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Policy Approaches that Encourage Development and Investment in V2G

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ASSUMPTIONS

- The degree to which the grid is “Aware”, or “Smart”, or “Intelligent” is a function of data flow, analysis and management
- For good reason, the FERC has identified interoperability of software systems as a key characteristic of the Smart Grid
- An electric drive vehicle is both functionally the same as any other device connected “behind the meter”, and critically different in its mobility from one geographic connection point to others.
- For bi-directional V2G power flow, there needs to be bi-directional information.

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SIGNIFICANT DATA

- The suite of vehicle data communicated to the web needs to identify the GIS coordinates, an IP or another unique address for the vehicle/operator, battery state of charge, anticipated grid connection interval, parameters of acceptable battery SOS at anticipated grid disconnection.
- If that suite of data is based on an open standard communication protocol recognized by the EPA and CARB for certification based on Federal Test Procedures, and reflected in the architecture of the vehicle On-Board Diagnostic (OBD) system, expanded data points can be communicated to and/or through grid data collection.
- These can include, VMT, calculated fuel use through injector pulses, battery SOS change algorithms.

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TECHNOLOGY PROGRESS

- GM "OnStar" and Ford "Synch" are examples of existing mobile communication systems. GM has demonstrated V2G with Volt battery, will have OnStar in production.

- Toyota looking for rapid development of individual vehicle IP addressing and remote, wireless management.

- CARB developed initial "OBD III" system decade ago – Big Brother criticisms factor in mothballing.

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USES OF EMERGING TECHNOLOGY

- V2G and simple electric drive charging will place emphasis on quantifying kWh interaction with grid for Low Carbon Fuel Standards and energy/portfolio schemes establishing energy life cycle costs
- Electric drive widely considered to be major carbon offset with monetary value
- Software management and data communication protocols central for quantifying offsets
- Also tailors vehicle interactions with other behind-the-meter data, including opportunities to understand consumer behavior.

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VALUE PROPOSITIONS

- Natural purview of Efficiency Utilities
- Open Standard data systems will further enable alternative road tax mechanism, pay at the pump/pay at the outlet insurance
- Data will enable States to better manage SIPs and Climate Change Action Plans.

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KEY POLICY RECOMMENDATIONS

- Provide appropriate State-level "Information Technology" Agency and budget/scope to integrate electronic data from utilities, including transportation, for EU efficiency measures, population of carbon and climate change databases, transportation planning, registration/warranty/recall, I/M programs
- Direct PUCs and regulatory bodies to monitor and steer Smart Grid build-out by utilities to incorporate appropriate software platforms, security, data sharing protocols
- Integrate electronic transportation data with transportation and infrastructure planning, incorporating Smart Growth "least cost" principles.

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KEY POLICY RECOMMENDATIONS, continued

- Incentivize electric drive for commercial and public transit fleets, prioritizing standardized battery architecture for V2G, robust storage capacity, end-of-life service as UPS, and full recycling

- Develop State policy ASAP on whether charging station deployment is ceded to private sector, or carefully structured by government

- Establish policy "capacity" to continually examine rapidly evolving technology for Best Available Practices to support environment, public health, and the economy.