

| <b>UTC Project Information</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| Project Title                                                           | Production of Renewable Diesel Fuel from Biologically Based Feedstocks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| University                                                              | University of Idaho                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Principal Investigator                                                  | Richard Wall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| PI Contact Information                                                  | E-mail: rwall@uidaho.edu;<br>Phone: (208) 885-7226                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Funding Source(s) and Amounts Provided (by each agency or organization) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Total Project Cost                                                      | \$60000.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Agency ID or Contract Number                                            | DTRT12-G-UTC10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Start and End Dates                                                     | 03/01/2012~07/31/2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Brief Description of Research Project                                   | <p>As signal timing plans and intersection infrastructure get ever more complex in attempts to reduce vehicle delays at intersections, pedestrians are confronted with pedestrian operations that are shoehorned into traffic plans designed so that pedestrians have minimal impact on the travel time for vehicles. Wide-radius right turn lanes and roundabouts have long been recognized as particularly dangerous intersection designs for pedestrians. Just as traffic controllers are programmed for customized operations at each intersection, so too must the systems that interact with pedestrians be customized to provide a consistency of expectation for operations. Without consistent expectation, pedestrians, regardless of physical capability, lose confidence in the traffic controls and eventually enter the intersection based upon their own assessment or risk. Drivers who unexpectedly find a pedestrian in the street reactively slow down thus disrupting the flow of traffic or precipitating a rear-end crash. Even worse, the situation can evolve into a vehicle-pedestrian crash. Modern accessible pedestrian systems require operations that can be easily and quickly customized to allow safe and reliable pedestrian access at signalized intersections. Without the ability to tune the pedestrian information for each intersection, pedestrians will be tempted to assume increased individual risks or are faced with confusing or conflicting directions resulting in unsafe actions. This research seeks to provide direction and alert pedestrians of potential dangers in ways that are clear and quickly comprehended. The systems are intended for use by pedestrians possessing a wide range of physical and cognitive abilities. Pedestrian buttons are no longer a simple mechanical switch that indicates to the traffic controller that someone wants to cross the street. Accessible Pedestrian Signals (APS) buttons are now verbal and vibra-tactile traffic signals. The immediate goals are: (1) Continue the development of the APS to unambiguously and accurately communicate the state of the visual traffic signals with a minimum of distraction. (2) Investigate new technologies for assisting pedestrians with limited physical and vision abilities to safely cross at signalized intersections. (3) Provide additional opportunities for intersection customization to improve safety for pedestrians at intersections. (4) Assess customization capabilities and recommend practices to help traffic agency engineers and technicians to determine when, how, and where to use the advanced customized operations.</p> |
| Describe Implementation of Research Outcomes (or why not implemented)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| Place Any Photos Here                                                                         |                                                                                                                                                                                                                                                                                                      |
| Impacts/Benefits of Implementation (actual, not anticipated)                                  |                                                                                                                                                                                                                                                                                                      |
| Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul> | Second Generation Accessible Pedestrian Systems<br><a href="http://depts.washington.edu/pactrans/wp-content/uploads/2012/12/PacTrans-16-739436-Wall-Richard-Small-Project.pdf">http://depts.washington.edu/pactrans/wp-content/uploads/2012/12/PacTrans-16-739436-Wall-Richard-Small-Project.pdf</a> |



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