

Research Need Statement 654

I. Need Statement Champions and Information

I.A. Need Statement Champion Information

I.A.1. First and Last Name of Research Champion: Susan Zarling

I.A.2. Research Champion's Office: Traffic Engineering

I.A.3. Research Champion's Phone Number: 651-234-7052

I.A.4. Research Champion's Email: susan.zarling@state.mn.us

I.B. Research Co-Champion

I.A.1. First and Last Name of Research Co-Champion:

I.A.2. Research Co-Champion's Office:

I.A.3. Research Co-Champion's Phone Number:

I.A.4. Research Co-Champion's Email:

I.C. Research Needs Title (115 Characters):

Evaluation of static and dynamic no right turn on red signs at traffic signals

I.D. Project Sponsor: Joint MnDOT and Local Road Research Board

II. Research Need Background and Description

II.A. Research Need Background

II.A.1. Describe the problem or opportunity.

Installing no right turn on red signs has been looked at as a safety strategy for pedestrians at certain signalized intersections. At the same time, it has been noted that motorists often ignore a static no right turn on red sign. Because of this the use of a dynamic No Right Turn on Red (NRTOR) blank out sign has been implemented at various intersections. The maintenance cost of blank out signs has been high, and reliability of similar signs has been an issue. As part of determining standards for the installation of the NRTOR blank out signs we would like research to help determine where they might have the biggest impact and benefit to pedestrians and other travelers. We would also like to find out the compliance rates of the static NRTOR signs and how that compares to blank out NRTOR signs. It is felt that if the blank out signs are installed they will be a high priority maintenance need since drivers and pedestrians will become accustomed to them being there and will begin to act in certain ways depending on if they are on or not. As we continue to implement this tool, we want to be sure that we are doing so in a knowledgeable way. Other methods of reducing conflicts between right turning vehicles and pedestrians could also be evaluated for compliance, safety, and operational impacts.

II.A.2. If applicable, describe how this project will build on previous research.

II.A.3. If applicable, include the title/s or previous research.

II.A.4. What is the **objective** of the proposed research?

MnDOT is currently working on standards as to when a No Right Turn on Red blank out sign is installed. While this can be a safety benefit to pedestrians it is not useful if it is not installed in a meaningful manner or if they are not working. There have been reliability issues with similar signs in the past and before installing them widespread it is desired to know where and when they are the most effective as to not over use the sign and to not stretch maintenance crews too far. This will benefit all motorized and unmotorized road users whether State, County or City

III. Strategic Priorities, Benefits, and Expected Outcomes

Section III. is for MnDOT sponsored and co-sponsored projects only; all LRRB projects proceed to section IV.

III.A. MnDOT Strategic Priorities

Instructions: Briefly describe how the project aligns with the following MnDOT Research Strategic Priorities. Complete all that apply.

III.A.1. Innovation & Future Needs:

Research will provide better understanding of NRTOR blank out sign attributes to inform future location applications and future maintenance implications.

III.A.2. Advancing Equity:

Finding a way to better serve pedestrians at our signalized intersections in a manner that is safe and achieves driver compliance helps us advance equity at our signalized intersections.

III.A.3. Asset Management:

III.A.4. Safety:

NRTOR signs at signalized intersections can provide pedestrians with a safe path across the road. In the past drivers we have seen low compliance with static NRTOR signs. This research will help us determine if dynamic NRTOR signs achieve higher compliance and safety and help determine justification as to when these signs should be installed.

III.A.5 Climate Change & Environment:

NRTOR signs require a vehicle to sit at a red light until the indication has changed to red. This causes more idling at intersections than may be needed. If used a dynamic NRTOR sign would require a vehicle to stay stopped at the intersection when pedestrians are present and the walk sign is on, but when no pedestrians are present the vehicle would be able to proceed with the turn on red.

III.B. Expected Outcomes

Instructions: Check all expected direct outcomes of this research.

- New or improved technical standard, plan, or specification
- New or improved manual, handbook, guidelines, or training
- New or improved policy, rules, or regulations
- New or improved business practices, procedure, or process
- New or improved tool or equipment
- New or improved decision support tool, simulation, or model/algorithm (software)
- Evaluation of a new commercial product
- New or improved technical standard, plan, or specification
- Other. Please specify below:

III.C. Expected Benefits

Instructions: Select all expected benefits that may be realized if the findings and recommendations from this research is adopted or implemented

III.C.1. Construction Savings Choose an item.

III.C.2. Decrease Engineering/Administrative Costs Choose an item.

III.C.3. Environmental Aspects Air Pollution

Research will help develop a method to inform drivers when they must stay stopped at an intersection to allow for a pedestrian to cross, but it also provides a means for not requiring the vehicle to idle through the entire red light cycle every time as a static sign would.

III.C.4. MnDOT Policy Choose an item.

III.C.5. Lifecycle Choose an item.

III.C.6. Operations and Maintenance Savings Other operational and maintenance savings.

Please describe below.

Research will inform MnDOT application guidelines for the use of NRTOR signs.

III.C.7. Reduce Risk Choose an item.

III.C.8. Reduce Road User Cost Reduced travel time

III.C.9. Safety Other safety benefit. Please describe below.

Better informed applications will result in overall safety benefits to users.

III.C.10. Technology Choose an item.

III.C.11. Other, please describe below:

IV. Technical Advisory Panel

Instructions: Please list the name and affiliation of individuals to consider for the Technical Advisory Panel.

MnDOT OTE Ped and Bike Engineer – Sonja Piper

MnDOT Office of Design Support – Ped and Bike Engineer - Hannah Prichard

MnDOT Electrical Services Section – Linda Heath

MnDOT OTE – Jerry Kotzenmacher

Metro Traffic – Mike Fairbanks

District 7 – Nick Ollrich

Your assigned Project Advisor is available to answer questions and provide guidance (assigned by the Office of Research & Innovation).

Your Project Advisor is: Brent Rusco (651)366-3767 brent.rusco@state.mn.us