

# N. Walnut St./N. Rehoboth Blvd./10th St. Intersection Study

## Council Meeting

June 13, 2023



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Study Area





# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Project Goals


- Analyze connectivity between Milford Senior High School, Milford Central Academy, and residential communities to the south
- Evaluate intersection improvements and/or road reconfigurations to improve mobility for pedestrians, cyclists and motorists
- Implement elements from the Milford Bicycle Master Plan and the Milford Comprehensive Plan



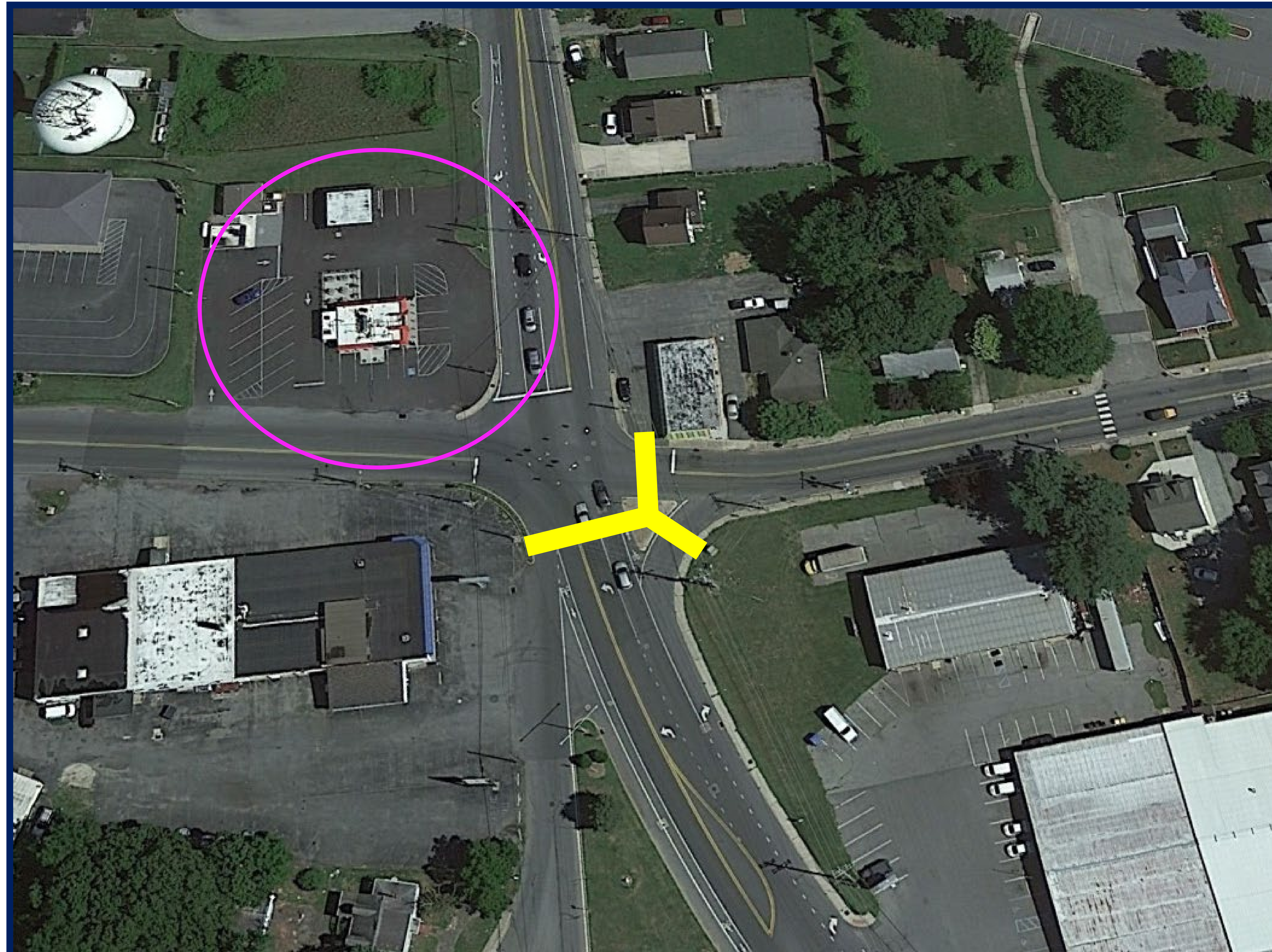
# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Milford Bicycle Master Plan Recommendations

 North/south crossing of 10th Street

 East/west crossing of N. Rehoboth Boulevard

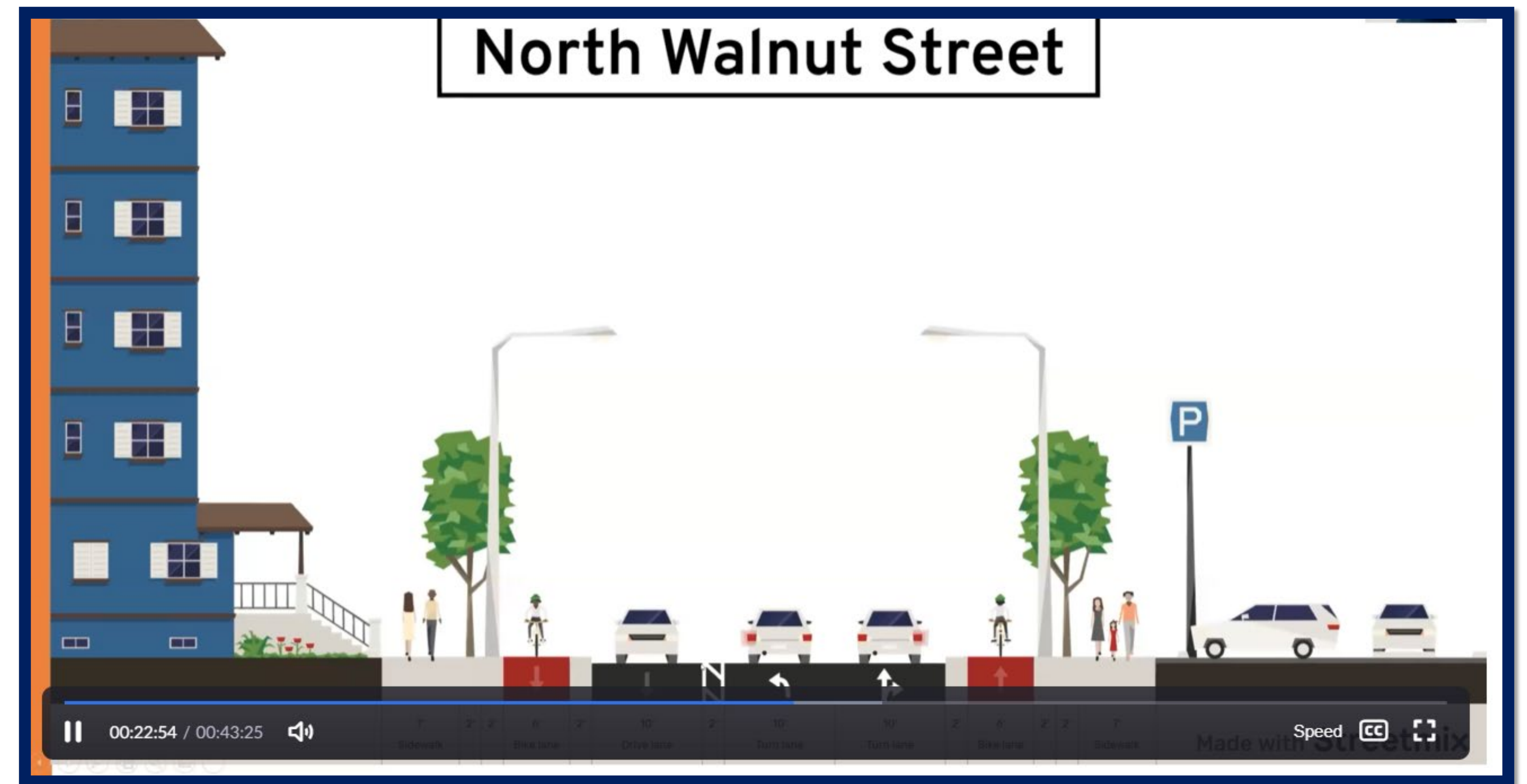
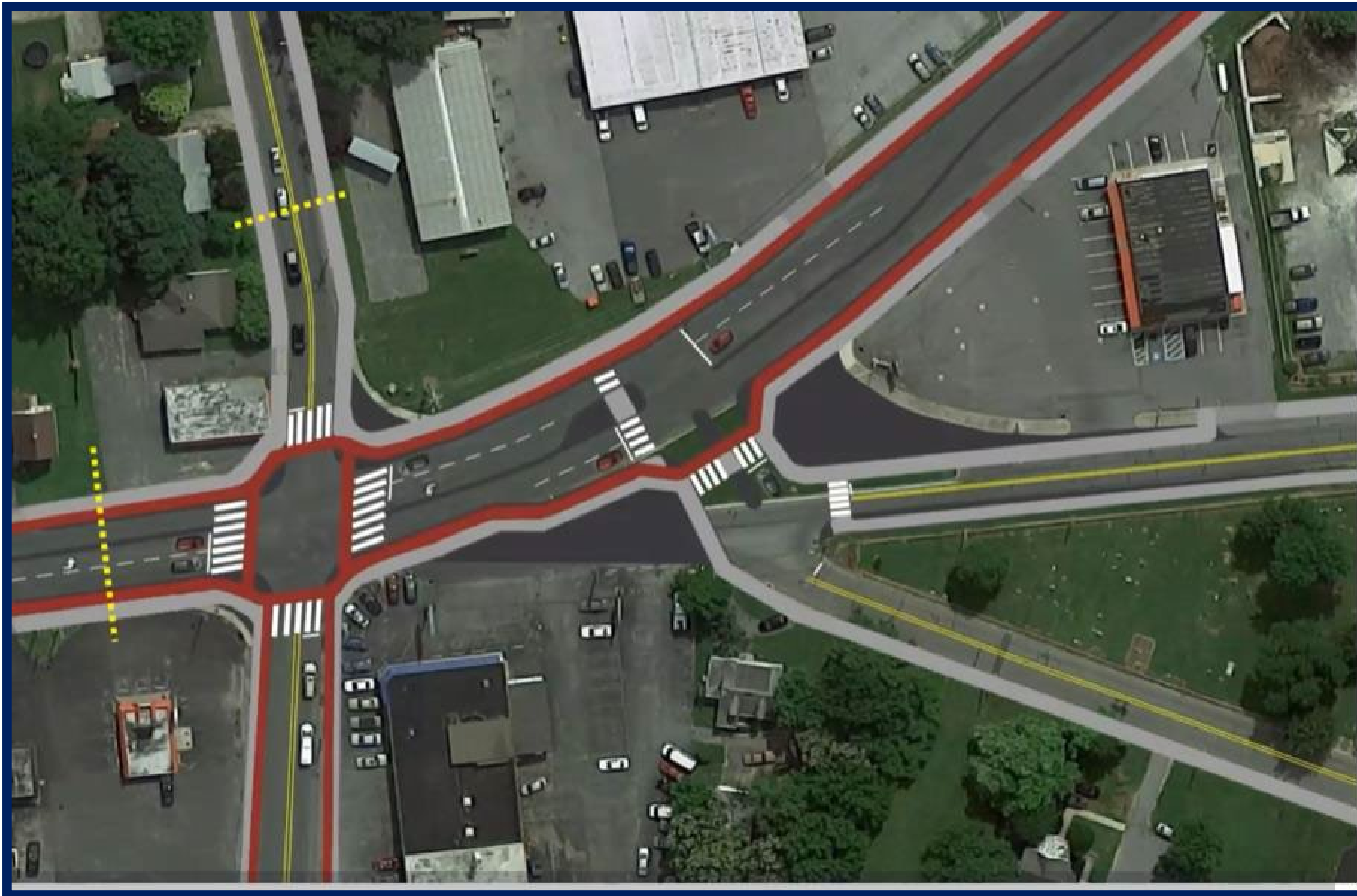
 Avoid impacts to Dairy Queen property





# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

Studied as part of Bike Delaware's  
"Day with the Dutch"

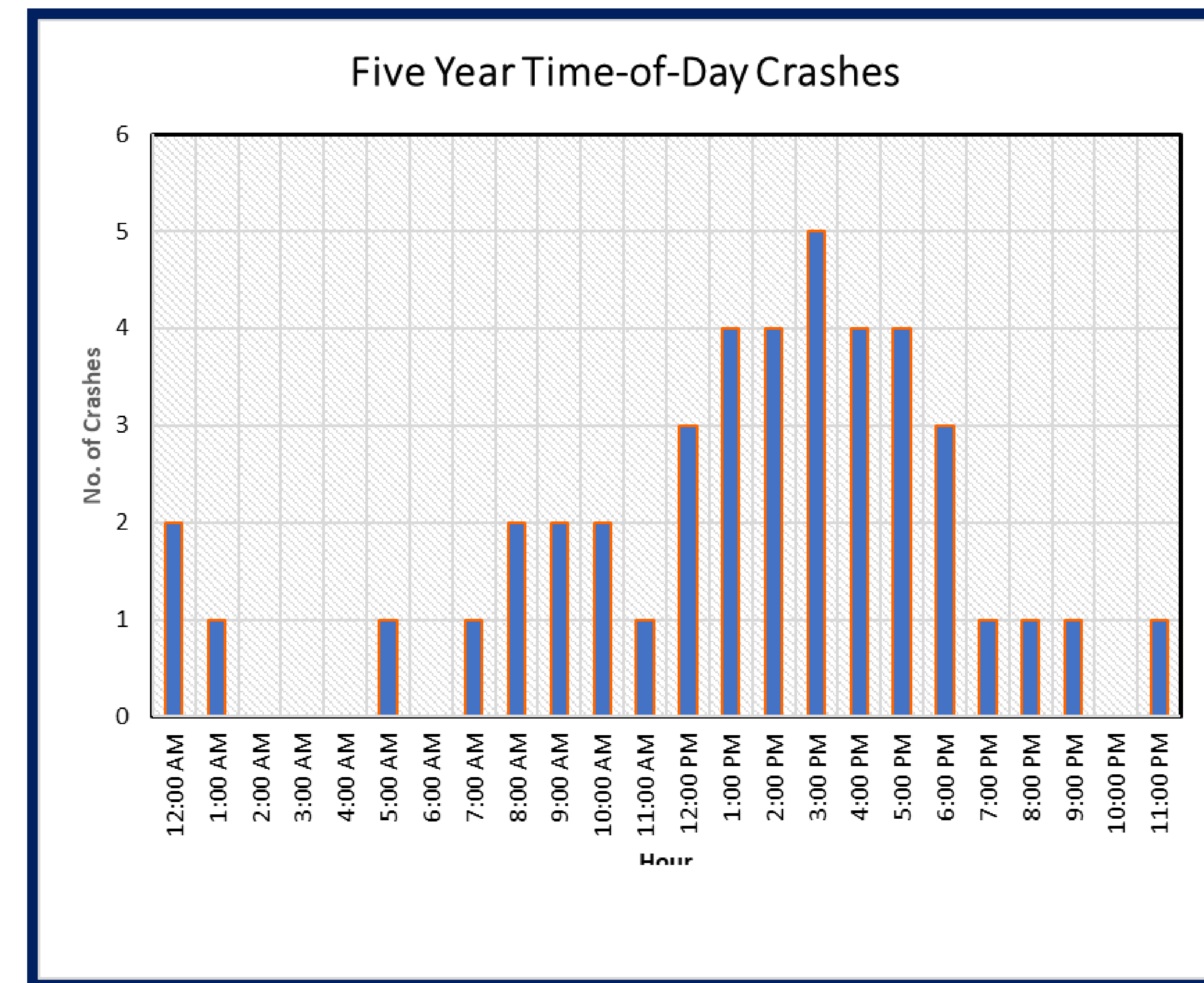
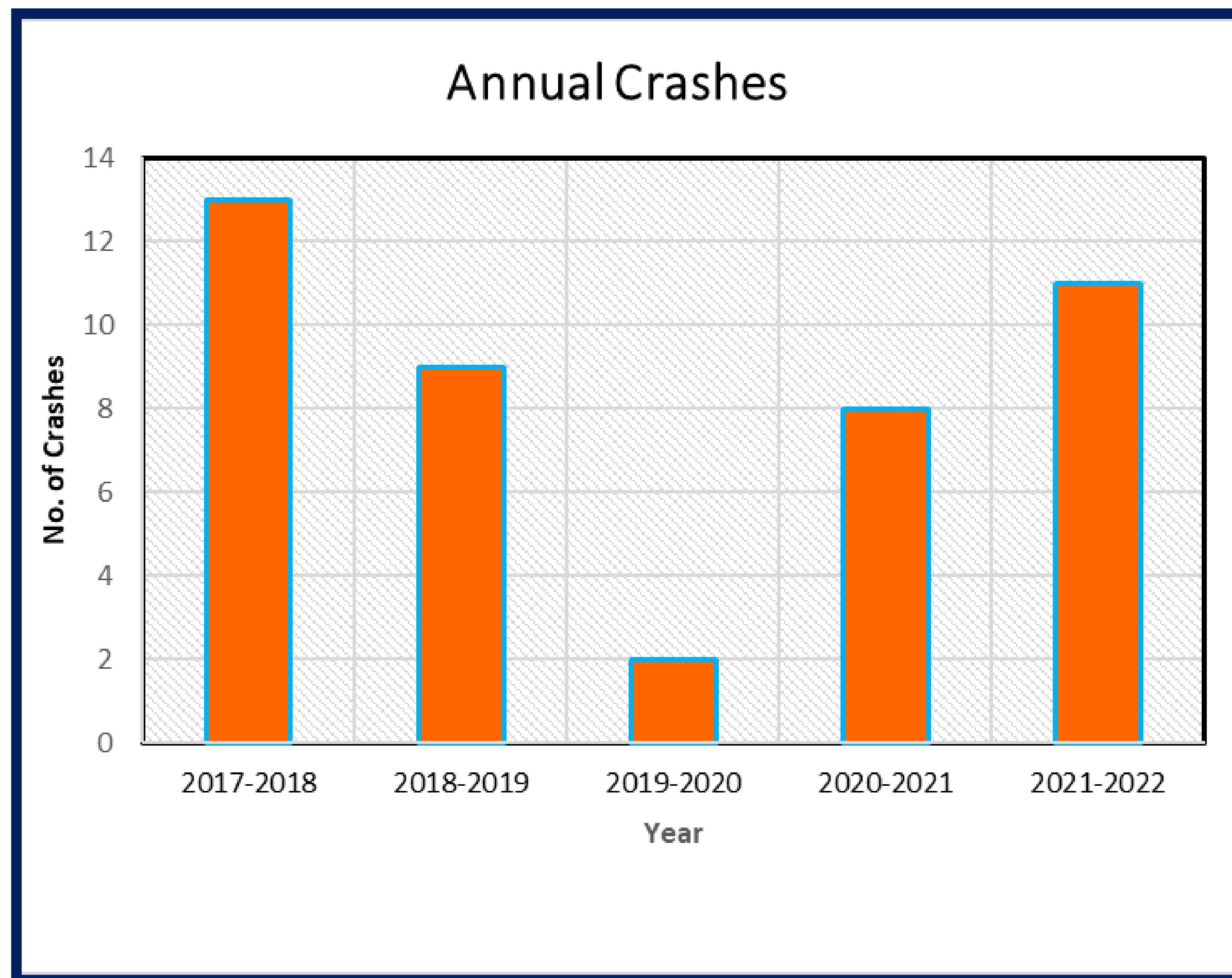




# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Existing Crash Data

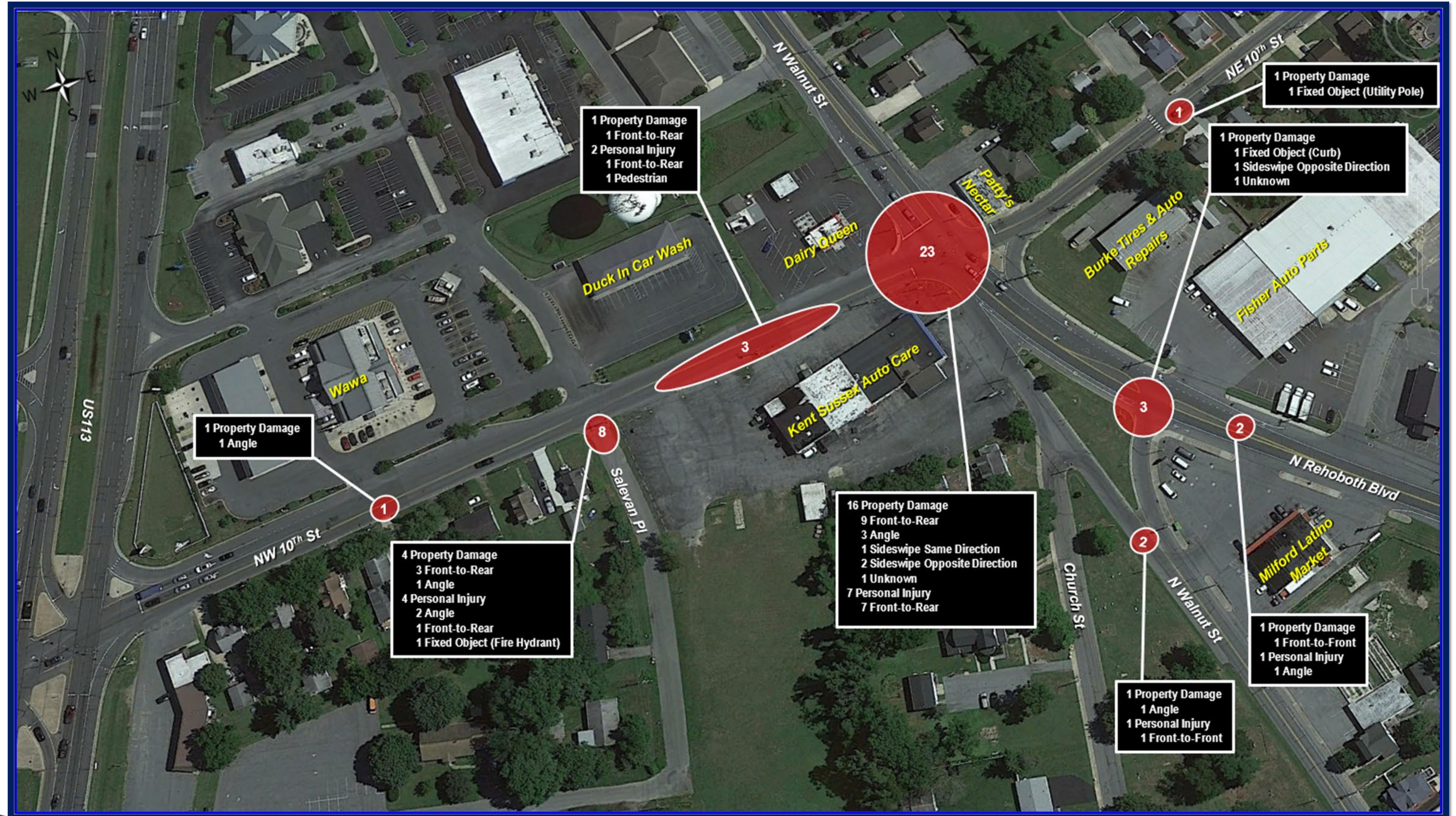
- Crash data analyzed from November 10, 2017 through November 10, 2022
- Crash data study area 0.1-mile radius from intersection
- 43 crashes occurred / 23 crashes occurred at the intersection
- No fatal crashes





# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Existing Crash Data

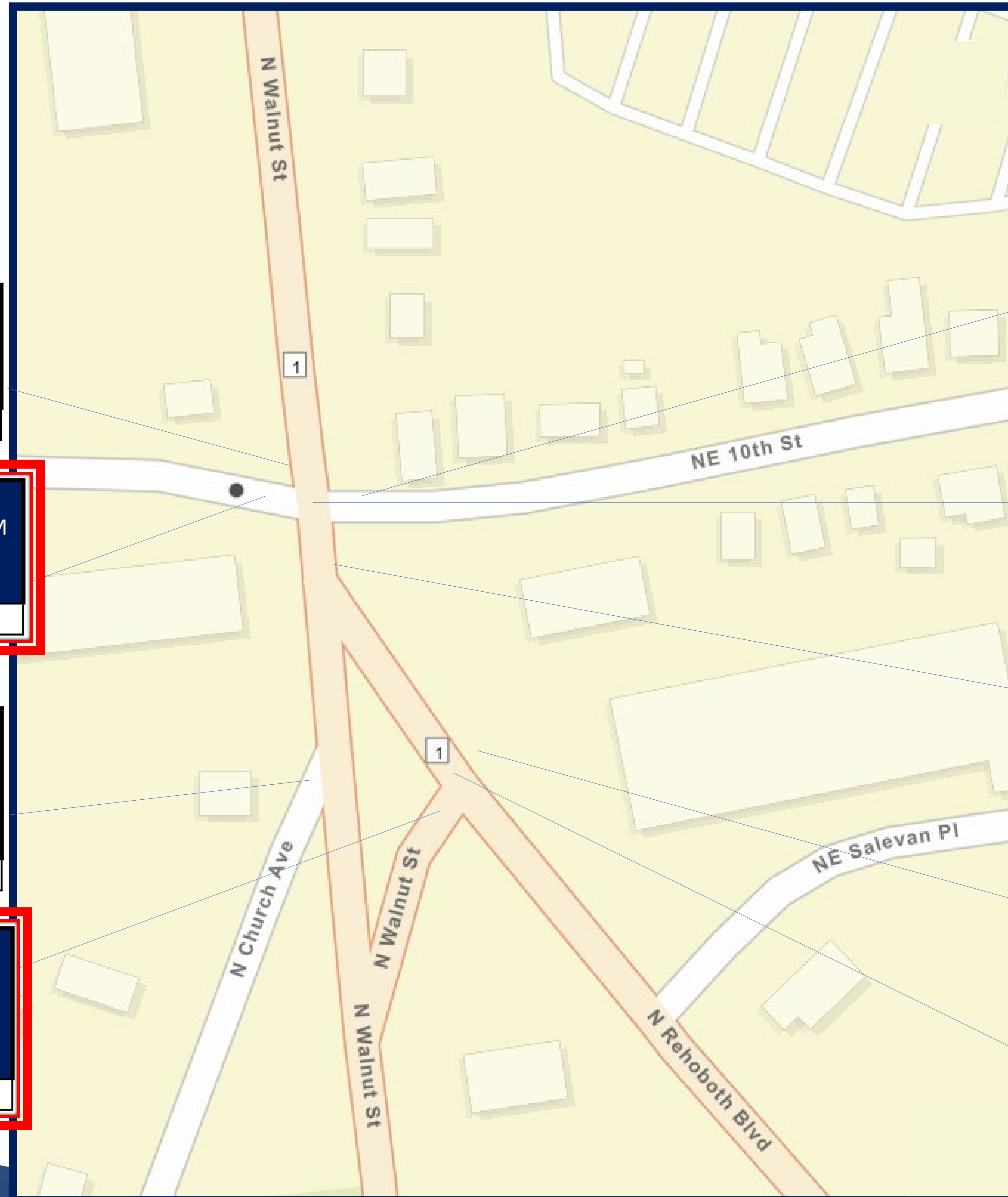




# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

Level of Service Criteria		
LOS	Delay (Seconds per Vehicle)	
	Signalized	Unsignalized
A	0 to 10	0 to 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	>80	>50

## Existing Levels of Service (LOS)



SB N. Walnut St 2022 Weekday AM Peak Hour Delay LOS <b>21.6 C</b>	SB N. Walnut St 2022 Weekday Midday Peak Hour Delay LOS <b>23.6 C</b>	SB N. Walnut St 2022 Weekday PM Peak Hour Delay LOS <b>25.7 C</b>
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EB NW 10th Street 2022 Weekday AM Peak Hour Delay LOS <b>86.3 F</b>	EB NW 10th Street 2022 Weekday Midday Peak Hour Delay LOS <b>85.1 F</b>	EB NW 10th Street 2022 Weekday PM Peak Hour Delay LOS <b>141.7 F</b>
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N. Walnut St @ Church St 2022 Weekday AM Peak Hour Delay LOS <b>9.2 A</b>	N. Walnut St @ Church St 2022 Weekday Midday Peak Hour Delay LOS <b>9.1 A</b>	N. Walnut St @ Church St 2022 Weekday PM Peak Hour Delay LOS <b>9.3 A</b>
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N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour Delay LOS <b>70.7 F</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour Delay LOS <b>42.1 E</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour Delay LOS <b>96.5 F</b>
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WB NE 10th St 2022 Weekday AM Peak Hour Delay LOS <b>24 C</b>	WB NE 10th St 2022 Weekday Midday Peak Hour Delay LOS <b>23.6 C</b>	WB NE 10th St 2022 Weekday PM Peak Hour Delay LOS <b>48.3 D</b>
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Intersection 2022 Weekday AM Peak Hour Delay LOS <b>36.5 D</b>	Intersection 2022 Weekday Midday Peak Hour Delay LOS <b>36.7 D</b>	Intersection 2022 Weekday PM Peak Hour Delay LOS <b>61.6 E</b>
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NB N. Rehoboth Blvd 2022 Weekday AM Peak Hour Delay LOS <b>12.6 B</b>	NB N. Rehoboth Blvd 2022 Weekday Midday Peak Hour Delay LOS <b>13.6 B</b>	NB N. Rehoboth Blvd 2022 Weekday PM Peak Hour Delay LOS <b>40.7 D</b>
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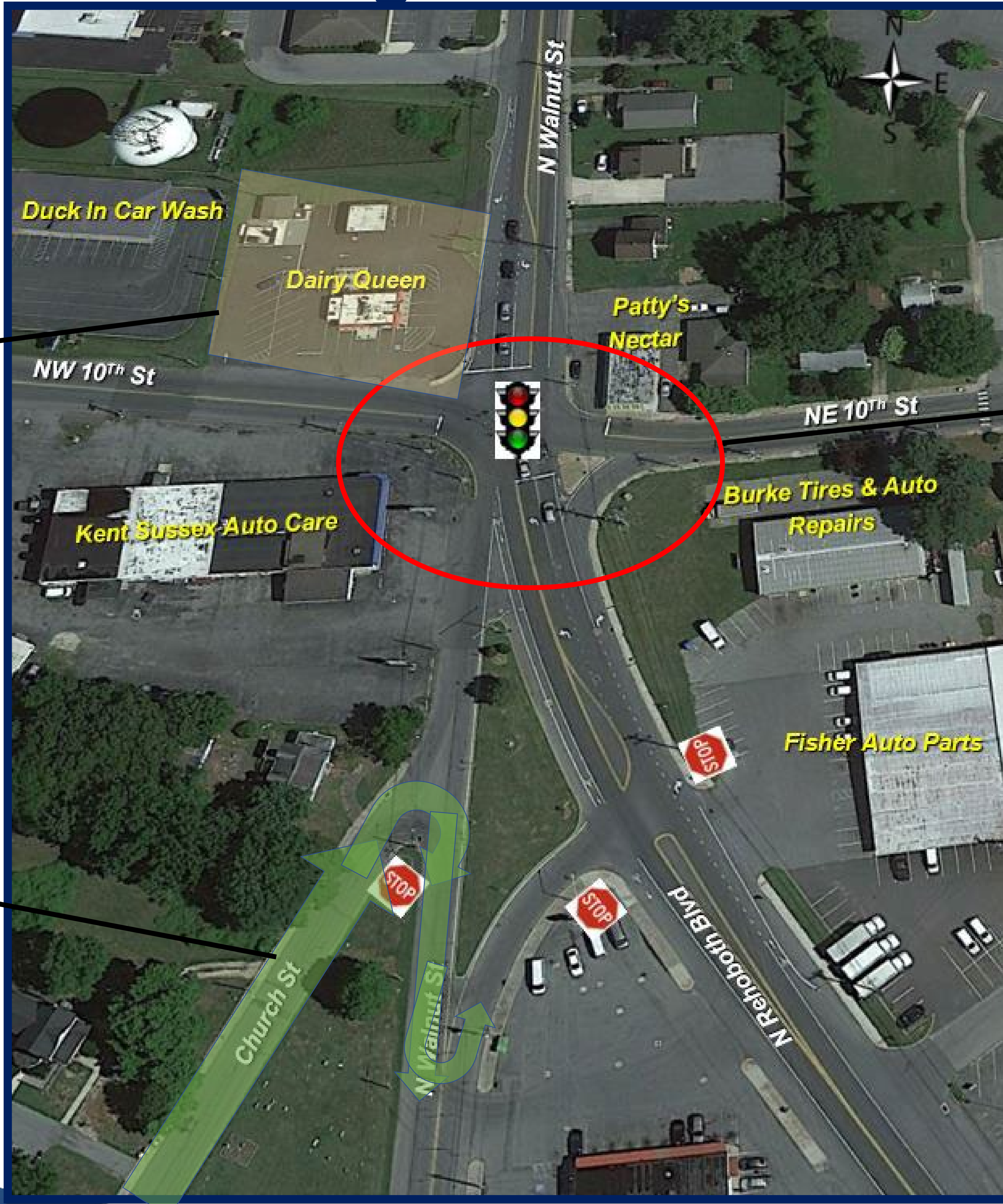
N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour Delay LOS <b>12.2 B</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour Delay LOS <b>15.3 C</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour Delay LOS <b>14.1 B</b>
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N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour Delay LOS <b>9.1 A</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour Delay LOS <b>8.3 A</b>	N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour Delay LOS <b>8.7 A</b>
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# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Existing Intersection



- Avoid Dairy Queen Property

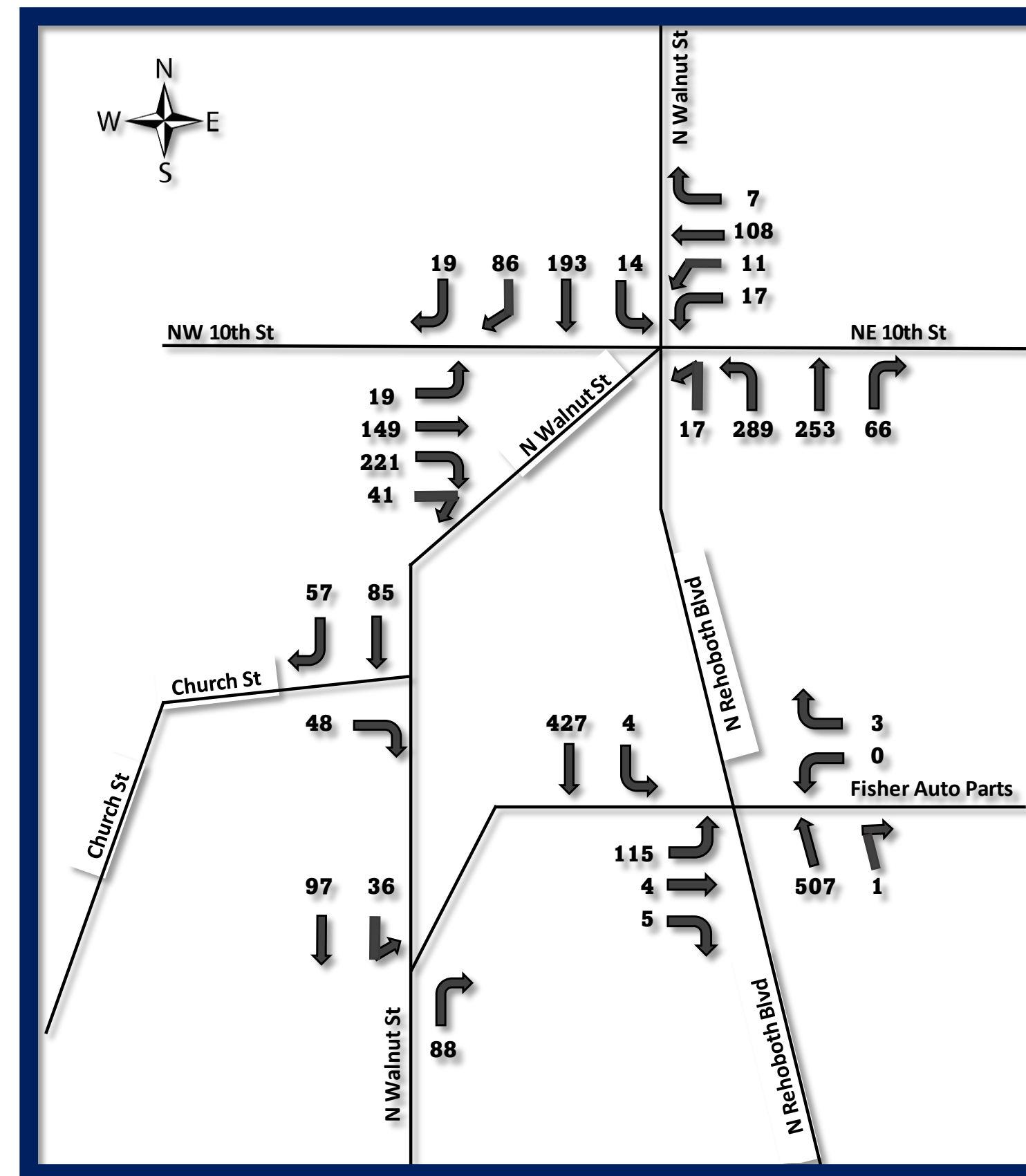
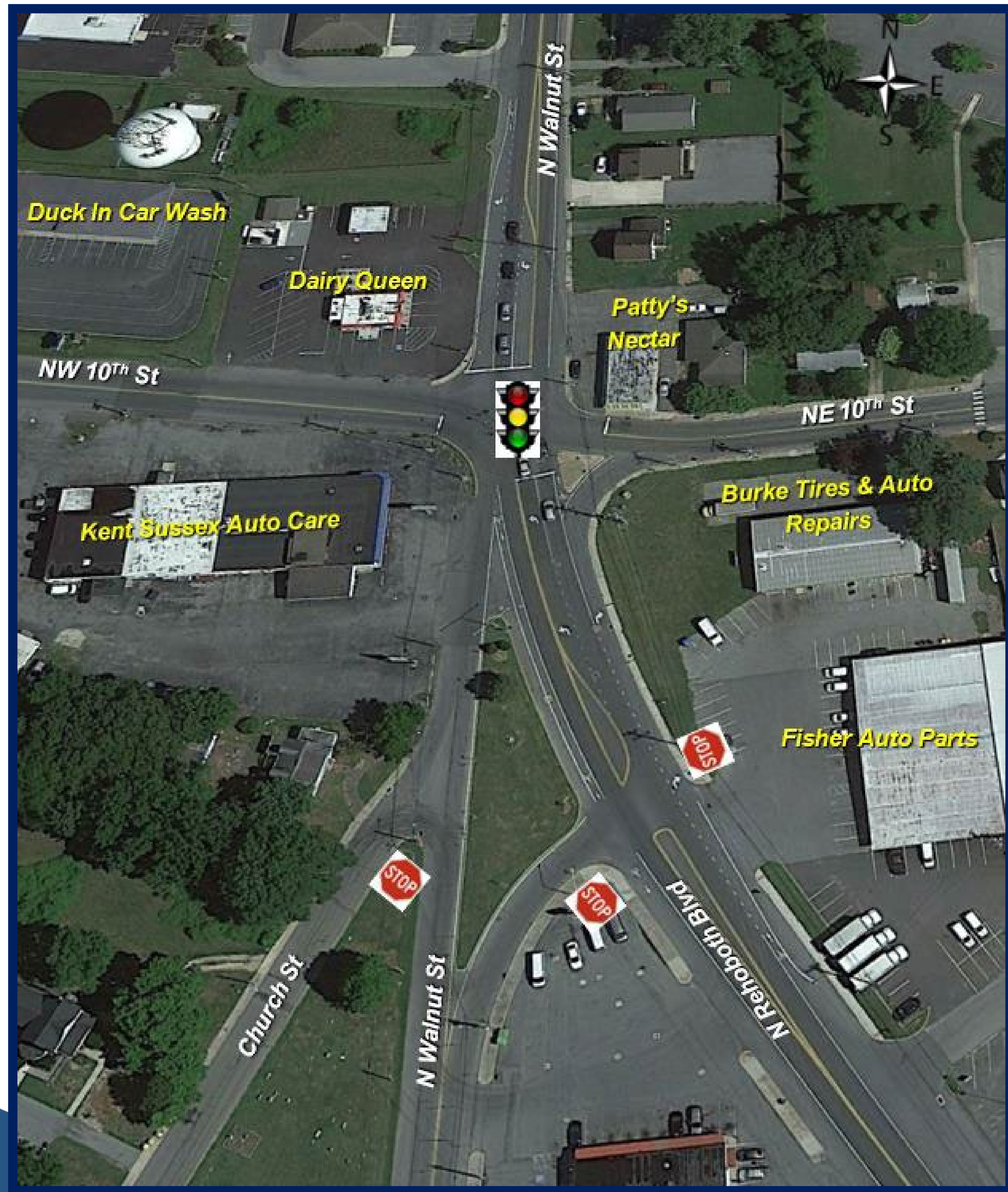
- Awkward Turning Movement

- Congestion
- Lacking Ped/Bike Infrastructure

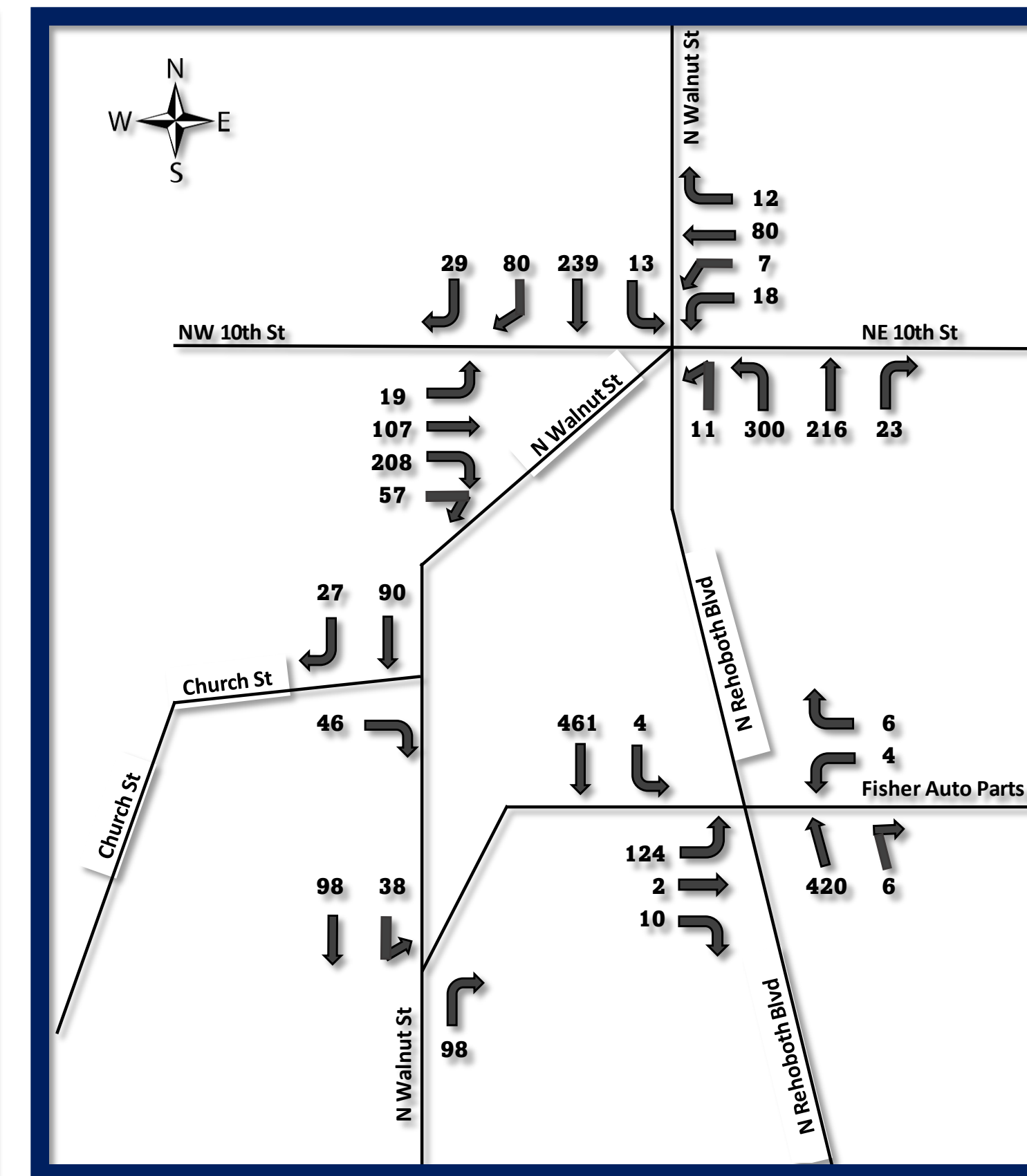


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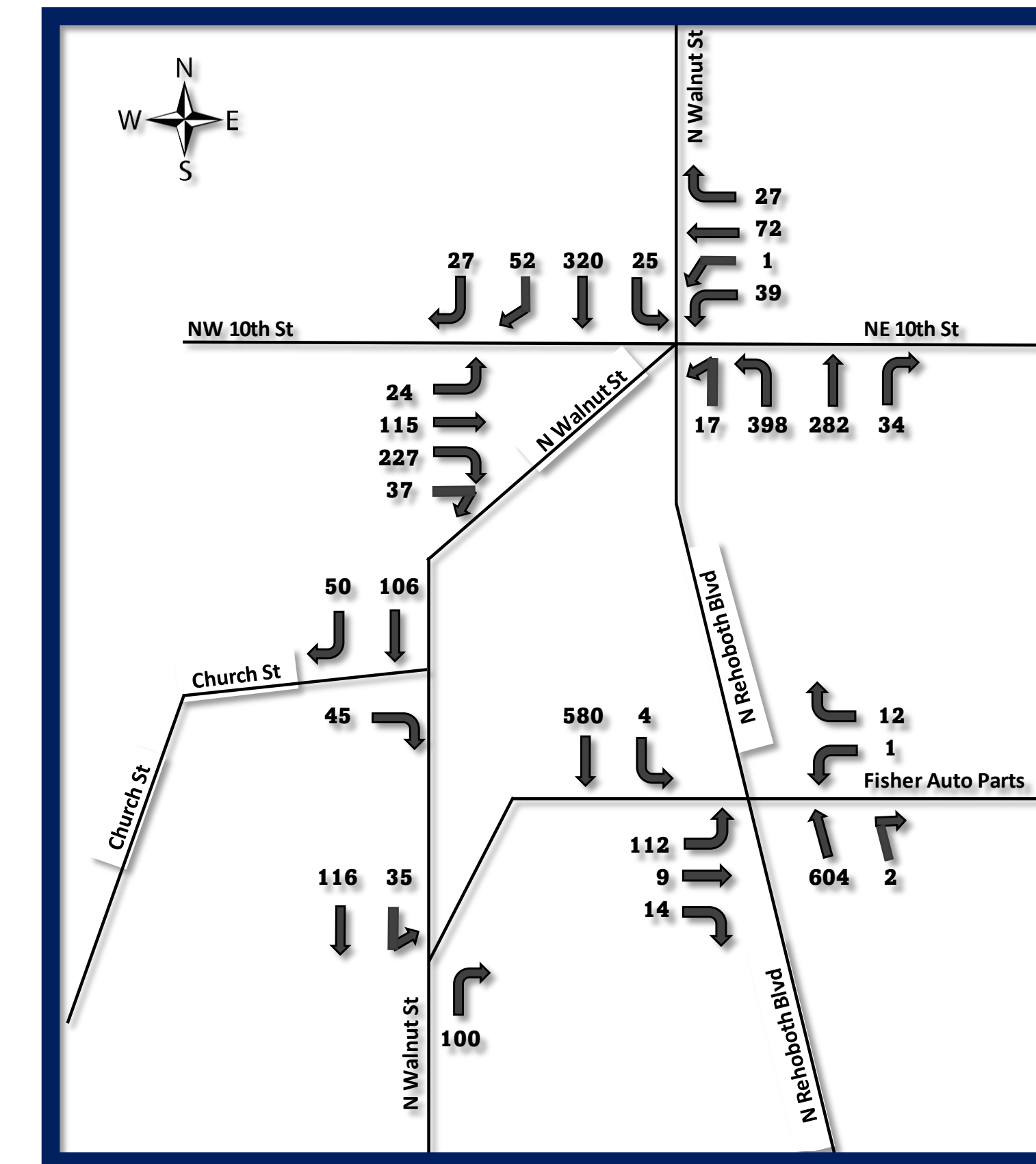
## Existing Traffic Volumes



A.M. Peak



Midday Peak



P.M. Peak



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## First Community Workshop

### ✓ December 13, 2022

- Milford Public Works Facility 6-8:00 pm
- Milford Senior High School and Milford Central Academy notified of workshop
- 17 attendees
- Comments/feedback was positive for improving this intersection
- Multiple attendees mentioned the intersection is at its worst at 2:30 when school lets out
- Key stakeholders (Meineke, Dairy Queen, and Patty's Nectars attended)



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

Design year: 2050

Initial Alternatives:

1. Traditional Intersection
2. Protected Intersection
  - a) Separates vehicles from bikes/peds
  - b) Reduces/eliminates conflict points; provides clear travel paths for bikes/peds
3. Elongated Roundabout





# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Alternatives Considered But Not Progressed

### ✓ Traditional Intersection

- Does not meet project goals

### ✓ Roundabout

- Single lane roundabout fails in Design Year 2050
- Requires a two-lane roundabout
- Does not meet project goals

### ✓ Remove Rehoboth Blvd. NB left turns using Salevan Place jug handle

- Upgrade Salevan Plan to local road standards
- Restrict left turns from N. Rehoboth Blvd onto NE 10th Street
- Conflicts with truck restrictions
- Does not meet project goals



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Modifications to Protected Intersection

- Prepared a comparison matrix for modifications:
  - a) Prohibit northbound left from Rehoboth Blvd onto NW 10<sup>th</sup> Street – LOS E (66.9 sec/vehicle)
  - b) NW 10<sup>th</sup> Street converted to one way eastbound – LOS D (40.4 seconds/vehicle)
  - c) Convert approach of Rehoboth Blvd to 10<sup>th</sup> Street to a through lane and a through/right; reconfigure southbound N. Walnut Street to one left/through/right lane to accept the new through northbound lane – LOS D (45.9 seconds/vehicle)
  - d) Convert NW 10<sup>th</sup> Street and Buccaneer St to one-way pairs LOS B (15.6 second/vehicle)



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## Sensitivity Analysis

Phase the improvements

1. Immediate - Interim Improvements
2. 2037 - Protected Intersection with all improvements except one-way pairs
3. 2050 - Convert NW 10<sup>th</sup> Street and Buccaneer street to one way pairs



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Second Community Workshop

✓ January 23, 2023

- Milford Public Works Facility 6-8:00 pm
- Advertised through City of Milford and Dover/Kent MPO
- Milford Senior High School and Milford Central Academy notified of workshop
- 17 attendees
- Overall attendees were positive toward short and long-term improvements
- Mixed review on the one-way pair



# N. Walnut St./N. Rehoboth Blvd./10<sup>TH</sup> St. Intersection Study

## Interim Improvement



- ✓ **Project Cost: \$1.14 Million**
- ✓ **Does not inc. ROW or Design Fees**



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## Protected Intersection Improvements



- ✓ Project Cost: \$3.8 Million
- ✓ Does not inc. ROW or Design Fees



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## Protect Intersection Improvement - Ultimate Phase

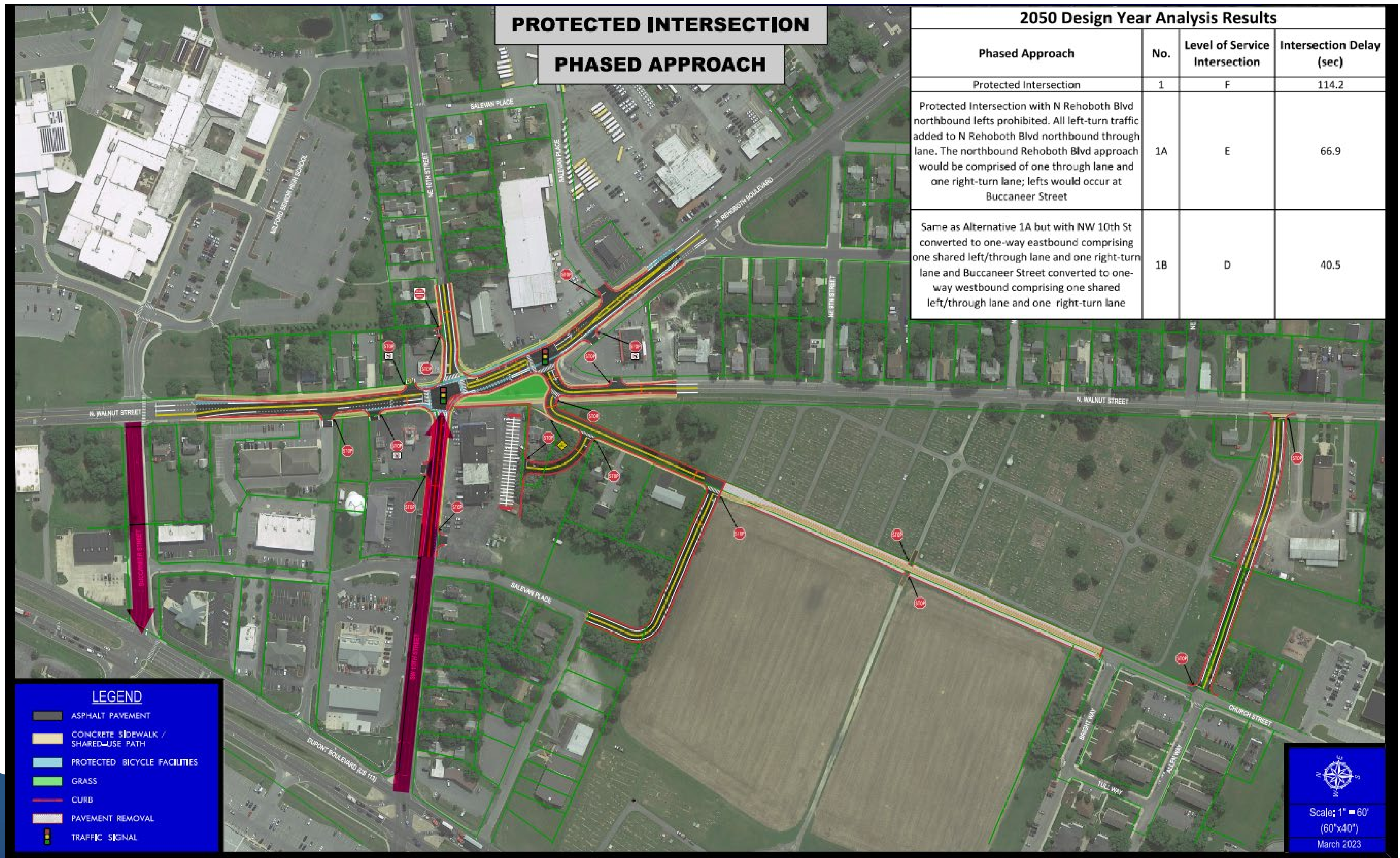


- ✓ **Project Cost: \$4.3 Million**
- ✓ **Does not inc. ROW or Design Fees**



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## Final Recommendation





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## THANK YOU!

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