



Research Project Statement 20-257 FY 2019 Annual Program

Title:	Assessing the Value of Next-Generation Scenario Planning for Emerging Transportation Technologies
The Problem:	<p>Emerging vehicle technologies for connected, automated, and electric vehicles are rapidly maturing in testing and early market release. Mobility services such as microtransit, dockless mobility devices, and ridehailing are also beginning to earn enough market shares to be considered distinct new modes of transportation. Each of these technologies and services are very likely to impact where people choose to live and work, how and with whom they choose to commute, and the variety of activities and opportunities they choose to or are able to access. These technologies will impact traffic demand and congestion, and strategic planning to anticipate and leverage their impacts can lessen or eliminate the need to add physical capacity to the Texas transportation system. Because there is much uncertainty around these emerging transportation modes, traditional transportation and land use planning paradigms are not suited to model the impacts they may have. Uncertainty not only exists in terms of transport services and consumer trends, but also in terms of the social and economic environment in which cities operate.</p> <p>Most traditional planning methods seek to (a) reduce uncertainty by requiring agreement on assumptions about the current and future conditions under which a plan must perform, and (b) analyze the decision options. Transportation planners would first characterize the future population shifts, urban form, economic growth, and other factors that affect travel demand, estimate the most likely future given the assumptions that were adopted, and identify near-term policy actions that would maximize the likelihood of the desired outcomes. Transportation planners would then evaluate the merits of various plans or investment choices; e.g., highway capacity expansion and increased transit, under these assumptions. A sensitivity analysis could help assess how much influence each assumption has on the outcome. When faced with deep uncertainty about the impacts of emerging technologies, these traditional processes are vulnerable to bias and gridlock.</p> <p>Many important assumptions are buried in models, making it difficult for decision makers to understand and assess potentially critical assumptions on which their decisions hinge. Many factors are difficult, if not impossible, to predict. Sensitivity analyses are often not sufficient for exploring the full range of plausible assumptions and future conditions. A significant need exists for understanding the future impacts of the emerging vehicle technologies. In order to achieve this, a new, dynamic approach to transportation planning should be implemented to complement existing modeling approaches if transportation program dollars are to be spent wisely.</p>
Technical Objectives:	<p>This research project will assess the feasibility of scenario planning for future transportation systems and develop scenarios relevant to Texas.</p> <p>The researchers shall develop a framework developing these strategies through the following steps:</p> <ol style="list-style-type: none"> 1. Identify current mobility trends and assess their probabilities of impact. 2. Determine the social and economic factors and technologies that could substantially influence travel, to be included within the scenarios. 3. Elicit projections on the influencing factors in workshops of subject matter experts and develop scenarios by distinguishing clusters of consistent projections across the influencing factors. 4. Write narrative descriptions of the scenarios. 5. Consider the impacts and challenges of each scenario. 6. Develop a toolkit of strategies that will create the flexibility for a public agency to respond to any scenario. <p>The expectation of this project is that the end product will obtain a TRL level 3.</p>
Desired Deliverables:	<ol style="list-style-type: none"> 1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the final research report. 4. Research report documenting the findings of the research, including a menu of policy and planning strategies identifying how these policies play out across the scenarios. The research report will also outline the process for incorporating scenarios into the long-range planning process. 5. Project Summary Report.



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Proposal Requirements:	<ol style="list-style-type: none">1. Utilize the "Proj/Agre" and "PA_Form" templates located at the TxDOT RTI website.2. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in RTI's University Handbook, which is also located at the RTI website.3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation.4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.
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