

<b>UTC Project Information</b>	
Project Title	MPC-679 – Framework of Adaptive Intersection Traffic Control Strategy for Urban Traffic Network Subjected to Disruptions
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT, Office of the Assistant Secretary for Research and Technology \$55,000  Colorado State University \$55,000
Total Project Cost	\$110,000
Agency ID or Contract Number	69A3551747108
Start and End Dates	December 17, 2021 to July 31, 2024
Brief Description of Research Project	<p>For urban communities, congestion at traffic network poses serious societal and economical threats. In recent years, various advanced traffic control strategies, including ITS-based signal control plans, have been developed to mitigate the urban congestion. However, most of existing studies are limited to recurrent congestions at normal driving conditions or single intersection optimization during incidents. Urban traffic network experiences complex disruptions due to traffic crashes and adverse weather events, under which the induced congestion and deteriorated traffic performance become hard to be assessed or predicted. As a result, traditional traffic control strategy at intersections do not meet the needs by offering optimal and timely mitigation results which are adaptive to specific disruptions. Moreover, single-intersection strategy may not offer the best solution for the whole urban traffic network and some adaptive strategies which can handle the needs at different spatial and temporal scales are desired.</p> <p>This study will develop a new traffic performance assessment and adaptive traffic control strategy framework which is adaptive to specific disruptions and offers multiple optimization plan for both single intersections and the whole network. The proposed framework, once developed, will help building safer and more efficient urban traffic network and more resilient transportation against various disruptions from hazards.</p>

<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>The research results have been published and shared with peers and stakeholders for possible implementation in the future.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>The new adaptive traffic signal strategy integrates dynamic phase selection (DPS) and queue length dissipation (QLD) for disrupted scenarios with incidents at a single intersection DPS technique is applied to skip unused phases during the incident period to avoid time waste, which may not only shorten the queue lengths at the impacted approaches, but also improve the intersection overall traffic performance. The proposed DPS+QLD traffic signal design plan aims to improve the resiliency of a typical intersection against disruptions caused by hazards or incidents by clearing queue faster, reducing overall traffic loss time and recover intersection mobility quickly.</p>
<p>Web Links</p> <ul style="list-style-type: none"> <li>• Reports</li> <li>• Project Website</li> </ul>	<ul style="list-style-type: none"> <li>• MPC Research Report – <a href="#">Framework of Adaptive Intersection Traffic Control Strategy for Urban Traffic Network Subjected to Disruptions</a></li> <li>• Journal Paper – <a href="#">Resilience-Based Adaptive Traffic Signal Strategy against Disruption at Single Intersection</a></li> </ul>