

## INDOT Team Helps Win National Research Award

INDOT has become renowned in the research field, whether through the agency's Research & Development (R&D) Division activities, our Traffic Management Center (TMC) practices, or our partnership with the Joint Transportation Research Program (JTRP) and Purdue University. Although some INDOT employees repeatedly have been responsible for or involved in the department's research, that doesn't mean only a core contribute to our research success.

A research paper that recently won a national award was certainly a group effort. TMC employees James Howard and Tom Platte, who previously had been involved in research but hadn't co-authored a report, were two of four INDOT employees who worked with the JTRP to produce a paper that won the 2017 Transportation Research Board (TRB) Traffic Signals Systems Committee Best Paper Award. The other two were TMC Director Jim Sturdevant and TMC Signal Systems Supervisor John McGregor.

"I am very appreciative that my management team, including Jim Sturdevant and John McGregor, thought to involve me in this project," said Platte, a TMC senior signal systems field engineer. "Being able to work with JTRP team members who went on to produce this award-winning paper was an opportunity I had always hoped would be presented to me. I thoroughly enjoyed working on this project and am looking forward to potentially being involved in future collaborations."



*Celebrating the national award includes (from left) JTRP Director Darcy Bullock, Deputy Commissioner of Operations Mike Smith, TMC Signal Systems Supervisor John McGregor, TMC Senior Traffic Systems Field Engineer James Howard, TMC Senior Signal Systems Field Engineer Tom Platte, R&D Transportation Systems Research Manager Tim Wells and TMC Director Jim Sturdevant.*

For years, Sturdevant, Traffic Engineering Director Ed Cox and others have pioneered the development of traffic-signal performance measures. They have led a multistate pooled-fund study over the past five years that relies on physical detection, such as inductive loop detectors — insulated, electrically conducting loops installed in the pavement that detect vehicles passing or arriving at a certain point. For this new paper, INDOT and JTRP investigated whether advanced telematics installed in new automobiles and the data generated could serve as replacements for in-pavement loop detectors.

Howard, a TMC senior traffic systems field engineer, said: "This research is game changing. It will allow agencies that lack mainline detection to optimize their offsets

similar to what we've been doing since the development of the Purdue Coordination Diagrams, which use loop detection.”

McGregor served as the project planner and identified the INDOT team members to participate.

“James and Tom were major assets in the research,” said McGregor. “Partaking in the research and co-authoring the paper were great ways for James and Tom to grow professionally, and I had faith that they would do a great job.”

INDOT and JTRP studied 25 signals along U.S. 36 (Pendleton Pike) in Indianapolis and State Road 37 near Greenwood. The team compared the use of physical detectors with “virtual detectors” — or probe data from connected vehicles — to synchronize traffic-signal progression. Even with very low vehicle telematics penetration of 0.09 percent to 0.8 percent, the results demonstrate that virtual detection can produce good quality offsets with current market penetration rates of probe data.

Howard coordinated field equipment upgrades on the field test on State Road 37, and Platte did the same at the U.S. 36 location. Sturdevant coordinated with JTRP on the paper concept, and all four INDOT employees co-authored the paper along with several JTRP members.

“This was a proof-of-concept project, and great results were produced whether we were recognized by TRB or not,” said Sturdevant. “The impact of this paper is that it provides evidence to both the automobile makers and public agencies on the benefits of integrating connected vehicles into their mainstream operations to reduce travel times and emissions.”