

**DOCKETED**

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**Presentation for DISCUSSION PANEL 3: Technology Needs**

*Additional submitted attachment is included below.*



# CEC VGI Roadmap Workshop Discussion Panel 3: Technology Needs

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October 30, 2018

# Transportation modeling ecosystem

Policy

Vehicle classes  
(LD/MD/HD)

Charging strategies

Autonomy

Cybersecurity

Vehicle types  
future sales  
& stock

Vehicle  
electricity  
demand

Infrastructure  
sizing/siting  
& charging  
flexibility

Grid impacts  
Business case

Vehicle  
Choice

Vehicle  
Simulator

Infrastructure  
Rollout

Grid Planning  
& Operations  
Customer  
Optimization

Consumer preference  
Regionality

Technical performance  
Duty cycles

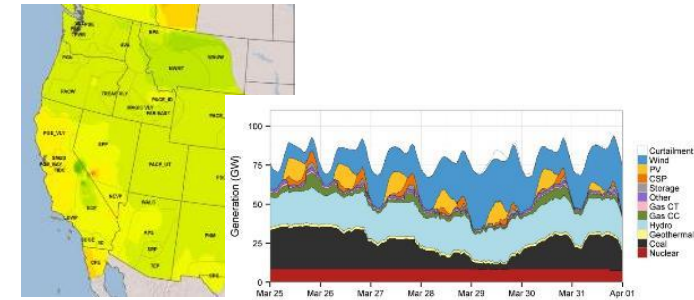
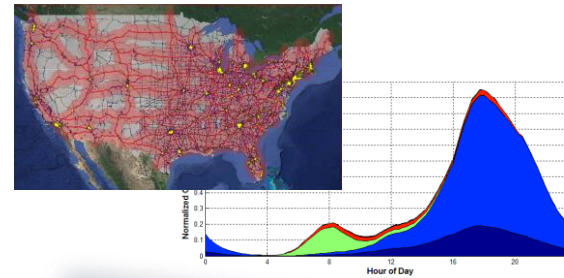
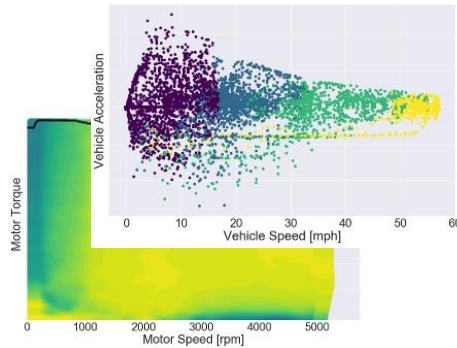
Travel surveys  
GPS traces  
Charging strategies

Grid topology  
Retail rates  
Etc.

Inputs

Outputs

Inputs and outputs



Models



AUTONOMIE



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# Discussion Questions

1. What types of analytical models are needed to link charging demand with grids operating at high penetrations of renewable electricity, against the backdrop of changing consumer mobility needs and the electrification of larger vehicle classes and additional modes of transportation?
2. Which new technologies should be incorporated into electric vehicles and equipment to improve cybersecurity? What are the technical barriers or requirements to advancing low-cost cybersecurity measures?
3. What standards and methods of communication need to be considered in VGI programs (e.g. involving unidirectional, bidirectional, high-powered, inductive, or pantograph charging, and potentially involving automated connections)?
4. Which charging use cases would most benefit from EVSE-embedded metering? What can be learned and commercialized from the utilities' submetering pilots? How can the state and network developers balance metering records-keeping requirements with the need for cost effective solutions? Does NIST Handbook 44 provide the solution or a starting point?
5. How can policymakers, researchers, and industry foster advanced technologies into to a global, vibrant e-mobility market to save customer costs and minimize emissions?