

FALL 2018 TRANSPORTATION SEMINAR

MULTI-SCALE ANALYSIS OF TRANSPORTATION ELECTRIFICATION TO QUANTIFY PHYSICAL AND ECONOMIC IMPACTS OF VEHICLE GRID INTEGRATION

Friday, November 9, 2018 2:00 - 3:15 PM (US Arizona)

[College Avenue Commons \(CAVC\) Room 559](#) (Parking)**Dr. Colin Sheppard****Lawrence Berkeley National Laboratory***Senior Scientific Engineering Associate***About the Talk**

Transportation electrification and emerging forms of mobility are bringing dramatic changes to how the transportation system is planned, operated, and analyzed. Plug-in electric vehicles (PEVs) present new challenges and constraints around the siting and operation of refueling infrastructure. Electric load from PEVs can exacerbate grid congestion at either transmission or distribution scales if left unmanaged. In addition, sharing and autonomy are changing mobility which will have unique implications for the grid integration of PEVs. In this talk, I will summarize two studies that explore the technical and economic potential for PEVs to supply flexibility services to the electric grid based on a variety of methodological approaches that quantify the opportunity at multiple scales, across multiple geographies, and that cover scenarios with both personally owned and shared autonomous PEVs.

About the Speaker

Colin Sheppard is a Senior Scientific Engineering Associate at Lawrence Berkeley National Laboratory and the Institute for Transportation Studies at UC Berkeley. For ten years he has been working in the spaces of sustainable transportation, renewable energy resources development, and energy efficiency. Mr. Sheppard's role at LBNL under the DOE SMART Mobility Initiative is leading the development of the BEAM Framework (Behavior, Energy, Autonomy, and Mobility), an integrated systems approach to sustainable transportation analysis. BEAM involves agent-based simulation modeling of a fully multi-modal transportation system that includes public transit and shared/autonomous mobility services in addition to traditional modes. Mr. Sheppard has previously applied BEAM in the context of generated detailed, spatially explicit forecasts of electric vehicle charging demand from personally owned EVs. This work includes estimating of load flexibility inherent in EV charging that can be used to support the power system and simulating power markets over the Western Electric Coordinating Council interconnect in order to assess the value of EV load flexibility. Currently, Mr. Sheppard is developing analogous analytical capabilities for EVs charging for electrified fleets of autonomous ride hailing vehicles could provide substantial opportunities for load flexibility in the near future.

This seminar is webcast live to a worldwide audience by **ASU Engineering – Global Outreach and Extended Education (GOEE)**. To access the live webcast and archive of previous seminar recordings, please visit: <http://links.asu.edu/ASU-Transportation-Seminar>

Light refreshments will be served. Event is open to the public.



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