

**VGI WORKING GROUP
STAGE 3 REPORT
February 10, 2020¹**

Background and Activities

Stage 3 began on September 30, 2020 to undertake the intake, screening, scoring, and analysis of use cases to answer PUC Question (a), “what use cases can provide value now, and how can that value be captured?” This followed the Working Group’s Stage 2, which covered the methodology to be used for use case assessment. Stage 3 consisted of two in-person workshops, each 1-1/2 days long, on 11/14-11/15 and 1/22-1/23. Stage 3 concluded with a Working Group call on 1/30 and proposed answers to PUC Question (a).

On the 1/30 call, the Working Group acknowledged that the proposed answers to the second part of the question, “how can that value be captured” needed to be sharpened and refined, and that this work would be done in conjunction with answering PUC Question (b) during Stage 4 on policy recommendations.

The bulk of the work of Stage 3 was led and conducted by Subgroup B (see Annex A for composition). The Subgroup formulated and issued a call-for-proposals for use case intake by a 10/23 deadline. The call-for-proposals employed a fixed submission template agreed upon by the Subgroup. After intake, the Subgroup then organized ten “screening teams” of 3-4 people each to screen all submitted use cases over a period of three weeks. One of the ten teams was assigned the screening of all of the medium- and heavy-duty vehicle (MHV) use cases. All Working Group parties were also invited to provide parallel screening results of any use cases they wished, and additional screening results were submitted by a few individual parties, such that some use cases had multiple screening results.

The use cases to be screened were placed into a screening template and distributed to the screening teams, about 70 use cases per team. The distribution of use cases across all ten screening teams was randomized. Subgroup B then reviewed the screening and resolved a number of questioned use cases that screening teams had some uncertainty about how to screen.

Once the screening was completed, all the screened and “passed” or “disputed” use cases were provided to the full Working Group for scoring, in a set of scoring templates containing specific “subsets” of use cases organized by application or by sector. The templates were distributed 11/22. The Working Group was given four weeks to score the use cases, with a deadline of 12/19. Individual parties were allowed to submit scoring results separately, or groups of parties working together could also submit jointly. Parties indicated in advance which subsets they planned to score, so that the Subgroup was able to anticipate what was going to be scored and if there would be any gaps in scoring. No party was permitted to score a given use case more than once. The

¹ This stage report was issued on February 10, 2020 for comments by the Working Group, and not comments were received.

scoring results were compiled and summarized by Gridworks and provided back to the Working Group on 12/26.

From 1/6 to 1/17, parties then had two weeks to analyze the compiled scoring results, propose methods and graphical means of grouping, prioritizing and displaying the scoring results, and propose answers to PUC Question (a). The compiled scoring results, the grouping methods and graphical displays, and the proposed answers to the PUC Question (a) were all brought to the 1/22-1/23 workshop to discuss and achieve consensus and resolution. That process, and Stage 3, was completed with a two-hour Working Group call on 1/30.

Following the formal conclusion of Stage 3, the Working Group received a submission from Karim Farhat on further ways of analyzing, displaying, and grouping the use cases into subsets for further focus. Working Group participants have the opportunity to include this submission in further discussions, for example in addressing PUC Question (b) on policy recommendations.

Outputs of Stage 3

The seven primary outputs of Stage 3 were as follows. All materials are posted on the Working Group’s OneDrive file sharing site and key reports are attached to this Stage Three Report as annexes.

(1) Use case submissions. Nineteen parties submitted a total of 1,060 unique use cases proposed as providing value now, using a submission template developed by Subgroup B based upon the agreed methodology from Stage 2. Some use cases were submitted by multiple parties, as much as six parties for some use cases, while other use cases were only submitted by one party.

Attachments for reference:

- “VGI Master list of use case submissions” (10/28)

(2) Screening results. All 1,060 submitted use cases were screened as either “pass” or “fail” for the “now” timeframe to 2022. This was done according to seven agreed-upon screens for technology (Screen 1), wholesale and retail market participation rules (Screens 2a-2b), consumer adoption/acceptance (Screens 3a-3b), and data availability (Screens 4a-4b). The screening resulted in three initial “piles” of use cases: Pile A contained 306 “pass” results, including 187 LDV cases and 119 MHDV cases. Pile B contained 672 “fail” results. Pile C contained 136 “disputed results” where one or more parties or teams failed a use case and one or more other parties or teams passed it. The screening results were further clarified and refined in Subgroup B and during the 11/14-11/15 workshop. The final screening results are shown in Table 1.

Table 1: Final screening results

	Total being scored (*)	Consensus pass	Consensus fail	Disputed pass (**)
Light-duty vehicles	235	191	536	44
Medium- and heavy-duty vehicles	110	87	179	23

Total	345	278	715	67
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(*) Total being scored includes both consensus passes and disputed passes. The scoring templates indicate which use cases are consensus and which are disputed. Total does not include second repeat of 3 LDV use cases with second-variant technology characteristics.

(**) Disputed passes are uses cases where at least one team or Party screened a use case as a pass, while at least one other team or Party screened the same use case as a fail.

Attachments for reference:

- Pile A consensus pass final screening results (12/8)
- Pile B fail final screening results (12/8)
- Pile C disputed pass final screening results (12/8)

(3) Scoring results. Fourteen parties submitted scoring of the use cases, submitting a total of 880 LDV scores and MHDV scores. Most of these submissions were for LDV use cases, while a 6-person “MHDV Team” submitted most of the scores for the MHDV use cases, along with three other parties submitting scores for some MHDV use cases. Table 2 summarizes the scorings submitted. There were also over 500 text comments on scoring submitted along with the numerical scores.

Table 2: Scoring Submitted by Parties

	LDV	MHDV
Use cases scored	232	176
Consensus pass	196	138
Disputed	36	38
Use cases with only partial scores	3	71
Use cases not scored	12	29

Gridworks compiled the submitted scores, and produced a summary spreadsheet showing the average, minimum, and maximum scores for each use case, for each of the three elements (benefits, costs, and implementability). Also showing the number of scores that each use case received. The exact calculation methodology for calculating the scores is given in the spreadsheets.

Attachments for reference:

- VGI LDV scoring compilation and summary (12/26 and revised 1/13)
- VGI MHDV scoring compilation and summary (12/26)

(4) Screening rules and consensus assumptions. Six sets of “proposed screening rules” were developed by five organized screening teams participating in Subgroup B’s screening process, and from a joint submission by PG&E, SCE, and Enel X (see Annex E). These screening rules were reviewed by the Working Group during the 11/14-11/15 workshop and were employed in finalizing the screening. The 11/14-11/15 workshop resulted in a set of “consensus assumptions” (see Annex D, items in green are agreed to fail screening) that were agreed by the Working Group and applied to the initial screening results, along with some other adjustments agreed during the workshop, to come up with a final set of screening results.

Attachments for reference:

- Team 3 screening comments/rules (10/31)
- Team 6 screening comments/rules (11/04)
- Team 8 screening comments/rules (11/04)
- Team 9 screening comments/rules (10/31)
- Team 10 screening comments/rules (11/04)
- PG&E-SCE-Enel X screening comments/rules (11/12 revised)

(5) Source and baseline materials. During the scoring process, a set of “source and baseline materials” was developed and shared by parties on different aspects of the scoring process. These materials were intended to enhance consistency and to share publically available information among Working Group participants.

Attachments for reference:

- All documents posted to OneDrive directory for Stage 3

(6) Subgrouping and categorization of scored use cases and methods of graphical display. Parties defined and developed several types of subgroups and categories of scored use cases based upon scoring results, and also developed several ways of graphically displaying the scoring results and the subgroupings. These are documented and detailed in the write-up of the 1/22-1/23 workshop and notes from the 1/30 follow-up call (see Annexes B and C).

(7) Resolutions and agreements on PUC Question (a). A set of resolutions and agreements by the Working Group on answers to PUC Question (a) contained in the write-up of the 1/22-1/23 workshop and in the 1/30 Working Group call notes (see Annexes B and C).

Main Resolutions and Conclusions from Stage 3

1. There was general agreement with the conclusion that all use cases that passed screening and received a full or partial benefit score can be considered as able to provide value now. This was definition (b) from Section 1 of the workshop write-up (dated 1/28). The MHDV group was going to revisit those use cases with only a population benefit score and no \$/EV benefit score, to see if these should remain.

2. There was discussion of the approach to take on continuing work on how to capture use case value. The two approaches in the workshop write-up were: “(1) delineate actions and group subsets of use cases to which given actions would apply; (2) identify some categories or subsets of use cases to focus on, in describing actions, since it will be impossible for the Working Group, in the time available, to describe actions for all scored use cases.” Some parties liked approach #2, and others were in favor of #1, with a consensus emerging for #1.

3. Several subsets, categories, and prioritizations of use cases were proposed by parties for further investigation in Subgroup C, in terms of barriers and potential policy impacts, and understanding of use case benefits, costs, and implementability. All of these were assessed by the Working Group as having merit and useful for further work. These include a number of categories of “consensus use

cases” resulting from scoring and workshop discussions, subsets put forward by Ford, Honda and Nissan in their proposals, and an above-median subset proposed by Gridworks. All subsets and categories are documented in the write-up of the 1/22-1/23 workshop (see Annex B).

4. There was general consensus that the most important work of the Working Group and Subgroup now would be to prioritize “messages” for the PUC in terms of policy that would allow use cases to provide value, i.e., where can the most value be realized? The Working Group should not make a list of high-value use cases, but identify, particularly among the consensus use cases, what is the PUC missing in terms of opportunities to provide value?

5. The Working Group would continue to make use of the rich array of screening and scoring data, comments, displays, and results in its discussions on PUC Question (b) on policy recommendations. There are many suggestions, potential follow-up work, and approaches identified during Stage 3 that will be relevant and useful as Subgroup C and the full Working Group proceed to answer PUC Question (b). These suggestions, ideas, and approaches are all documented in the write-up of the 1/22-1/23 workshop and the 1/30 follow-up call (see Annexes B and C).

List of Annexes

- A. Subgroup B Composition and Screening Teams
- B. Gridworks write-up of 1/22-1/23 workshop (1/28)
- C. Gridworks call notes of 1/30 Working Group call (2/6)
- D. Consensus assumptions for screening
- E. Teams screening comments/rules

Annex A: Subgroup B Composition and Screening Teams

Hiba Abedrabo	Toyota
Meredith Alexander	CalStart
Tom Ashley	Greenlots
Lance Atkins	Nissan
Alan Bach	Public Advocate's Office
Anna Bella Korbatov	Fermata
Dan Bowerson	Auto Alliance
Ed Burgess	Strategen
Noel Crisostomo	CEC
Eric Cutter	E3
Naor Deleanu	Olivine
Jessie Denver	EBCE
Mauro Dresti	SCE
Karim Farhat	PG&E
Wendy Fong	LeHigh University
Mehdi Ganji	Willdan Smart City Lead, and IEEE Smart City R&D Committee Chair
Jamie Hall	GM
John Holmes	Honda
Sam Houston	UCS
Christina Jeworski	Santa Clara VTA
Erick Karlan	Greenlots
Alex Keros	GM
Phillip Kobernick	Peninsula Clean Energy
Fidel Leon Diaz	Public Advocate's Office
Alexandra Leumer	Chargepoint
Taylor Marvin	SDG&E
Chris Michelbacher	Audi
Marc Monbouquette	Enel X
Miles Muller	NRDC
Stephanie Palmer	CARB
Max Parness	Toyota
Ed Pike	CPUC
Samantha Rosenbaum	Hubject
Jigar Shah	Electrify America
Carrie Sisto	CPUC
Jordan Smith	SCE
Hitesh Soneji	Olivine
Steve Tarnowsky	GM
Dean Taylor	CalETC
Vincent Weyl	Kitu Systems
John Wheeler	Fermata
Zach Woogen	Strategen
Eric Woychik	Willdan

Screening Teams

Team 1

Jordan Smith SCE
Eric Woychik Willdan
Erick Karlan Greenlots
Jamie Hall GM
Miles Muller NRDC

Team 2

Dan Bowerson Auto Alliance
Mehdi Ganji Willdan Smart City
Tom Ashley Greenlots
Vincent Weyl Kitu Systems

Team 3

Eric Cutter E3
John Wheeler Fermata
Lance Atkins Nissan
Fidel Leon Diaz Public Advocate's Office

Team 4

Anna Bella Korbatov Fermata
Noel Crisostomo CEC
Barton Sidles Hubject
John Holmes Honda

Team 5

Chris Michelbacher Audi
Hitesh Soneji Olivine
Taylor Marvin SDG&E
Wendy Fong LeHigh University

Team 6

Karim Farhat PG&E
Naor Deleanu Olivine
Steve Tarnowsky GM
Samantha Rosenbaum Hubject

Team 7

Alex Keros GM
Alexandra Leumer Chargepoint
Ed Burgess Strategen
Jessie Denver EBCE

Team 8

Dean Taylor CalETC
Jigar Shah Electrify America
Hiba Abedrabo Toyota
Zach Woogen Strategen

Team 9 (MHDV Team)

Meredith Alexander CALSTART
Samantha Houston UCS
Christina Jaworski Santa Clara VTA
Naor Deleanu Olivine
Wendy Fong Lehigh University
Jasna Tomic UCS

Team 10

Mauro Dresti SCE
Marc Monbouquette Enel X