

Transportation Engineering Seminar Series

Optimizing the Location of Electric Vehicle Charging Stations

Presentation Abstract

Emissions resulting from vehicles are causing a problem to the public health. Countries need to start planning and encouraging the use of electric vehicles (EVs). The charging stations need to be planned to meet the changing needs of electric vehicles. The minimum number of charging stations need to be placed in various locations so that can serve the maximum number of EVs, without significant delays.

In this research, the simulation software DYNASMART (Dynamic Network Assignment Simulation for Road Telematics) was utilized to simulate different percentages of electric vehicles within the traffic stream. The modifications to DYNASMART include the simulation of EVs and its parameters, including the consumption rate, state of charge, and the charging rate, for each vehicle code to track the battery charge level. For the components, a subroutine to select a charging station. Also, the operations within the charging station were added. Additionally, an optimization model was developed to optimize the location of EVs charging stations. The problem considers predefined m possible locations of the charging stations. The optimization procedure will determine the best location for a set of n charging stations ($n \leq m$). The objective function of this model includes decision variables such as waiting at and travel time to the charging station and number of stations. Also, solution procedures were developed to solve the proposed model. The solution procedure was tested under different traffic conditions and different EVs percentage in the traffic flow.

About the Speaker



Akmal Abdelfatah is a Professor of Civil Engineering at the American University of Sharjah (AUS), United Arab Emirates. He has a Ph.D. degree in Civil Engineering from the University of Texas at Austin. He has worked as a transportation planning and traffic engineering researcher /consultant on many projects in the Middle East and the United States. His research interests are focused on transportation systems electrification, dynamic traffic assignment, transportation planning, traffic operations, and ITS applications. He supervised several Master theses in the Civil Engineering, Urban Planning, and Engineering Systems Management programs at AUS. He also supervised PhD students in the Engineering Systems Management Program at AUS. He serves as an editor in-Chief, associate editor, and editorial board member for international journals. He also chaired five international conferences in the field of Civil Engineering.

Please join us in person:

Friday, September 11, 2026

10:50 - 11:50 AM Central Time

Kiewit Hall (KH) Room A510, Lincoln

Peter Kiewit Institute (PKI) Room 160,
Omaha (remote)

External guests may join via Zoom:

Connect at: <https://unl.zoom.us/j/93635821617>

All participants will earn 1 Professional Development Hour (PDH). Seminar attendees will receive both the flyer and the presentation slides as documentation. These materials satisfy the recordkeeping requirements of the Nebraska Board of Engineers & Architects for CE credit. Note: If you attended the seminar but did not receive a confirmation email with supporting documentation for your continuing education credit by the following Monday, contact Dr. Nathan Huynh at nathan.huynh@nebraska.edu.

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