Gasoline CO2				$37.7				$37.7
	LCFS Benefit				$75.1				$75.1
	Criteria Pollutant Benefit				$32.7				$32.7
Grand Total		$76.0	$129.2	$125.3	$270.7	$143.5	$115.6	$119.8	$265.3
Total Costs		$294.1	$885.2	$820.8	$820.8	$227.5	$898.8	$826.2	$826.2
Total Benefits		$370.1	$1,014.4	$946.1	$1,091.5	$371.1	$1,014.4	$946.1	$1,091.5
C/B Ratio		1.3	1.1	1.2	1.3	1.6	1.1	1.1	1.3

[5] See Chapter 6, page JCM-32.

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26. In his revised testimony, J.C. Martin states:

> *"However, the SDG&E VGI Rate scenario has an estimated $63.7 million less NPV impact for ratepayers than the Non-utility Flat Fee scenario in the RIM test. VGI charger infrastructure is owned by SDG&E and Administrative cost incurred by SDG&E are a cost to ratepayers and therefore are included in the RIM test. The Non-utility Flat Fee scenario charger infrastructure and administrative costs provided by a non-utility entity (third party) are absorbed by the non-utility owners of the equipment, as opposed to ratepayers, and therefore not included in the RIM test result." [JCM-31]*

a. Do the two illustrative SDG&E scenario results suggest that if the third party's infrastructure and administrative costs exceeded $63.7 million (NPV), other things equal, a similar program would not be cost effective to these third parties?
b. Did SDG&E consider a more cost effective EV rate for non-utility customers? Please explain.

SDG&E Response:

a. From the perspective of a third party business, cost effectiveness would require Commercial Charging Fees to exceed 3rd Party Charger & Admin Costs on an NPV basis. Since the Commercial Charging Fees are estimated to be $62.9 million NPV (Table 6-12), their 3rd Party Charger and Admin Costs would need to be below $62.9 million NPV.
b. The assumption in the Non-utility Flat Fee Scenario is that "the EV customer pays the Flat Fee price, and another entity pays the Utility Bill for the electricity used for EV Charging." (JCM-20) Therefore the assumption is the 3rd Party Charging Company does not pay the electricity bill for EV charging. The host site pays for the electricity, reflecting business practices of a number of 3rd Party charging companies today.

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27. What is the NPV of SDG&E's infrastructure and administrative costs only? Is this more or less than the NPV of infrastructure and administrative costs expected by non-utility third parties?

SDG&E Response:

The NPV of SDG&E's infrastructure and administration costs (Utility Charger and Admin Costs) are $79.1 million. The NPV of similar infrastructure and administrative costs expected by non-utility third parties (Third Party Charger and Admin Costs) to implement Flat Fee pricing, totals $72.0 million.[6]

Please note, Table 6-12 includes $37.7 million NPV for Third Party Charger and Admin Costs that are included in both the SDG&E VGI Rate scenario and the Non-utility Flat Fee Scenario. These $37.7 million NPV costs represent costs for pre-existing MuD and Workplace charging equipment.

[6] See Chapter 6, page JCM-32.

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28. Other than the utility's EV rate (which is different than AL-TOU), does the proposed utility EV charging rate have any other differences over non-utility owned commercial EV charging stations?

SDG&E Response:

Non-utility owned charging stations can occur under two different scenarios that would impact the applicable rate schedule. The load associated with the charging stations may be included as part of the customer's existing load and result in no change in the applicability on the customer's existing rate schedule, provided that the addition of the charging stations does not change the customer's ability to meet the applicability requirements of the schedule. In this case, the charging load would be applied the same charges as the customer's existing load. Alternatively, the charging stations may be separately metered. In that event the charging load would be served on the applicable non-residential schedule. This could vary depending on the size of the charging facility. For instance, Schedule A, the standard rate schedule for small commercial customers, includes a monthly service fee that varies by a customer's annual max demand and a seasonal energy rate, and Schedule AL-TOU, the standard rate schedule for Medium and Large Commercial and Industrial customers, includes a monthly service fee, demand charges, and a TOU energy rate.

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29. Has SDG&E considered reducing the scope of the pilot to for make ready services to encourage the non-utility market to develop EV charging infrastructure? (connecting third party charging stations to the grid)

SDG&E Response:

No. Please note that utility ownership, operation and maintenance of the entire EV charging infrastructure, including EVSE is necessary to protects all ratepayers by ensuring that the facilities remain used and useful over the life of the asset to ensure the achievement of the net benefits of VGI.

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30. Has SDG&E done any analysis on the costs of providing make ready services to connect third party owned charging stations to the grid? Please provide any analysis of the make-ready services scenario.

SDG&E Response:

SDG&E does not use the term "make-ready" in its VGI Pilot Program proposal, as well as in the normal course of utility business. SDG&E believes that this term, used ambiguously by various non-utility parties, is confusing and misleading. However, Randy Schimka's testimony on page RS-14 lists cost estimates for the installation of the various components that go into a typical VGI facility.

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31. What would be the average costs to

SDG&E Response:

SDG&E cannot respond to an incomplete question.

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32. In what ways, if any, has SDG&E considered collaborating with the public sector or private sector in terms of adding charging stations available to non-utility and/or utility customers?

SDG&E Response:

Please see response in UCAN DR-01, question 10.

SDG&E did consider various public funding options while preparing the VGI application.

In the past, SDG&E has worked with the various Electric Vehicle Service Providers who install charging stations, most of them with some form of grant or government funding to support these installations. Because the property owners or site managers had to contribute valuable parking spaces to the effort, which are usually marked for EV parking only, most of them were reluctant to share any costs to move projects forward. Many property owners value their parking spaces as a function of revenue that flows into their property, and SDG&E has heard numbers as high as $30,000 per space quoted as the all-in cost of parking at a typical shopping center.

Because the grant or government funding was usually not large enough to pay entirely for the installation, this cost share question (i.e., developers with property owners/site managers) arose in almost every job. SDG&E's experience is that the concept of cost share eliminated approximately 80-85% of the potential host sites customers when it came to installing stations with grant or government funding.

Because of this, SDG&E believes that in order for host customers to successfully accept VGI facilities , the offering to property owners at a no-cost basis is necessary in order for serious consideration of such installations.

This approach ensures that the VGI facilities received maximum utilization in order to deliver benefits to all SDG&E customers.

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33. Does SDG&E have any information on whether the cost to connect a third party owned EV charging station to the grid is a barrier to entry?

SDG&E Response:

While SDG&E recognizes that connecting a third-party owned EV charging station to the grid (e.g., a separate service) involves costs that may be a barrier to some third parties, SDG&E doesn't have any specific information on what the threshold is for barrier to entry costs for third parties.

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34. SDG&E's witness Pulliam claims that non-utility entities have found it difficult to make a profit in the vehicle charging market. Pulliam states:

"*The history of the PEV fueling services industry to date indicates that providers have not been able to earn profits above competitive levels." [ST-28]* Also: *"The National Academy of Sciences study notes that a major barrier to the development of PEV fueling infrastructure by private companies is the difficulty of achieving a favorable rate of return on investment from PEV fueling services." [ST-29]*

a. What are the barriers to making a profit by private companies in the VGI market?

SDG&E Response:

SDG&E objects to the questions as unclear – the "VGI market" is not defined. Assuming that the intended reference is "PEV fueling by private companies," as stated by Question #35, costs are a barrier to entry. As Mr. Pulliam notes in his testimony, the National Academy of Sciences study states that "a major barrier to the development of PEV fueling infrastructure by private companies is the difficulty of achieving a favorable rate of return on investment from PEV fueling services." A favorable rate of return indicates that revenues are not sufficient to cover costs. The barrier to making a profit is the inability to charge customers more than the cost of providing the service.

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35. If SDG&E has identified the costs to connect a private EV charging station to the grid as a barrier to entry into the private EV charging market, has SDG&E considered any remedy to this barrier?
    a. Private/public partnerships?
    b. Any types of financing options for the costs?
    c. Anything else?

SDG&E Response:

SDG&E's remedy to this barrier is the proposed VGI Pilot Program. The approach proposed in SDG&E's VGI Pilot Program:

- Will demonstrate net benefits to all ratepayers
- Protects ratepayers (ensure assets continue to be used and useful)
- Provide equitable deployment of services to all ratepayers (VGI rate with enabling facilities)
- Provides customer choice through pricing
- Helps inform CPUC policy
- Support the Governor's 2020 infrastructure and 2025 vehicle deployment goals, and state's clean air and climate change objectives

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36. What were the average costs charged to commercial operators of Electric Vehicle Charging Stations by SDG&E to connect their charging station equipment to the grid i.e. trenching, line extension work, services to the meter?

    a. Please detail the cost categories that commercial EV charging station owners would need to pay for and their itemized costs.

SDG&E Response:

Since every charging station installation job is different physically, which translates to different costs across the spectrum of installations, SDG&E applied cost estimates prepared for installing a standard VGI station at one site. These cost estimates were gathered through three years of experience in working with EV Service Providers and SDG&E field personnel. The cost categories and amounts are broken down in Randy Schimka's testimony starting on page RS 14.

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37. Has SDG&E gathered any information on capital costs barriers and other private sector costs of building EV charging stations?

SDG&E Response:

SDG&E has worked with EV Service Providers for three years and observed their projects and installations. The information gathered over this period of time has been used to develop the costs for the VGI project installations, as shown in Randy Schimka's testimony starting on page RS-14.

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38. What information does SDG&E have on what it costs a private party to build an EV charging station?

SDG&E Response:

SDG&E has information on the various facility cost components for a private party to build an EV charging station. This information was used to build the VGI cost estimates listed in Randy Schimka's testimony starting on page RS-14.

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39. What other barriers to entry prevent private companies from entering and profiting in the VGI market?

SDG&E Response:

SDG&E objects to the question as unclear - a "VGI market" is not defined. If the intended reference is to the market for the supply of fuel to PEVs, the National Academy of Sciences study referenced in Mr. Pulliam's testimony (and the subject of Q #34) discusses potential barriers and the ability of private firm to profit in that market.

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40. SDG&E's witness Pulliam states: *"SDG&E's proposal to spread VGI Pilot Program costs over all ratepayers is functionally similar to using the kinds of grants or other forms of subsidies that have benefitted PEV fueling infrastructure to date in the market. In this respect, SDG&E's plan would allow it to operate in a similar manner as other providers that have benefited (and/or will continue to benefit) from EVSE subsidies, albeit under the CPUC's regulatory authority and oversight. The difference here is that SDG&E's ratepayers will bear infrastructure costs rather than taxpayers generally."* [emphasis added]

    a. Is the fact that bill impacts are small a sufficient rationale for requiring ratepayers to act as taxpayers for the purpose of funding the infrastructure for the sole benefit of EV owners?

SDG&E Response:

SDG&E objects to this question as argumentative and not reasonably calculated to lead to the production of admissible evidence. Without conceding that the question is proper, SDG&E notes that its prepared testimony identifies project benefits to all ratepayers, not just to EV drivers, including carbon reduction and the reduction of future infrastructure costs attributable to EV adoption and load impacts.

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41. SDG&E's witness Pulliam states: *"The rationale given for government subsidies of PEV fueling infrastructure recognizes that adoption of PEVs by the public provides benefits to society in general, not just to PEV users…" [ST-36]*

    a. Is SDG&E's position that it is acceptable to use non-participating ratepayers as a proxy for the taxpayer and expect these non-participating ratepayers to subsidize the participants just as the government, might use taxpayer dollars to subsidize certain policies if it determines that society benefits?

SDG&E Response:

SDG&E objects to this question as argumentative and not reasonably calculated to lead to the production of admissible evidence. Without conceding that the question is proper, SDG&E notes that its prepared testimony identifies project benefits to all ratepayers, not just to EV drivers, including carbon reduction and the reduction of future infrastructure costs attributable to EV adoption and load impacts.

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42. SDG&E's witness Fang states:

> "The first year of proposed revenue requirement impacts are anticipated to have an annual bill impact will be approximately 0.18 cents in 2015 for a typical residential customer using 500 kWh per month in both the Inland and Coastal climate zones, as compared to current rates. On a percentage basis, this equates to an increase of 0.02% for a typical residential customer in the Inland climate zone and 0.01% for a typical residential customer in the Coastal climate zone." [CF-20]

a. If the Rate Impact Measure is positive in the illustrative case and SDG&E is proposing the pilot to obtain more accurate results, why does Cynthia Fang estimate that rates go up at all? Shouldn't rates decline with a positive RIM test?

SDG&E Response:

No, rates are designed to collect authorized revenue requirements.