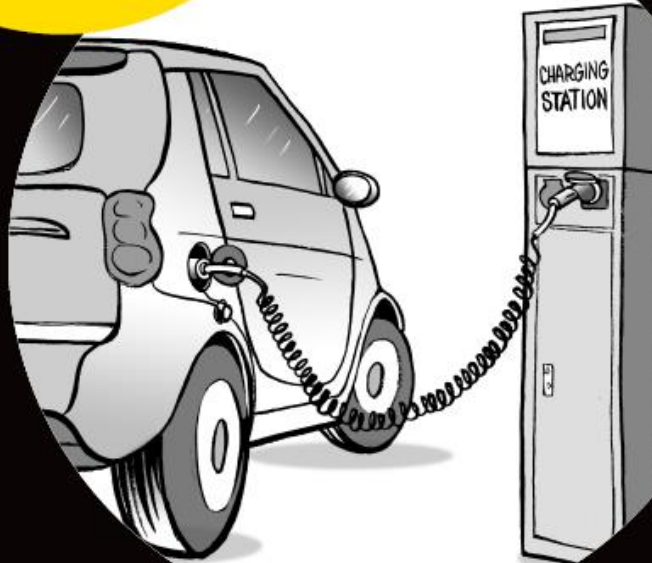


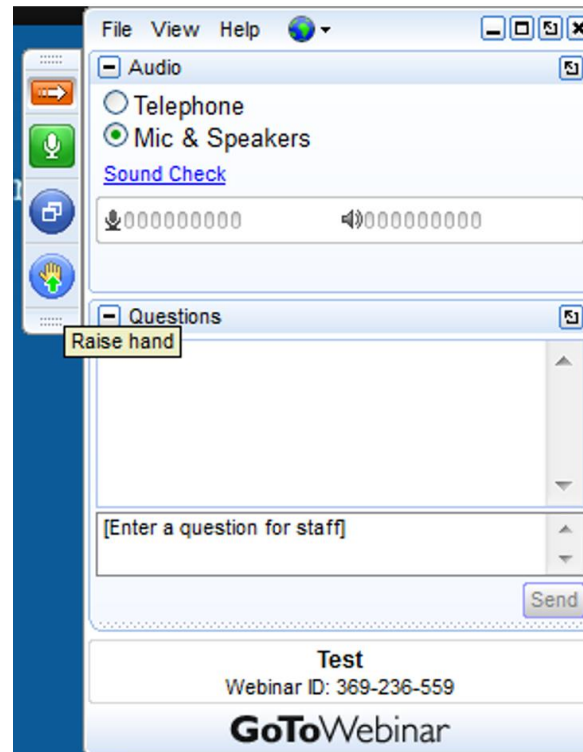
In The Driver's Seat

How Utilities and Consumers
Can Benefit
From The Shift To
Electric Vehicles



Housekeeping

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Our Electric Vehicle Experts



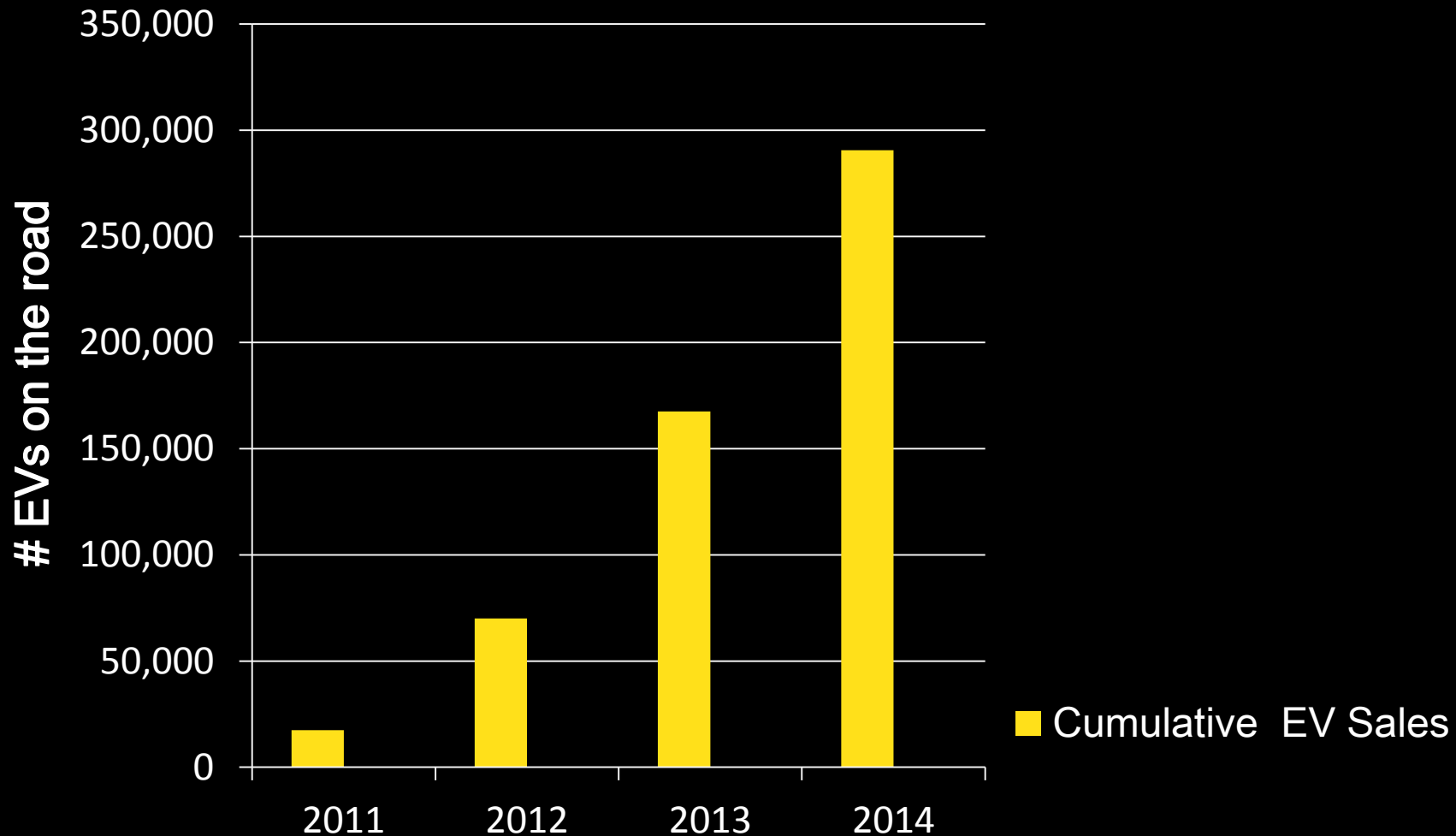
Karen Glitman, VEIC
Director of Policy and Public Affairs



Justine Sears, VEIC
Consultant



National Electric Vehicle Registrations



Automaker Offerings

OEM	Current EVs	Upcoming Models	Goals/Targets
BMW	ActiveE (AEV)	i3 (AEV/PHEV), i8 (PHEV), X5 eDrive (PHEV)	
Chrysler / Fiat	500e (AEV)		
Ford	Focus (AEV), Fusion (PHEV), C-Max (PHEV)		10-25% of 2020 sales electric
GM	Volt (PHEV), Spark (AEV)	Cadillac ELR (PHEV), Cruze (PHEV)	10% of 2020 sales electric, hybrid
Honda	Fit (AEV), Accord (PHEV)		
Hyundai		Sonata (PHEV)	
Kia		Soul (AEV)	
Mercedes	Smart ED (AEV)	B Class Electric (AEV), S500 (PHEV)	
Mitsubishi	i-MiEV (AEV)	Outlander (PHEV)	20% electric and hybrid by 2020
Nissan	Leaf (AEV)	e-NV200 (AEV), Infinity LE (AEV)	10% of 2020 sales electric
Tesla	Roadster, Model S (AEV)	Model X (AEV), Model E (AEV)	N/A (all electric)
Toyota	Prius Plug-in (PHEV)		30% of 2020 sales electric and hybrid
VW / Audi / Porsche		E-Golf (AEV), A3 E-Tron (PHEV), Q7 E-Tron (PHEV), Panamera (PHEV), 918 (PHEV)	

What is the role of utilities in fostering the market for EVs?

- Incentivizing EVs and charging stations
- Deploying utility-owned stations
- Development and marketing of EV-focused rates
- Tracking EVs and charging stations



Benefits of electric vehicles to utilities and consumers

- Increased revenue and new business opportunities
- Improved load management
- Improved system reliability

I. Additional Revenue

- EVs are a substantial source of new load
- Revenue increase
 - \$770 annually (PSE)
 - \$2,500- \$9,000 vehicle lifetime (CPUC RIM)



Utility EV and Charging Station Incentives

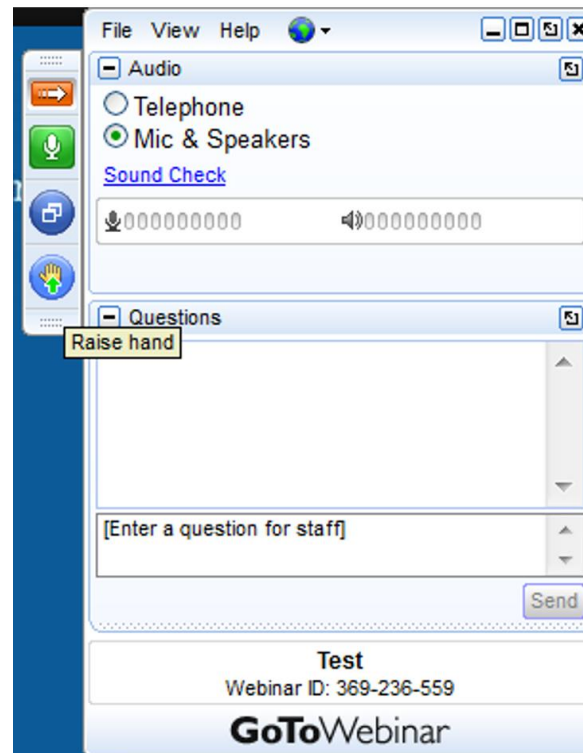
Utility or Utility Commission	Incentive for EV or EVSE	Amount
Alabama Power (AL)	Residential EV	\$750 (limited to 250 incentives)
Alabama Power (AL)	Commercial EVSE	\$500
Austin Energy	EVSE	\$500 (50% cost of purchase and installation)
Central Maine Power (ME)	Commercial EV, Commercial Level 2 EVSE, and DC Fast Chargers	\$1,000 for purchase or lease, \$500 for EVSE installation
Connexus (MN)	Residential time-of-day meter	\$270
Consumers Energy (MI)	Level 2 EVSE	Up to \$2500
DTE Energy (MI)	EVSE	Up to \$2500
Georgia Power (GA)	Residential Level 2 EVSE	
Indiana Michigan Power (MI)	Residential Level 2 EVSE	
JEA (FL)	EV	
NIPSCO (IN)	Residential Level 2 EVSE	
NIPSCO (IN)	Commercial Level 2 EVSE and DC Fast Chargers	
Orlando Utilities Commission (FL)	Commercial EVSE	
PECO (PA)	EV	\$50
Public Service Electric and Gas (NJ)	"Smart" EVSE units supplied to employers with at least five employees committed to commuting via EV	
PSE (WA)	Residential Level 2 EVSE	\$500

Incentive Programs

EV-specific TOU rates

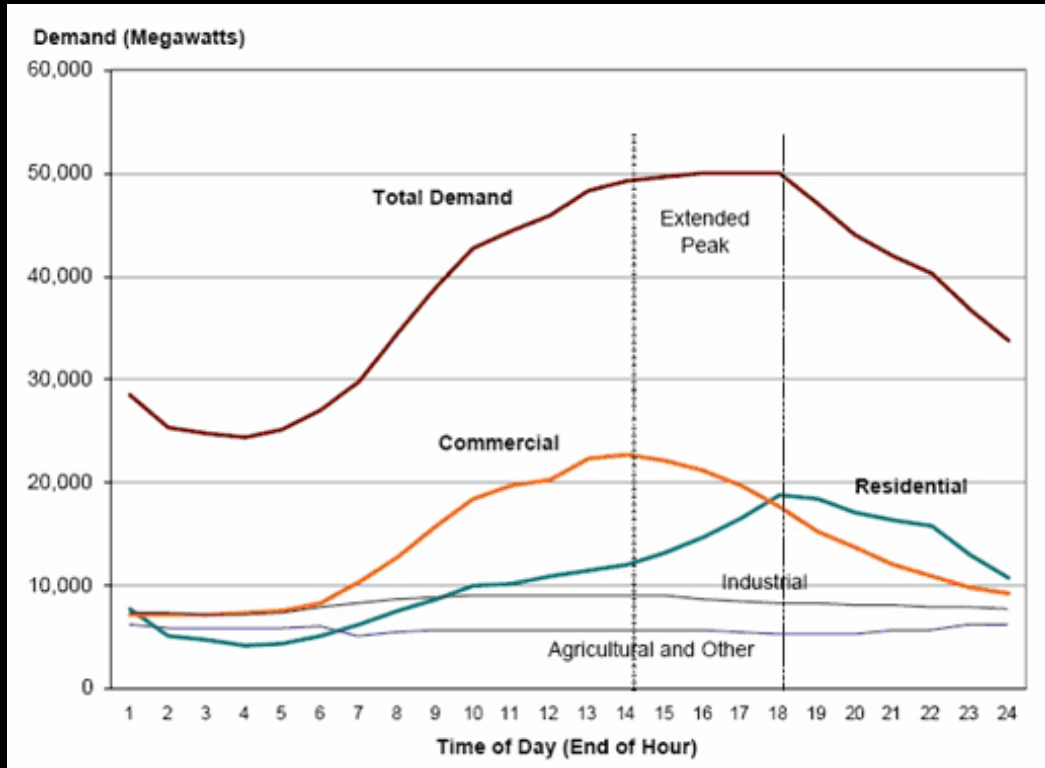
Questions?

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II. Load Management

Smoother ride, smoother load

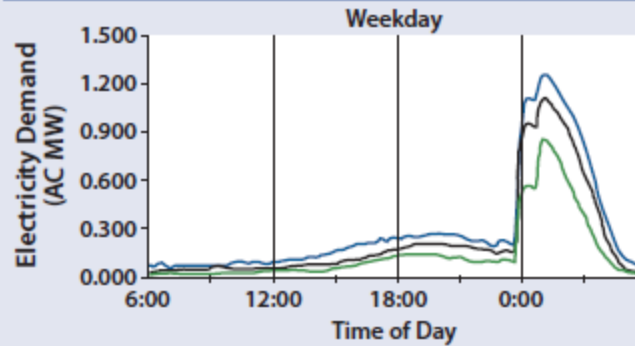


Time of Use
Rates

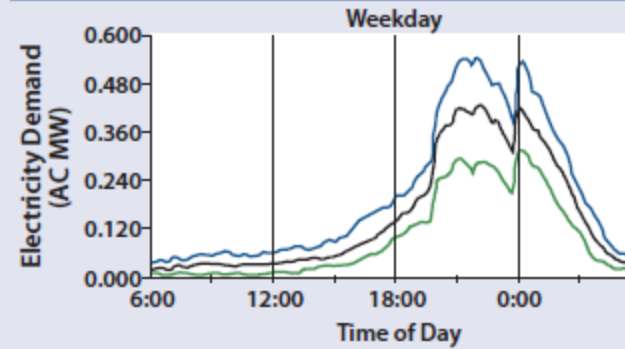
Controlled
Charging

EV Project EV Charging Patterns With and Without TOU Rates¹²

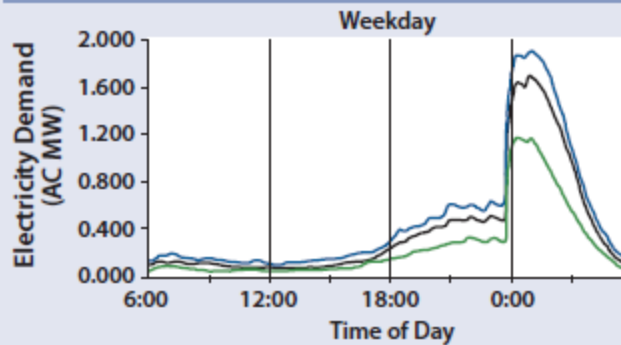
San Diego



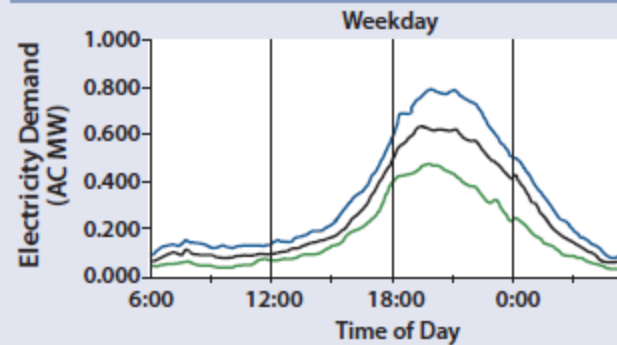
Los Angeles



San Francisco



Washington State



Source: EV Project 2013

Controlled Charging

- Managed charging
 - Communication between the charger or vehicle and the grid
 - Control over charging rate ceded to utility or aggregator
- May require additional metering
- Opportunity for maximizing EV environmental and grid benefits



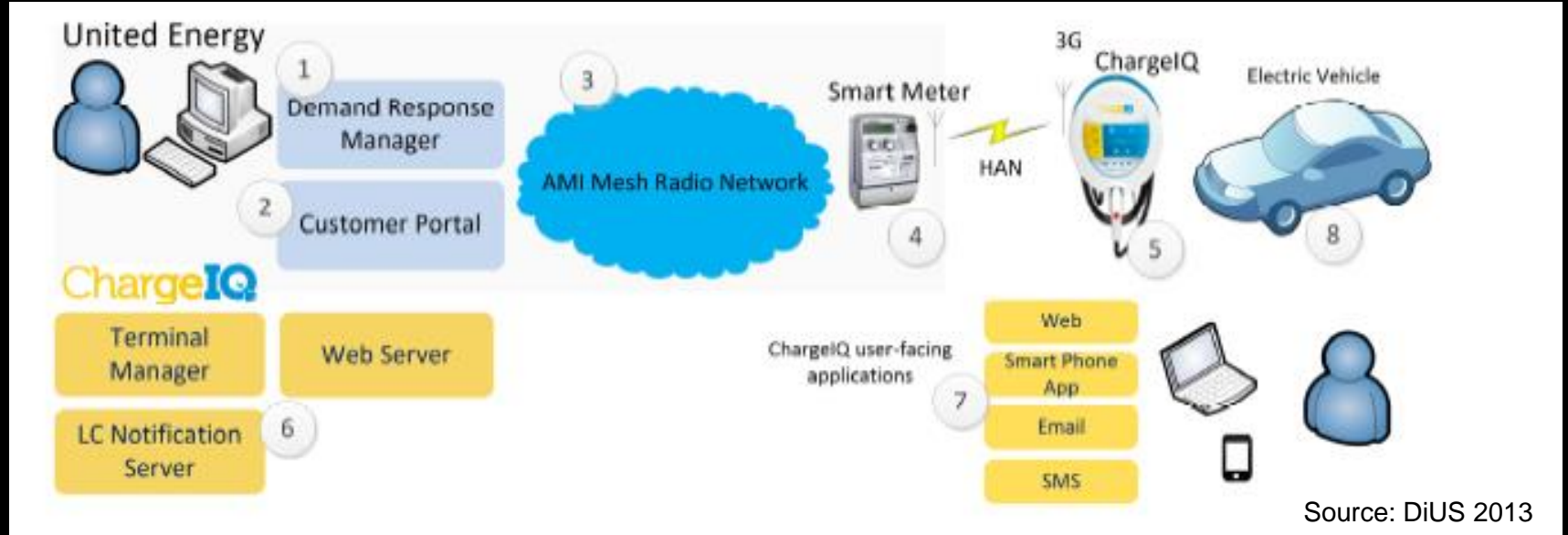
III. System Reliability



- One way flow of energy vs. two way flow

III. System Reliability (cont'd)

- Managed charging to reduce cost and grid strain
- Demand Response



III. System Reliability (cont'd)

- Managed charging to reduce cost and grid strain
- Demand Response
- Participation in wholesale markets
 - PJM Advanced Technology Pilot
- Consumer protection needs to be explicitly addressed

New Business Opportunities

EPRI, OEMs, Utilities Connect on EV Grid

July 29, 2014 in *Electric Drive, EVs, Technology* by Rich Piellisch | No Comments

*Smart Grid for Utilities to Support PEV Charging Anywhere:
Large Organizations Are Getting Serious About V2G Technology*

The Electric Power Research Institute is collaborating with eight automakers and 15 utilities on an "open platform" to integrate PEVs – plug-in electric vehicles – with smart grid technologies, "enabling utilities to support PEV charging regardless of location."

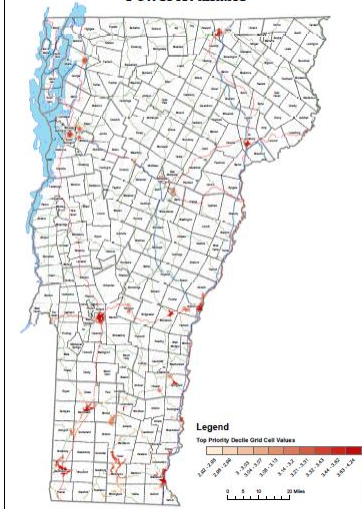
California utilities are now back
in the EV Charging Business



On December 22, 2014, the California PUC overturned earlier decisions and allowed California utilities to participate in the market for EV charging services.

USA: GMP to Install Public Charging Stations for Electric Cars

Map 1. Top Ranked Priority Areas with 3-Phase Power Available



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www.raponline.org/document/download/id/7586

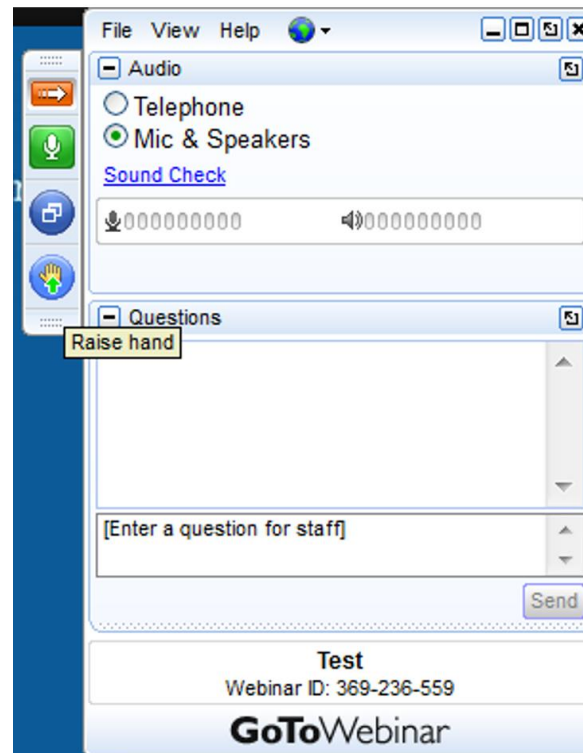
www.veic.org/resource-library/in-the-driver's-seat-how-utilities-and-consumers-can-benefir-from-the-shift-to-electric-vehicles

kglitman@veic.org
jsears@veic.org



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Benefits of EVs to utilities and consumers

1. Increased revenue and new business opportunities
2. Improved load management through rate design and smart charging
3. Improved system reliability- EVs can provide grid services