UTC Project Information	
Project Title	A Data Driven Safety Assessment of Various Left Turn Phasing Strategies
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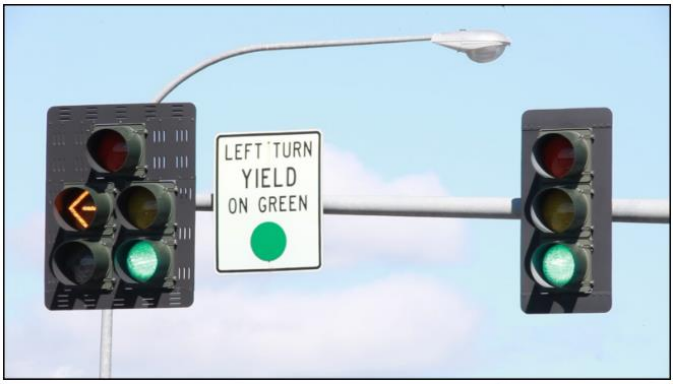
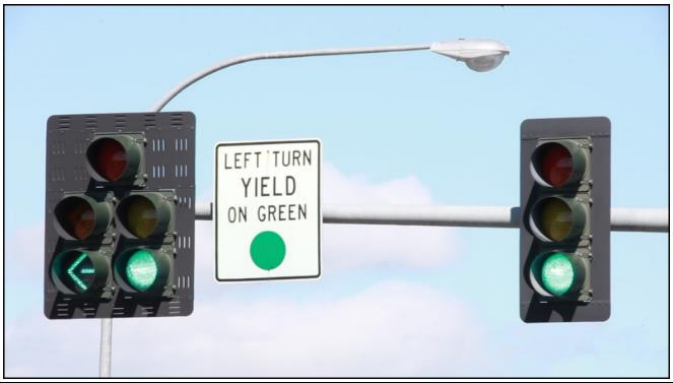
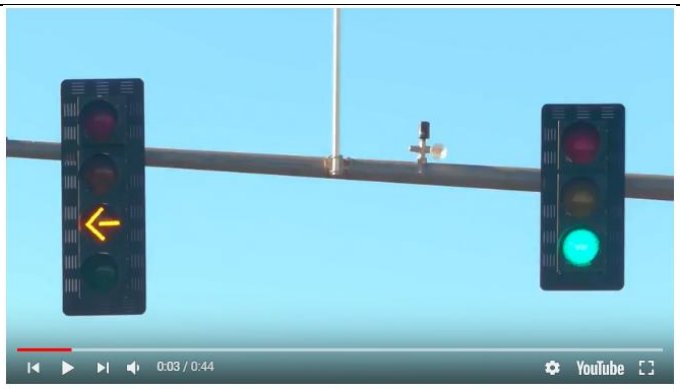
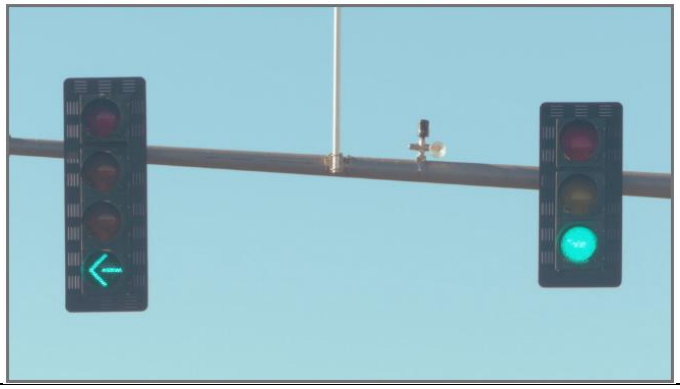
Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans $40,000 Washington State Department of Transportation $40,000
Total Project Cost	$80,000
Agency ID or Contract Number	DTRT13-G-UTC40
Start and End Dates	December 16, 2016 – January 31, 2018
Brief Description of Research Project	Protected-permissive left turn phases have potential to improve traffic operations by allowing more vehicles to complete their left turns during the permissive phase especially in off-peak hours; however, their safety is perceived to be less than protected-only left turn phases. As such, assessing the safety of protected-permissive left turn phases with FYA is needed before implementing them in the field. This research will use a data-driven methodology to assess the safety of the aforementioned signalization strategies. The results of this research will help decision makers to select a more suitable signal phasing plan/display under various operational conditions. Specific objectives are: 1-Compare the safety of protected left turns to protected-permissive left turns with FYA 2-Compare the safety of doghouse displays to four section vertical displays with Flashing Yellow Arrow (FYA) 3-Assess the safety of including FYA phases in protected-permissive left turns at different times of the day to identify if it creates driver confusion.

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The research provided safety and operational comparison of doghouse and 4-section vertical display with FYA for Washington State Department of Transportation (WSDOT). Furthermore, the research analyzed safety and operational impacts of protected only left turn and protected-permissive left turn with FYA phase plans.
	  

	 
Impacts/Benefits of Implementation (actual, or anticipated)	The proposed research has documented the safety and operational effects of different signal phasing alternatives. The outcome will support WSDOT and other transportation agencies of the Northwest region to make decisions on selecting appropriate signal phasing sequence for their specific operational conditions. Furthermore, a survey was conducted that showed driver comprehension of different left turn phases. Therefore, traffic engineers are assisted in selecting and displaying the most clear phasing sequence alternatives to drivers.
Web Links • Reports • Project Website	https://digital.lib.washington.edu/researchworks/handle/1773/43581 http://depts.washington.edu/pactrans/research/projects/a-data-driven-safety-assessment-of-various-left-turn-phasing-strategies/