# *Addressing the Technical Challenges of Urban EV Integration*

## *Electric Vehicles and Global Urban Adoption: Policies and Perspectives from France and California*

Douglas Black

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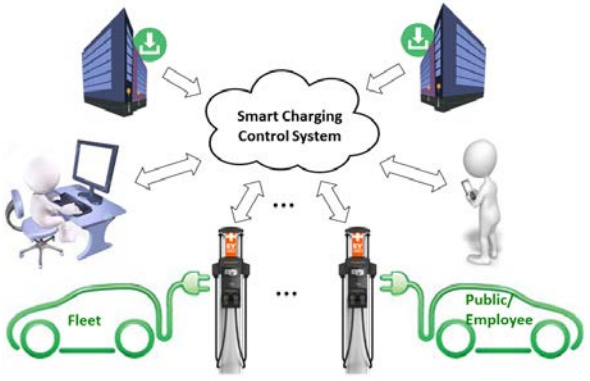
# LBNL Focus and Stakeholder Impact

- LBNL is a leader in creating control and optimization solutions and demonstrating these solutions in real-world vehicle-to-grid (V2G) and microgrid applications
- Impacting key stakeholders
  - CAISO and SCE with LAAFB ancillary services participation
  - Alameda County and other public and private fleet operators
  - ChargePoint acquired Kisensum for technology developed with LBNL in V2G and smart charging projects



# Key Technical Challenges to Urban EVs

- A major barrier for urban EV charging is electrical infrastructure upgrade costs
- Commercial building TOU demand charge increases
- Trade offs between available parking spaces, charging ports, and flexibility for users and charge scheduling
- All of the above are a challenge for level 2 charging and an even greater challenge for DC fast charging

# Alameda County Fleet EVs and EVSEs



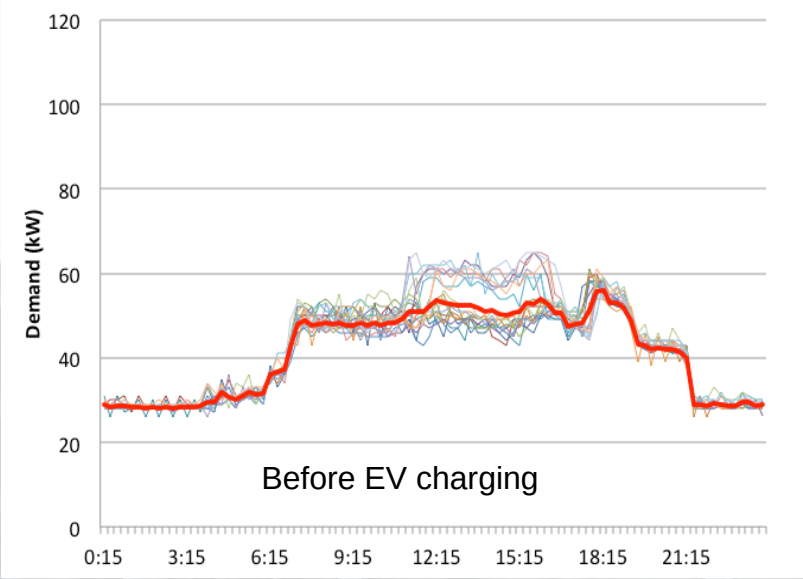

36 Level 2 ports and one DCFC

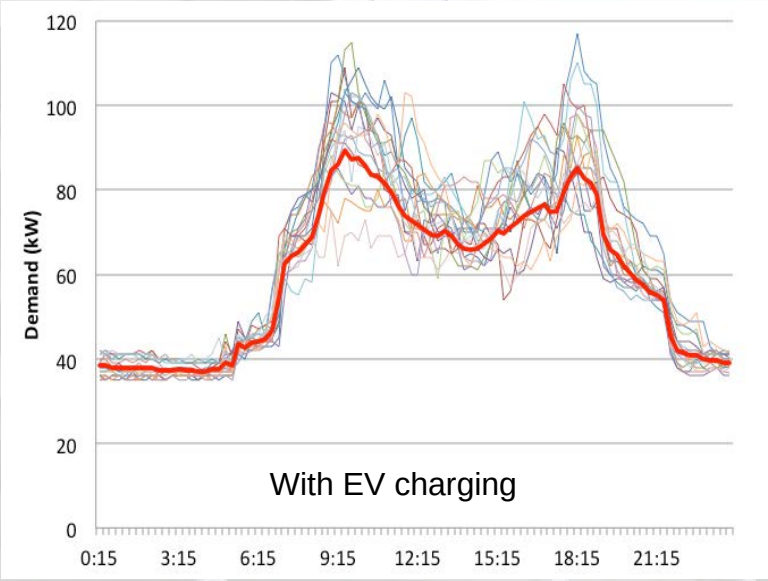
**12** Nissan LEAF
24 kWh battery

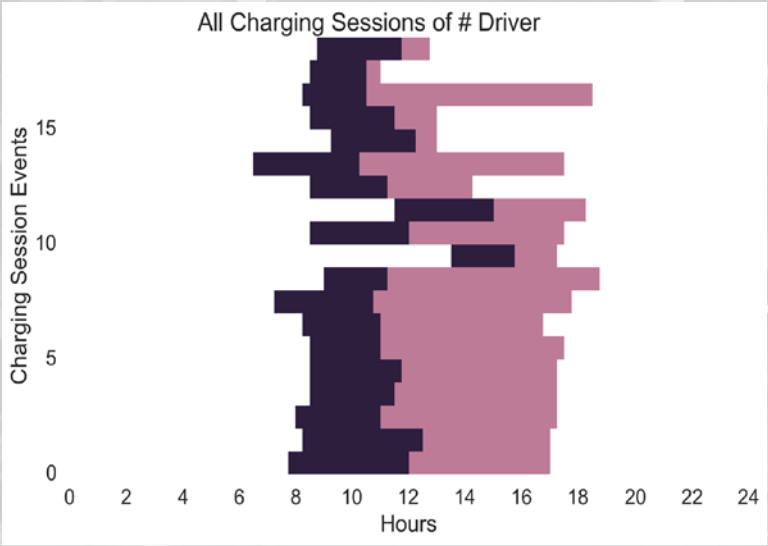
**17** Ford Focus Electric
23 kWh battery

**2** Chevy Bolt
60 kWh battery

# AlCo Fleet and Public EV Smart Charging



# AlCo Fleet and Public EV Smart Charging

BERKELEY LAB
Bringing Science Solutions to the World

**Smart Charging at Alco Park Garage**

Planned Departure Time: (HH:mm AM/PM)

HH | mm | AM/PM

how much charge would you like?

kWh | Or | miles

Remember my request info

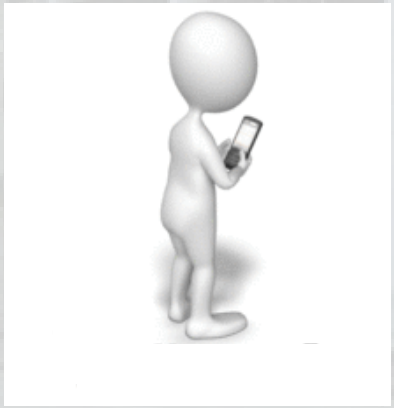
If your planned departure time changes, please use the same link to complete another smart charging form and we will re-adjust charge schedule.

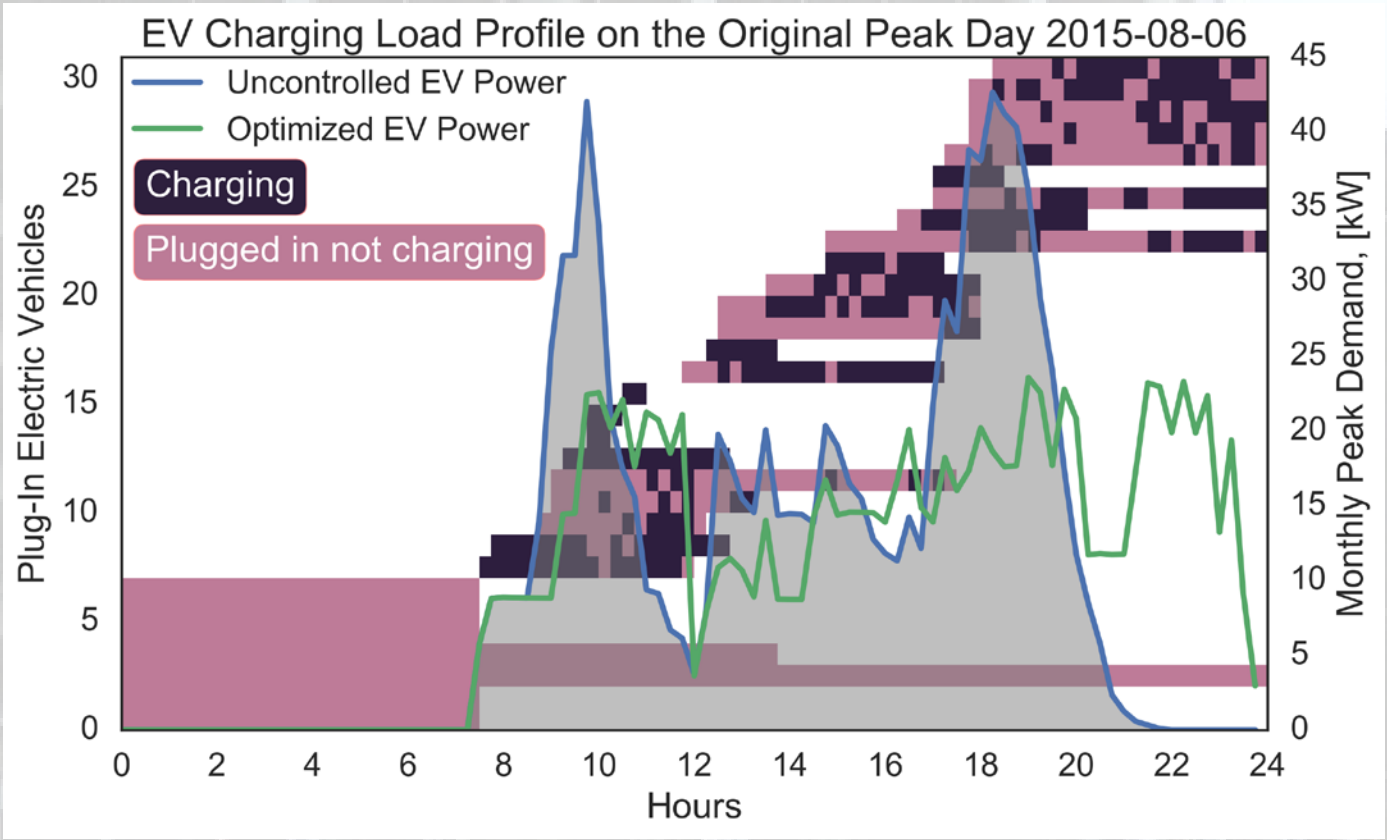
Submit

If you have any questions please call or e-mail:

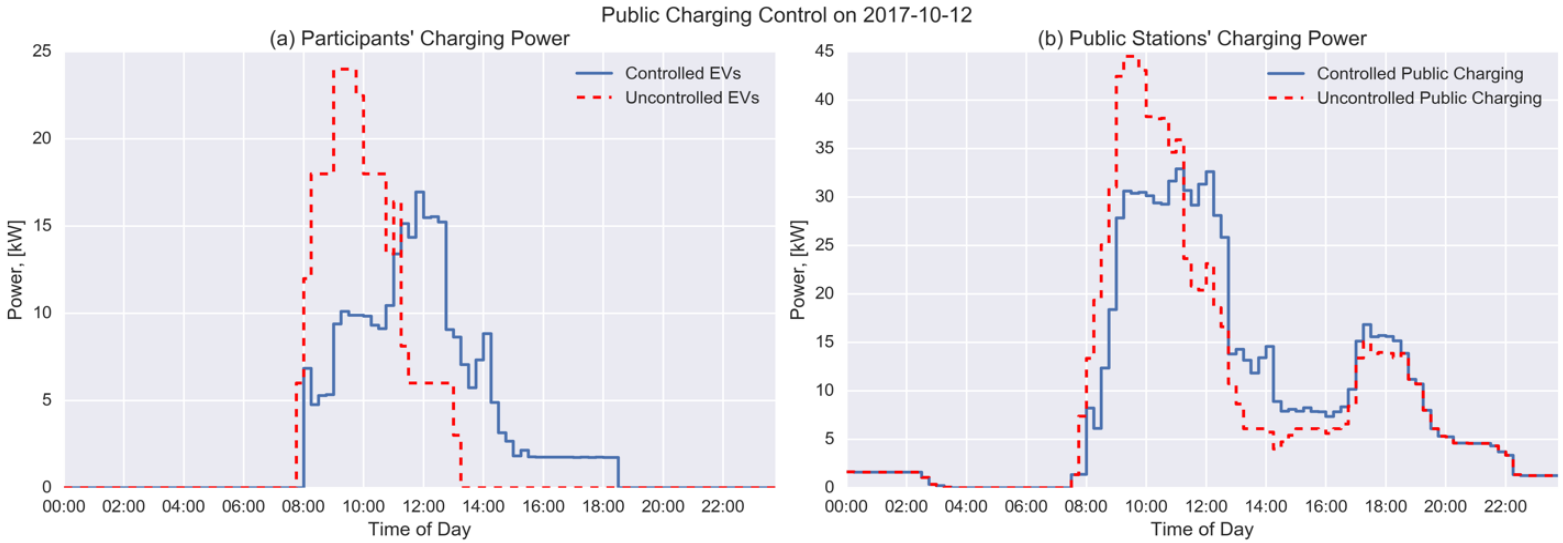
**Douglas Black**, Principal Investigator, 510-486-7904, DRBlack@lbl.gov

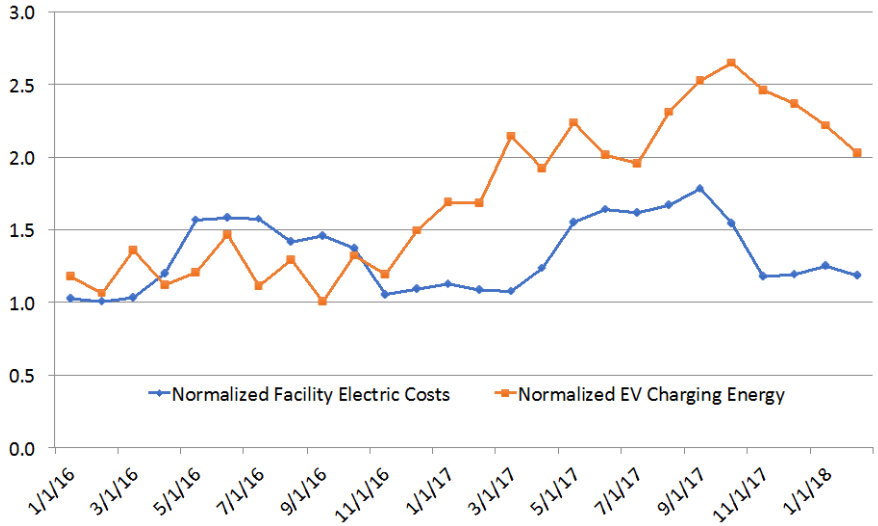
**Phillip Kobernick**, Sustainability Project Manager, 510-272-6505, Phillip.Kobernick@acgov.org





# Impact of Smart Charging



# Overcoming Challenges of Urban EVs

- Electrical infrastructure and operating costs can be reduced with smart charging
- Incentivizing EV owner to participate in smart charging or grid participation is difficult
- EV charging participation should be ”invisible” to owner
- Need communication and coordination between EVs, charging stations, and smart charging operators
- Combined benefits of PV, fixed battery storage, and EV charging to commercial buildings and MUDs

# Questions

Doug Black
drblack@lbl.gov