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| UTC Project Information |
| Project Title | Development of an Emission-based Selection Algorithm to Optimize Variable Message Signs Location |
| University | Texas A&M Transportation Institute |
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| Funding Source(s) and Amounts Provided (by each agency or organization) | Center for Advancing Research in Transportation Emissions, Energy, and Health (CARTEEH): $83,160 |
| Total Project Cost | $83,160 |
| Agency ID or Contract Number | 69A3551747128 |
| Start and End Dates | 09/01/2019 – 08/31/2020 |
| Brief Description of Research Project | Variable message sign (VMS) is a key component of intelligent transportation system (ITS) technologies, and more specifically, a real-time traveler information tool. Estimated travel time on freeways, corridor congestions, construction and maintenance schedules, special events instructions, and incident notifications can be conveyed through VMS. Previously, it was indicated that the highest performance gain and emission saving occur when the VMS locations are wisely selected. Therefore, this project will introduce and develop a transferable bi-level emission-based algorithm to select the optimal VMS locations within a network, which assures the environmental benefits in large-scale as well as saving money and time on finding the optimal locations. The integration of non-recurring congestion data into a simulation-based emission optimization algorithm and life-cycle cost analysis for the selection of optimal VMS locations are the unique features of this platform. The developed platform will finally be applied and tested in El Paso, Texas, and can benefit transportation agencies by facilitating the selection of optimal VMS locations, improving regional air quality, and reducing operational costs. |
| Describe Implementation of Research Outcomes (or why not implemented)Place Any Photos Here | * The first part of the study will generate a lane closure probability for El Paso, Texas, which can be directly implemented for mobility studies and safety research.
* The developed optimization algorithm will be tested on the El Paso network as well as guaranteed transferability to other cities.
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| Impacts/Benefits of Implementation (actual, not anticipated) | * A facilitated tool for planning agencies to find the next optimal locations for VMS installation
* Regional emission saving and air quality improvement
* Reduced overall life-cycle cost of by finding the optimal VMS locations
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| Web Links* Reports
* Project website
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