



# Vehicle - Grid Integration Initiative

*May 21, 2019*



# Agenda

**10:00 - 10:10 - Introductions**

**10:10 - 10:30 - Definition and Principles Update (Matthew Tisdale, Gridworks)**

**10:30 - 11:00 - PG&E Update/Progress on Proposed Methodology (Karim Farhat, PG&E)**

**11:00 - 12:00 - VGI Methodology Exercise**

**12:00 - 1:00 - Lunch (*lunch provided by Gridworks*)**

**1:00 - 2:45 - VGI Methodology Exercise (continued)**

**2:45 - 3:00 - Wrap Up and Next Steps**

**3:00 - 5:00 – Networking and Community Building**

- *Location: Lost & Found (2040 Telegraph Ave, Oakland)*

# Initiative Objectives

- 1. Identify and assess opportunities in which VGI can create value from multiple market participants' perspectives*
- 2. Identify regulatory, labor, or industry market barriers to realizing VGI value creation, and*
- 3. Provide recommendations on the market or policy actions needed.*

# Initiative Scope

*Address the CPUC's Questions:*

- *What VGI use cases can provide value now, and how can that value be captured?*
- *What policies need to be changed or adopted to allow additional use cases to be deployed in the future?*
- *How does the value of VGI use cases compare to other storage or DER?*



# Initiative Scope

## Out of Scope

- *Communication standards and protocols*
- *Recommendations on transportation electrification beyond VGI (e.g., new infrastructure investment proposals)*
- *Other?*

# Initiative Scope

## Timeline:

- *March - June: Preparing for the CPUC's Working Group*
  - *Scope the work needed to answer the PUC's questions*
  - *Develop an approach to completing that work*
  - *Identifying what further information we need and start gathering*
  - *Finalize Framing Document*
  - *Build community*
- *July - ?:*
  - *Execute steps needed to answer PUC's questions*



# Definition and Principles

*Caveat: Gridworks' working definition and principles*



## Definition: where we started

*“the many ways in which a vehicle can provide benefits or services to the grid, to society, the EV driver, or parking lot site host by optimizing plug-in electric vehicle (PEV) interaction with the electrical grid....”[1]*

[1] “VGI Glossary of Terms” California Public Utilities Commission. <http://www.cpuc.ca.gov/vgi/>



## Where we started (cont'd)

*“...VGI includes:*

- *active management of electricity (e.g., bi-directional management, such as vehicle-to-grid power flow [also known as V2G]);*
- *unidirectional management such as managed charging [also known as V1G]) and/or active management of charging levels by ramping up or down charging; and*
- *passive solutions such as customer response to existing rates, design of improved utility rates (e.g. time-of-use (TOU) charges, demand charges and customer fees), design of the grid to accommodate EVs while reducing grid impacts to the degree possible, and education or incentives to encourage charging technology or charging level (e.g. rebates for lower level charging, modifying current allowance policy).*

## What we heard

- 2017 definition is too long, with too many specifics
- Maintain a “mobility first” emphasis to support accelerated electrification of transportation; don’t put the cart (grid services) before the horse (mobility)
- Should complement/fits California’s larger DER definition and framework
- Needs to answer the main question: “Who is it for? Who benefits?”
- Should serve marketing purposes
- Emphasis on EVs as an integral part of the grid, rather than the grid as something that must accommodate EVs
- Careful not to confuse V1G, V2G, charge and discharge
- Don’t get too hung up on the definition...



# Gridworks Proposal:

Vehicle - Grid Integration:

How we drive electric, drive down costs and drive out emissions.



# Principles and Priorities for Use Case Evaluation:

- *Inclusive without prejudice*
- *Able to:*
  - *leverage available information*
  - *identify and narrow any information gaps*
  - *adapt to new information*
- *Reasonably efficient to implement, balancing progress, consensus building, time and accuracy*
- *Technology and business model neutral*
- *Transparent, simple and clear*



# PG&E Update/Progress on Proposed Methodology

Karim Farhat (PG&E)



# VGI Methodology Exercise



# Groups

## Group 1:

- Dean (CalETC)
- Adam (BMW)
- Hannon (SDG&E)
- Carrie (CPUC)

## Group 2:

- Greenlots
- Glenn (Toyota)
- Mauro (SCE)
- Joe (Olivine)

## Group 3:

- Jackie (Nuvve)
- Jamie (GM)
- Bill (SMUD)
- Noel (CEC)

## Group 4:

- Chargepoint
- Richard (FC)
- Jessie (EBCE)
- Taylor (GridLAB)
- Jin (CESA)

## Group 5:

- EVgo
- Lance (Nissan)
- Eric (TURN)
- Tim Lipman
- Eric (E3)

## Group 6:

- others



# Lunch





# VGI Methodology Exercise (continued)



# Wrapping Up

## Next Steps

- Regroup in June
- Action items
- Other?



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Thank you!