



## Traffic Engineering Division

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## SUMMARY OF STAFF RECOMMENDATIONS To TRANSPORTATION COMMISSION

February 23, 2021

- SHEBOYGAN AVENUE & WHITNEY WAY (#1 on list Meeting Warrant): recommend installing traffic signal with Bus Rapid Transit project.
- EAST WASHINGTON AVENUE & INDEPENDENCE LANE (#2 on list Meeting Warrant): recommend installing traffic signal installation with Bus Rapid Transit project.
- NORTHPORT DRIVE & SCHOOL ROAD (#3 on list Meeting Warrant): recommend installing traffic signal.
- PACKERS AVENUE & SIXTH STREET (#2 on list Not Meeting Warrant): recommend maintaining existing stop control.
- SEGOE ROAD & SHEBOYGAN AVENUE (#4 on list Not Meeting Warrant): recommend installing traffic signal with Bus Rapid Transit project.
- EAST WASHINGTON AVENUE & MELVIN COURT & RETHKE AVENUE (#13 on list Not Meeting Warrant): recommend installing traffic signal with the Bus Rapid Transit project,
- EDGEWOOD AVENUE & MONROE STREET (#15 on list Not Meeting Warrant): recommend maintaining existing stop control and strategies along the corridor to assist in creating gaps during school start and release times.
- BLACKHAWK AVENUE & JOYCE ERDMAN PLACE & UNIVERSITY AVENUE (#23 on list Not Meeting Warrant): recommend maintaining existing stop control and geometric changes with the Safe Streets Madison program.
- MILWAUKEE STREET & N. THOMPSON DRIVE (#28 on list Not Meeting Warrant): recommend maintaining stop control and make geometric changes.
- JAMES MADISON MEMORIAL HIGH SCHOOL DRIVEWAY & MINERAL POINT ROAD (#60 on list Not Meeting Warrant): recommend maintaining existing stop control.
- SHARPSBURG DRIVE & SPRECHER ROAD & WYALUSING DRIVE (#106 on list Not Meeting Warrant): recommend maintaining existing stop control.

## **2021 TRAFFIC SIGNAL PRIORITY LIST SPECIAL STUDIES FOR TRANSPORTATION COMMISSION SELECT INTERSECTIONS**

### **Actions completed to date**

- **SHEBOYGAN AVENUE & WHITNEY WAY**  
Collected 24 hour automatic machine counts and speed data  
Review of crash history
  
- **EAST WASHINGTON AVENUE & INDEPENDENCE LANE**  
Collected 12 hour automatic machine counts and turning movement count  
Review of crash history
  
- **NORTHPORT DRIVE & SCHOOL ROAD**  
Collected 24 hour automatic machine counts and speed data  
Collected manual turning movement & pedestrian count  
Manual delay study  
Review of crash history
  
- **PACKERS AVENUE & SIXTH STREET**  
Collected 24 hour automatic machine counts and speed data  
Manual delay study  
Pedestrian & bicycle gap study  
Review of crash history
  
- **SEGOE ROAD & SHEBOYGAN AVENUE**  
Collected 24 hour automatic machine counts and speed data  
Review of crash history
  
- **EAST WASHINGTON AVENUE & MELVIN COURT & RETHKE AVENUE**  
Collected 12 hour automatic machine counts and turning movement counts  
Review of crash history
  
- **EDGEWOOD AVENUE & MONROE STREET**  
Collected 24 hour automatic machine counts and speed data  
Manual delay study  
Review of crash history
  
- **BLACKHAWK AVENUE & JOYCE ERDMAN PLACE & UNIVERSITY AVENUE**  
Collected 24 hour automatic machine counts and speed data  
Pedestrian & bicycle gap study  
Review of crash history
  
- **MILWAUKEE STREET & N. THOMPSON DRIVE**  
Collected 24 hour automatic machine counts and speed data  
Manual delay study  
Review of crash history

- **JAMES MADISON MEMORIAL HIGH SCHOOL DRIVEWAY & MINERAL POINT ROAD**  
Collected 24 hour automatic machine counts and speed data  
Collected manual turning movement count  
Manual delay study  
Review of crash history
- **SHARPSBURG DRIVE & SPRECHER ROAD & WYALUSING DRIVE**  
Collected peak hour turning movement counts  
Performed sight distance observations  
Review of crash history

## **TRAFFIC SIGNAL PRIORITY LIST COMMENTARY**

### **Sheboygan Avenue & Whitney Way (#1 on List Meeting Minimum Warrants)**

The Sheboygan Avenue & Whitney Way intersection is a 1-way stop controlled, T-intersection. This intersection is located approximately 340 feet south of the signalized intersection at Old Middleton Road & N Whitney Way and approximately 345 feet north of the un-signalized intersection at Whitney Way & Wynwood Way.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported ten (10) crashes; of which four (4) are of type considered to be correctable by traffic signal control.
- During the five-year period 2016-2021, there have been four (4) injuries.
- Three (3) of the four (4) injuries were a result of crashes typically considered correctable by traffic signal operation.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 47 percent above meeting the adopted minimum numerical volume.

#### **Special Consideration**

- The City of Madison is currently pursuing a Bus Rapid Transit (BRT) project that would make a WBLT off Sheboygan Avenue to N Whitney Way. To aide in access of N Whitney Way, it is highly anticipated that traffic signals will be evaluated as part of the larger set of improvements.

#### **Staff Recommendation**

Staff recommends installing a traffic signal in conjunction with the Bus Rapid Transit project.

### **East Washington Avenue & Independence Lane (#2 on List Meeting Minimum Warrants)**

The East Washington Avenue & Independence Lane intersection is a 2-way stop controlled intersection with thru and left turns off the side street restricted with median geometry. This intersection is located approximately 800 feet northeast of the signalized intersection at Continental Lane & Eagan Road & East Washington Avenue and approximately 900 feet southwest of the signalized intersection at East Washington Avenue & Zeier Road.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported twenty five (25) crashes; of which, none are of type considered to be correctable by traffic signal control.
  - Six (6) of the twenty five (25) crashes involved left turn and thru angle crashes which may be considered correctable by protected only left turn operation.
- During the five-year period 2016-2021, there have been six (6) injuries.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 11 percent above meeting the adopted minimum numerical volume for traffic signals when the EBLT movement is analyzed as the major side street volume.

#### **Special Consideration**

- The City of Madison is currently pursuing a Bus Rapid Transit (BRT) project that would pass through, and make a stop at this intersection with a proposed station in the west median to allow for bus center-running. To aide in pedestrian access of the median destination, it is highly anticipated that traffic signals will be evaluated as part of the larger set of improvements.

#### **Staff Recommendation**

Staff recommends installing a traffic signal in conjunction with the Bus Rapid Transit project.

### **Northport Drive & School Road (#3 on List Meeting Minimum Warrants)**

The Northport Drive & School Road intersection is a 2-way stop controlled intersection. This intersection is located approximately 1,490 feet east of the signalized intersection at Kennedy Road & Northport Drive and approximately 3,560 feet west of the signalized intersection at Northport Drive & Troy Drive.

There is currently a Rectangular Rapid Flashing Beacon (RRFB) at this intersection, however was not yet installed during the time of any observations.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported twenty one (21) crashes; of which, nine (9) are of type considered to be correctable by traffic signal control.
- During the five-year period 2016-2021, there have been seven (7) injuries, of which, 3 were a result of crashes of types considered to be correctable with traffic signal operations.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 2 percent above meeting the adopted minimum numerical volume for traffic signals.
- Manual vehicle delay study indicates this intersection is 82% below meeting the minimum peak hour delay criteria per MUTCD.
- A manual pedestrian count indicates this intersection is 95% below meeting the minimum number of pedestrian crossings per hour per MUTCD.

#### **Staff Recommendation**

Staff recommends installing traffic signal.

### **Packers Avenue & N. 6<sup>th</sup> Street (#2 on List)**

The Packers Avenue & N. 6<sup>th</sup> Street intersection is a 2-way stop controlled intersection located approximately 1,500 feet south of the signalized intersection at Packers Avenue & Commercial Avenue, and approximately 2,150 feet north of the un-signalized intersection at Packers Avenue & N. 3<sup>rd</sup> Street. The right turn movement off SB Pennsylvania Avenue to SB Packers Avenue is not at the intersection, however was counted as right turns at the intersection for the purposes of this study.

The intersection is currently stop controlled on the N 6<sup>th</sup> St. approaches. The median on Packers is not sufficiently wide enough to install poles for signals or signs, nor is it wide enough to be considered a safe pedestrian refuge.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported twelve (12) crashes; of which, six (6) are of type considered to be correctable by traffic signal control.
- Of the twelve (12) crashes in the previous 5 years, one (1) involved a person biking eastbound across Packers Avenue hit by a southbound driver on Packers Avenue.

#### **Application of Traffic Signal Criteria**

- During a manual gap study performed in 2019, and 2022 it was observed that approximately twenty five (25) gaps sufficient enough for a person biking to cross were observed while one (1) gap sufficient enough for a person walking across Packers Avenue was observed during a 30 minute peak period in the AM peak hour.
  - During this study, one (1) person crossed Packers Avenue on foot waiting 3 minutes before crossing.

- During a manual gap study performed in 2022 it was observed that approximately twenty six (26) gaps sufficient enough for a person biking to cross were observed while one (1) gap sufficient enough for a person walking across Packers Avenue was observed during a 60 minute observation.
- Manual vehicle delay study indicates this intersection is 88 percent below meeting the minimum vehicle-delay criteria (from 2019 study).

#### **Staff Recommendation**

Staff recommends maintaining existing stop sign control. Also recommend further study and collaboration with Metro Transit and City Planning to determine what geometric changes to the intersection would improve safety, allow for easier pedestrian & bicycle crossing while being consistent with future Metro Transit plans and potential nearby land use changes.

#### **Segoe Road & Sheboygan Avenue (#4 on List)**

The intersection of Segoe Road & Sheboygan Avenue is located approximately 410 feet south of the signalized intersection of Frey Street & Segoe Road, and 360 feet north of the signalized intersection of Sawyer Terrace & Segoe Road.

The intersection is currently a 2-way stop controlled intersection with the Sheboygan Avenue and a private driveway approaches being the stop controlled approaches.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported eight (8) crashes; of which, six (6) are of type considered to be correctable by traffic signal control.
- All reported crashes were property damage only crashes.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 51 percent below meeting the adopted minimum numerical volume for traffic signals.

#### **Special Consideration**

- The City of Madison is currently pursuing a Bus Rapid Transit (BRT) project that would pass through, and make a stop at this intersection with a proposed station on the north side of the intersection.

#### **Staff Recommendation**

Staff recommends installing traffic signal with Bus Rapid Transit project.

#### **East Washington Avenue & Melvin Court & Rethke Avenue (#13 on List)**

The East Washington Avenue & Melvin Court & Rethke Avenue intersection is a 2-way stop controlled intersection located approximately 630 feet northeast of the signalized intersection at East Washington Avenue & WB Aberg Avenue (HWY 30) Ramp and approximately 935 feet southwest of the un-signalized intersection at East Washington Avenue & Lexington Avenue.

The intersection is currently controlled by stop signs on the Rethke Avenue and Melvin Court approaches. The east pedestrian crossing of East Washington Avenue is equipped with a RRFB and continental crosswalk pavement markings.

### **Crash History**

- During the five-year period 2016-2020 there have been a reported nineteen (19) crashes; of which, six (6) are of type considered to be correctable by traffic signal control.
- During the five-year period 2016-2020, there have been eleven (11) injuries and one (1) fatality. Seven (7) of the eleven (11) injuries and the one (1) fatality occurred during crashes of types generally considered correctable by traffic signal control. This fatality represents the only crash involving vulnerable road users (pedestrians and bicyclists).
- Since the fatality on November 17<sup>th</sup>, 2016, the northeast crosswalk crossing East Washington Avenue has been equipped with a continental crossing pavement marking crossing and an RRFB. Since these changes were made, there have been no reported crashes involving people walking or biking at this intersection.

### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 28 percent below meeting the adopted minimum numerical volume for traffic signals.

### **Special Consideration**

- The City of Madison is currently pursuing a Bus Rapid Transit (BRT) project that would pass through, and make a stop at this intersection with a proposed station in the west median to allow for bus center-running. To aide in pedestrian access of the median destination, it is highly anticipated that traffic signals will be evaluated as part of the larger set of improvements.

### **Staff Recommendation**

Staff recommends installing a traffic signal in conjunction with the Bus Rapid Transit project.

### **Edgewood Avenue & Monroe Street (#15 on List)**

The intersection of Edgewood Avenue & Monroe Street is located approximately 875 feet east of the signalized intersection of Leonard Street & Monroe Street, and 760 feet east of the un-signalized intersection of S. Prospect Avenue & Monroe Street.

The intersection is currently a 2-way stop controlled intersection with the Edgewood Avenue approaches being the stop controlled approaches. This intersection is a skewed intersection where the east edge of the SB approach is in line with the west edge of the NB approach, but was considered as one intersection for the purposes of this study.

This intersection is equipped with a RRFB on the west crossing, and accompanied by a crossing guard during school start and release times.

### **Crash History**

- During the five-year period 2016-2021 there have been a reported six (6) crashes; of which, three (3) are of type considered to be correctable by traffic signal control.
- Two (2) of the six (6) crashes resulted in injury, where one (1) of the two (2) injury crashes were a result of a crash type considered to be correctable by traffic signal operation.

### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 36 percent below meeting the adopted minimum numerical volume for traffic signals.
- Manual delay study shows the delay experienced by drivers is 26% of meeting the minimum numerical delay per the MUTCD.

- Pedestrian counts indicated that during the peak hour, the intersection is 43% of the minimum crossings per hour required for this context per the MUTCD.

### **Staff Recommendation**

Staff recommends maintaining stop control and reviewing existing controls adjacent to the intersection and implementing strategies along the corridor to help create gaps for nearby side street approaches during the peak hours.

### **Blackhawk Avenue & Joyce Erdman Place & University Avenue (#23 on List)**

The intersection of Blackhawk Avenue & Joyce Erdman Place & University Avenue is located approximately 575 feet east of the un-signalized intersection of Highbury Road & University Avenue, and 770 feet west of the signalized intersection of Hill Street & Shorewood Boulevard & University Avenue.

The intersection is currently a 2-way stop controlled intersection with the Joyce Erdman Place and Blackhawk Avenue approaches being the stop controlled approaches. The intersection has a crosswalk on the west side crossing University Avenue using continental crosswalk marking design, and standard marked crosswalks for crossing the side streets.

### **Crash History**

- During the five-year period 2016-2021 there have been a reported seventeen (17) crashes; of which, six (6) are of type considered to be correctable by traffic signal control.
- During this time period, one (1) crash involving vulnerable road users; this crash is of type considered to be correctable with a traffic signal.

### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 47 percent below meeting the adopted minimum numerical volume for traffic signals.
- Pedestrian counts indicate this intersection is 89% below meeting the minimum number of pedestrian crossings per hour per MUTCD.
- During a manual gap study, it was observed that:
  - During the AM peak hour four (4) gaps were observed large enough for someone to cross completely at a 3.5 feet per second walking pace. During this time six (6) people crossed the street by accepting smaller gaps. These accepted gaps were by one direction at a time and were on average approximately 11 seconds.
  - During the AM peak the average pedestrian crossing time was 58 seconds consisting of 37 seconds of waiting time and 21 seconds of crossing time.
  - During the PM peak hour there were no gaps observed large enough for someone to cross completely at a 3.5 feet per second walking pace. During this time ten (10) people crossed the street by accepting smaller gaps. These accepted gaps were by one direction at a time and were on average approximately 14 seconds.
  - During the PM peak, the average pedestrian crossing time was 48 seconds, consisting of a 27 second wait and 21 second crossing time.
  - In both the AM and PM peak, a max waiting time of approximately 120 seconds was observed.

### **Staff Recommendation**

Staff recommends maintaining existing stop sign control, adding a concrete refuge island in the median, removing the WBRT lane to shorten the crossing distance, remove the west pedestrian crossing and replace with a diagonal pedestrian crossing from the SW to NE corners, and create curb cuts in the median to facilitate Northbound and Southbound bike movement.



### **Milwaukee Street & N. Thompson Drive (#28 on List)**

The intersection of Milwaukee Street & N. Thompson Drive is located approximately 565 feet east of the un-signalized intersection of Andrew Way & Milwaukee Street, and 2,380 feet west of the un-signalized intersection of Milky Way & Milwaukee Street.

The intersection is currently a 2-way stop controlled intersection with the N. Thompson Drive approaches being the stop controlled approaches.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported nine (9) crashes; of which, five (5) are of type considered to be correctable by traffic signal control.
- One (1) of the nine (9) crashes resulted in injury, this crash represents the only crash during this time interval that involved vulnerable road user.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 50 percent below meeting the adopted minimum numerical volume for traffic signals.
- Manual delay study indicates the intersection is 82 percent below meeting the minimum delay for side street users per MUTCD.

#### **Staff Recommendation**

Staff recommends maintaining existing stop control and pursuing geometric changes that may include, but are not limited to, bump outs. Following any geometric changes, staff recommends study for changing intersection control to all-way-stop control.

### **James Madison Memorial High School Driveway & Mineral Point Road (#60 on List)**

The James Madison Memorial High School Driveway & Mineral Point Road intersection is a 1-way stop controlled "T" intersection. This intersection is located approximately 675 feet east of the signalized intersection at Gammon Road & Mineral Point Road and approximately 820 feet west of the signalized intersection at Grand Canyon Drive & Mineral Point Road.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported thirteen (13) crashes; of which, three (3) are of type considered to be correctable by traffic signal control.
- Six (6) of the thirteen (13) crashes involved eastbound left turning drivers and westbound drivers, specifically westbound drivers in the bus & bike & right turn lane.
- During the five-year period 2016-2021, there have been seven (7) injuries, of which all resulted from eastbound left turn and westbound angle crashes.

#### **Application of Traffic Signal Criteria**

- Automatic hose counts show that this intersection is 69 percent below meeting the adopted minimum numerical volume for traffic signals.
- Manual delay study shows the side street delay at 5% of the minimum experienced delay per MUTCD.
- Crash history indicates a trend of crashes involving EBLT and WB movements.

#### **Staff Recommendation**

Staff recommends maintaining existing stop control. Staff recommends waiting until after the Bus Rapid Transit project completes as this project will move the outer Bus & Bike & Right turn lane and place it in the median. This cross section change may help address the crashes between the EBLT and WB movements.

### **Sharpsburg Drive & Sprecher Road & Wyalusing Drive (#106 on List)**

The Sharpsburg Drive & Sprecher Road & Wyalusing Drive intersection is a 2-way stop controlled intersection. This intersection is located approximately 1,080 feet north of the signalized intersection at Cottage Grove Road & Sprecher Road and approximately 1,390 feet south of the un-signalized intersection at Dominion Drive & Sprecher Road.

#### **Crash History**

- During the five-year period 2016-2021 there have been a reported eight (8) crashes; of which, four (4) are of type considered to be correctable by traffic signal control.
- Three (3) of the eight (8) crashes resulted in injury. Two (2) of these three (3) injury crashes were a result of crashes of types considered correctable by traffic signal operation.

#### **Application of Traffic Signal Criteria**

- Automatic turning movement counts were obtained during peak hours only and therefore unable to fully analyze against the traffic signal warrants.
- Side street volumes obtained during the peak hours do not indicate this intersection would meet minimum vehicular volumes per MUTCD warrants.
- Sight line observations were made which indicate a driver is able to see oncoming traffic from either direction approximately 8 seconds before the point of conflict between that approach and their movement.

#### **Staff Recommendation**

Staff recommends maintaining existing stop control.

END