

New Jersey Department of Transportation  
Bureau of Research

## Technical Brief



### Highway Repair Consolidation Feasibility

*Work Zone Coordination Spreadsheet (WCS) tool was developed for providing NJDOT with an easy-to-use tool to evaluate the feasibility and effectiveness of coordinating short and long term work zones and measure the benefits of various combinations of projects relative to each other and the status quo.*

#### Background

Faced with growing number of work zones, the challenge for transportation agencies is to effectively manage the impacts of work zones to alleviate congestion and maintain the safety of motorists without disrupting project schedules. NJDOT can benefit from enhanced strategies of coordinating and planning projects of different scales, quantify the impact of various combinations of proposed work zones within a corridor or in a specific region, and reduce the negative impact of work zones.

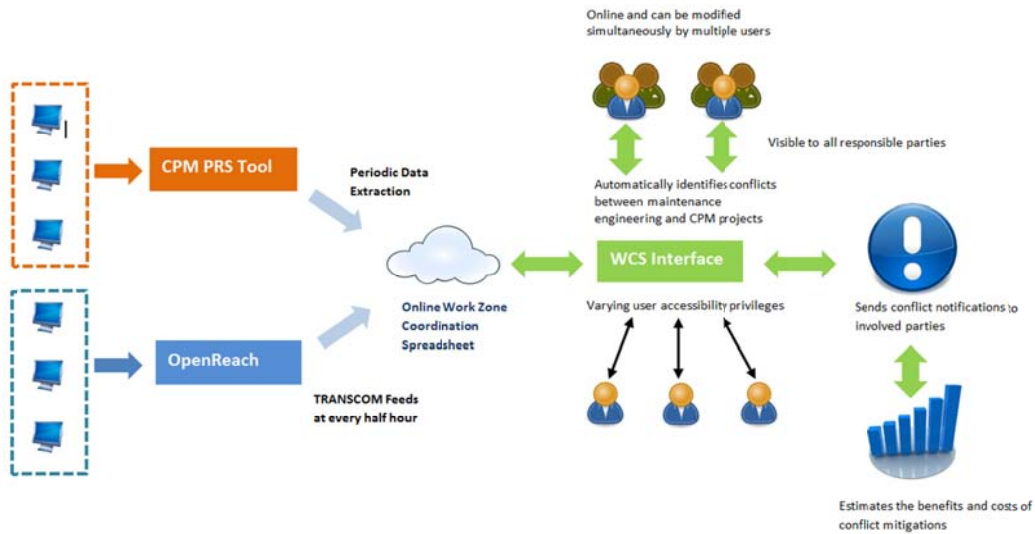
#### Research Objectives and Approach

The objective of this study is to evaluate the effectiveness of coordinating short - and long-term projects using a cost-benefit analysis tool to measure the efficiency of various combinations of projects relative to each other and the status quo. In order to realize this, we carefully reviewed the NJDOT state-of-practice via interviews with NJDOT experts. During the interviews we investigated the types of projects undertaken by NJDOT and if there are already any practice of work zone coordination on New Jersey roadways.

#### Findings

The project team, after consulting with the project panel and the NJDOT Mobility and Systems Engineering division, devised a work zone coordination framework that utilizes one common work zone database and utilize it in an online work zone coordination tool.

Work Zone Coordination Spreadsheet (WCS) tool is the backbone of the work zone coordination framework as shown below. It is implemented with a web-based interface to make it more user-friendly. This on-line tool integrates all scheduled and active construction projects from the OpenReach database and the planned CPM projects from project reporting system (PRS) database, and identifies conflicts between work zone projects and estimates the benefits of conflict mitigation. WCS tool allows user to identify work zone conflicts, alert involved parties, and conduct a benefit cost analysis of coordinating the conflicting work zones.



The four key modules of the tool are (1) Traffic Volumes, (2) Lane Closure Analysis, (3) Current Work Zone Database, and (4) Work Zone Coordination Analysis. “Lane Closure Analysis” and “Benefit Cost Analysis” modules depend on hourly volumes and link capacities. In order to determine hourly volumes on each link of NJ highways we gathered three different databases from NJDOT: ESRI shape file of NJ Straight Line Diagrams, Sensor Counts Database and Sensor Information Database.

The web-based WCS tool is operational and being tested by NJDOT. We will continue to provide technical support to the users of this tool. Future work is needed to continue the day-to-day maintenance and development of the WCS tool based on the actual experiences of its users.

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A final report is available online at: <http://www.state.nj.us/transportation/refdata/research/>  
 If you would like a copy of the full report, send an email to [Research.Bureau@dot.state.nj.us](mailto:Research.Bureau@dot.state.nj.us).

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