7 Future (2041) Base Conditions

The 2041 base conditions consider background growth and all the planned road improvements from approved Secondary Plans and Studies discussed in the following section.

7.1 Active Transportation

Pedestrian and cyclist volumes were extracted from the City of Toronto's macro demand model (GTAModelv4) and distributed based on existing TTS patterns. There is an approximate forty (40) percent increase in pedestrian and cyclist volumes between Existing 2011 conditions (3,140) and Future 2041 Base conditions (4,388). **Figure 7-1** illustrates the increase in volumes distributed within the larger study area, while **Figure 7-2** illustrates the increase in volumes distributed within the Yorkdale Zone only.

Figure 7-1. Estimated Directional Distribution of Existing and Future 2041 Pedestrian and Cyclist Volumes Within the Larger Study Area*

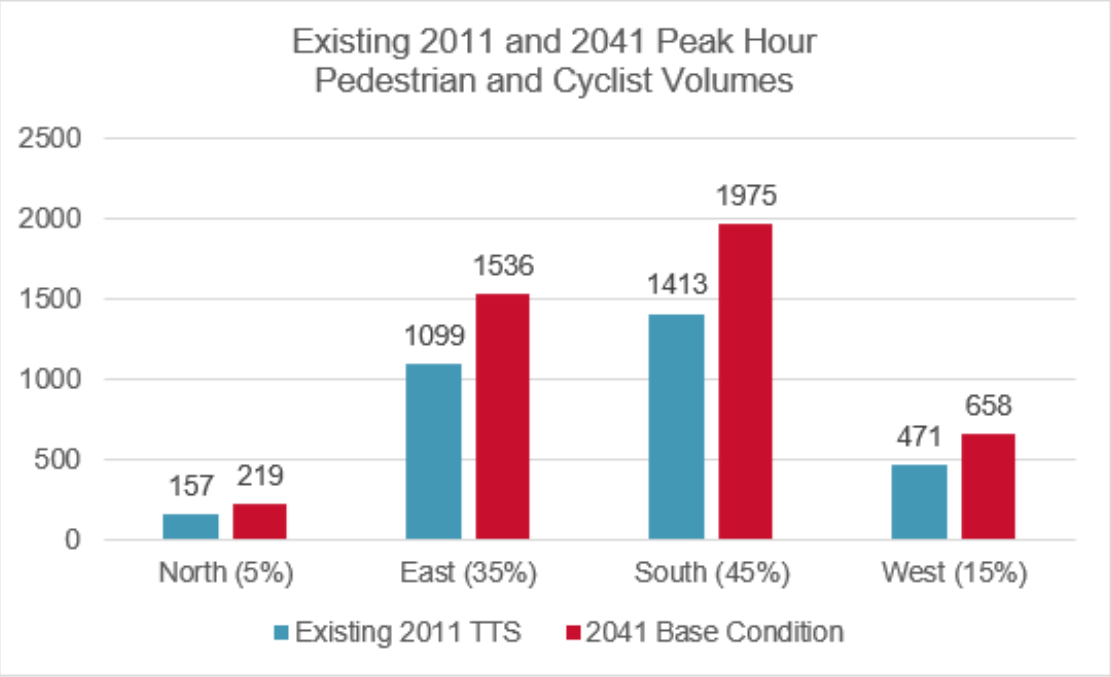
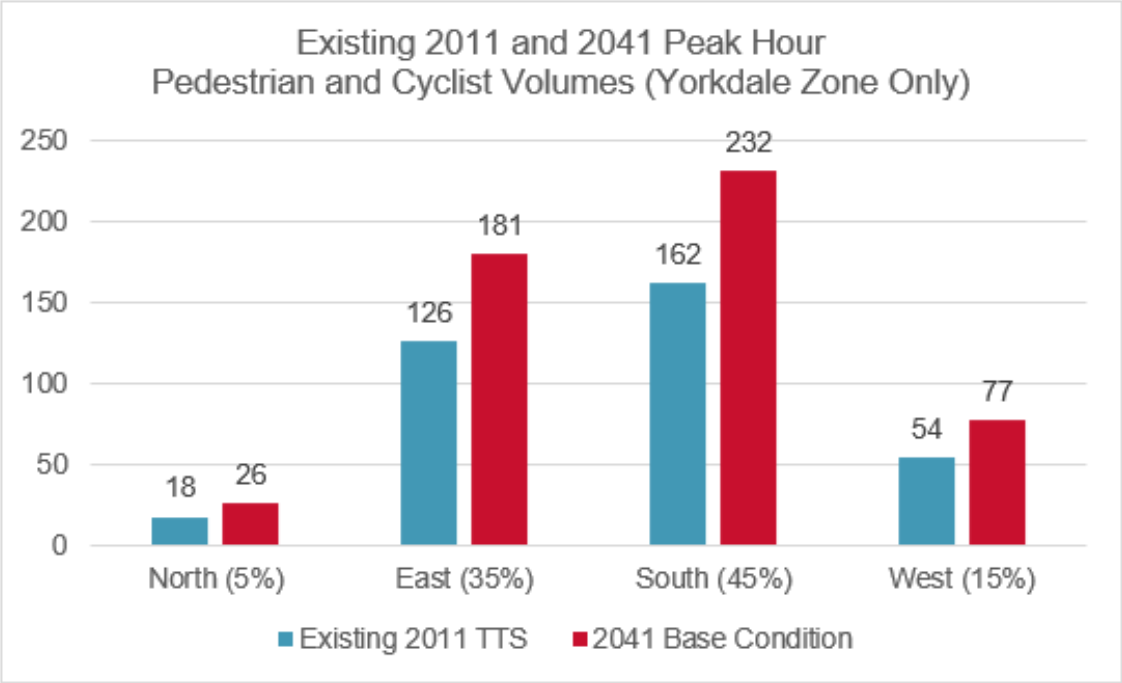


Figure 7-2. Estimated Directional Distribution of Existing and Future 2041 Pedestrian and Cyclist Volumes From/To Yorkdale Zone Only*



*Assumptions:

1. Based on PM volumes
2. Trip distribution based on existing TTS patterns with adjustments to consider redevelopment of the Honda and the Hilton sites, which will drive active transportation to/from the west.

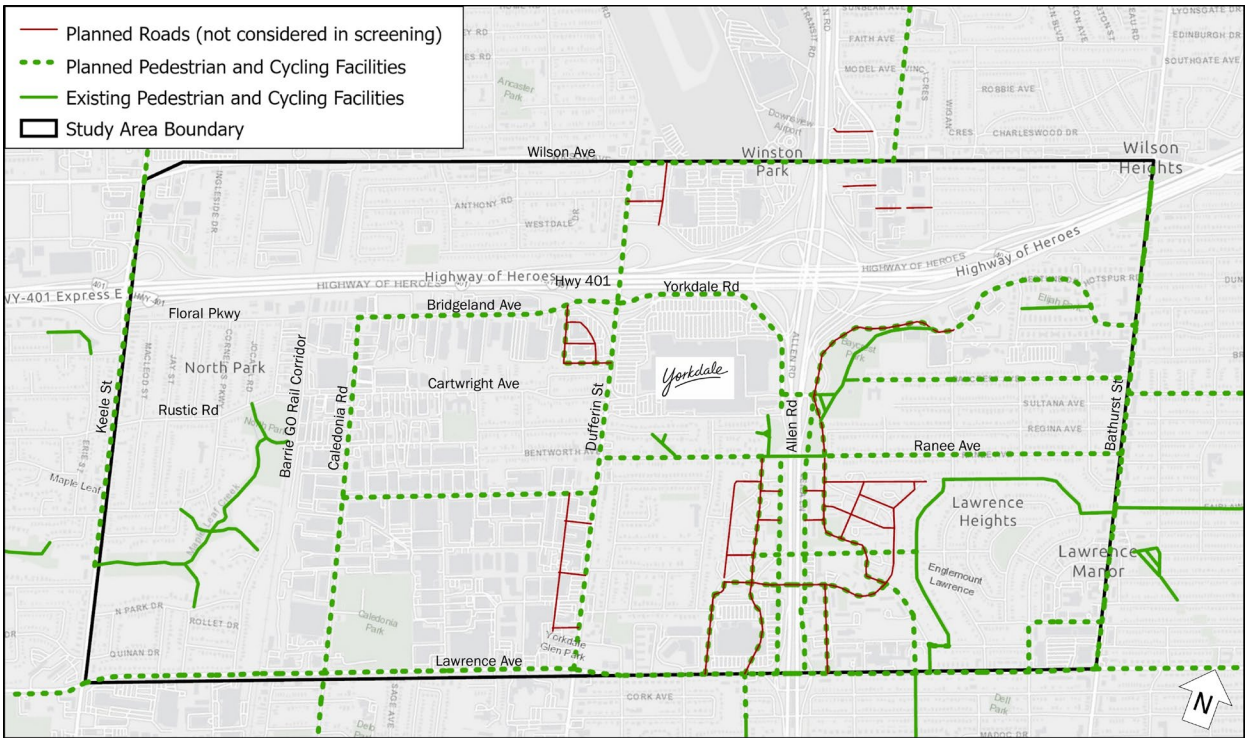
To accommodate future growth and the projected number of pedestrians and cyclists within the larger study area, numerous background studies were conducted to improve the pedestrian and cycling network within various key areas and neighbourhoods. The studies identified planned road improvements, including pedestrian, and cycling facilities, that has shaped the 2041 Do-Nothing conditions. These active transportation improvements are illustrated in **Figure 7-3** and is further summarized below.

The LASP had proposed Active Transportation network improvements in the Lawrence-Allen area, which is bounded by Highway 401, Bathurst Street, Lawrence Avenue West, and Dufferin Street. The following on and off-street cycling routes were proposed to the Lawrence-Allen area:

- Major on-street bicycle routes along Dufferin Street, Lawrence Avenue West, Bathurst Street, Yorkdale Road, Ranee Avenue, and along proposed streets parallel to Allen Road;
- Major off-street bicycle routes on both sides of Allen Road;
- Minor on-street bicycle routes along Dane Avenue, Highland Hill, Kirkland Boulevard, Rondale Boulevard, Ameer Avenue, Ridgevale Drive, Rajah Street, Baycrest Avenue, Drexel Road, and Saranac Boulevard from Drexel Road to Covington Road; and,

- Minor off-street bicycle routes primarily along new bridges over Allen Road and connections to parks.

Figure 7-3. Planned Road Improvements from Approved Secondary Plans and Studies



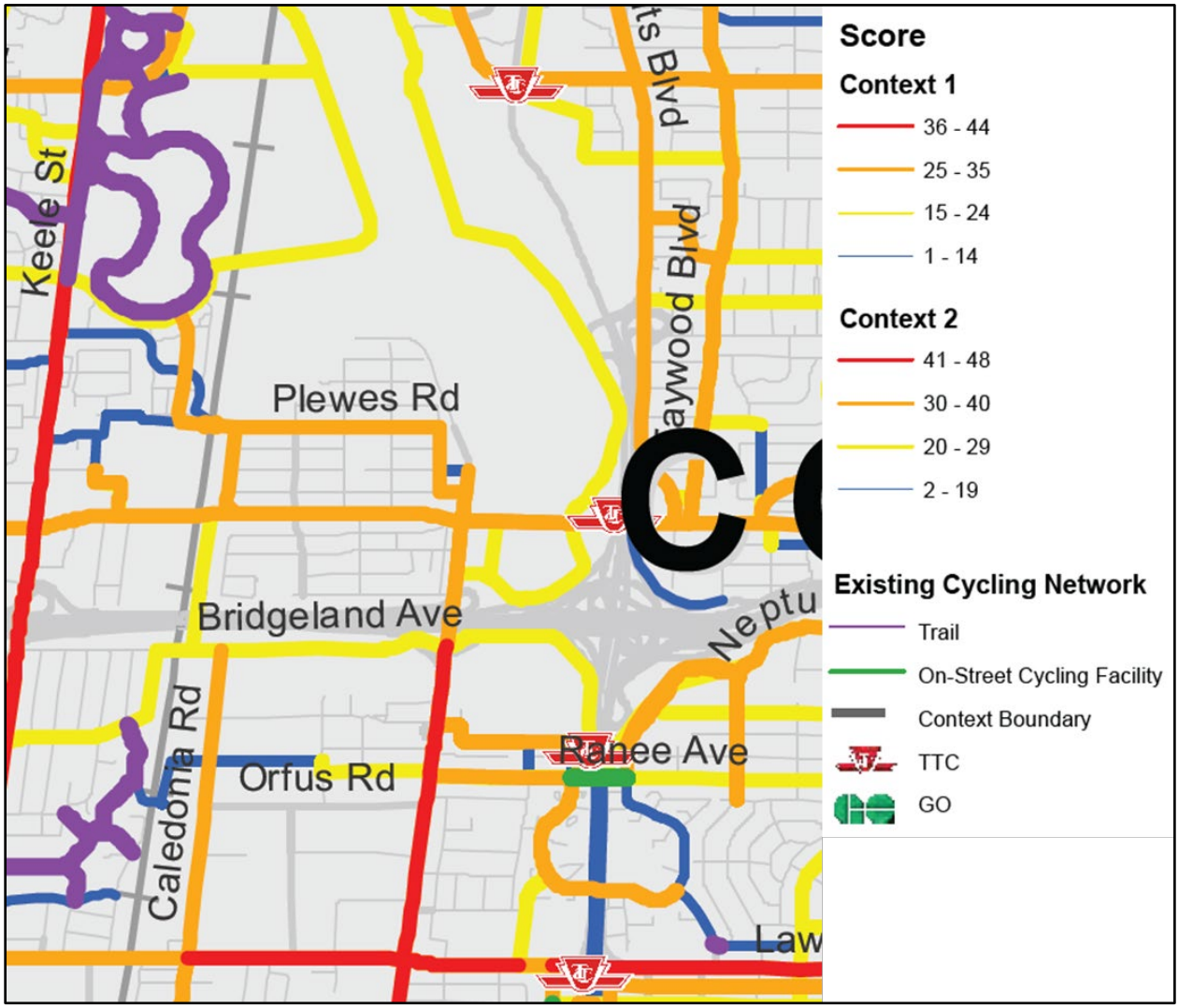
Many of the background studies focused on improving active transportation facilities along Dufferin Street between Highway 401 and Lawrence Avenue West. The Dufferin Street Avenue Study TMP, DSSP plans to enhance the walking and cycling environments through:

- New dedicated cycling tracks along Dufferin Street from Highway 401 to Lawrence Avenue West
- Bike lanes along Bridgeland Avenue, Yorkdale Road, Ranee Avenue, and on proposed road connected from Bridgeland Avenue and Dufferin Street
- Widening sidewalks

The Downsview Area Secondary Plan proposed potential bikes lanes along Wilson Avenue and Dufferin Street, while the Dufferin-Wilson Regeneration Area Study proposed bike lanes on Billy Bishop Way.

In addition to the background studies, the City's Long-term Cycling Plan proposes new cycling routes along Yorkdale Road with connection to Bridgeland Avenue and South Service Road illustrated in **Figure 7-4**.

Figure 7-4. Cycling Network Plan



Source: City of Toronto

7.2 Transit

Similar to pedestrian and cyclist volumes, transit user volumes were extracted from the City of Toronto's macro demand model (GTAModelv4) and distributed based on existing TTS bus routes and TTCs Line 1 ridership discussed in **Section 4.5.1** of this report. There is an approximate sixty (60) percent increase in transit user volumes between Existing 2011 conditions (10,274) and Future 2041 base conditions (16,496). **Figure 7-5** illustrates the increase in volumes distributed throughout the larger study area per bus/subway route.

Figure 7-5. Comparison of Existing and Future 2041 Transit User Volumes Within the Study Area*

*Assumptions:

3. Based on PM volumes
4. Trip distribution based on existing TTS patterns with adjustments to consider redevelopment of the Honda and the Hilton sites, which will drive active transportation to/from the west.

Background studies were conducted with the goal to shift the dependency away from automobiles and encourage transit use. RapidTO: Bus & Streetcar Priority will also guide the future study, evaluation, and delivery of bus and streetcar improvement projects in Toronto. To accommodate future increases in transit use and to achieve higher transit mode splits, these studies recommend improvements to existing and future services, through transit priority measures, amenities, streetscaping and transit connections to key neighbourhoods, areas, and services such as GO and TTC. Key areas of improvement are Yorkdale subway station, the Barrie GO Rail Corridor, and potential GO Transit station between Lawrence Avenue West and Yorkdale Shopping Centre, along Dufferin Street Corridor.

To enhance future transit services and reliability, improvements must be made to bus routes through stop consideration / relocation, transit signal priority (TSP), turn prohibitions, line management practice, stopping / parking resections, and queue jump lanes. The STOIS recommends the following:

- Restoring TSP for all intersections where TSP was deactivated along route 29 Dufferin;
- Activating TSP for all intersections which have TSP infrastructure along Route 7 Bathurst;

- Consider providing TSP for all directions at the intersections of Bathurst Street and Finch Avenue, Bathurst Street and Sheppard Avenue, and Bathurst Street and Lawrence Avenue West;
- Evaluating the recommended stop removals and consolidations based on TTC stop change criteria;
- Considering the implementation of queue jump lanes at the intersections of Bathurst Street and Finch Avenue, Bathurst Street and Sheppard Avenue, and Wilson Avenue and Wilson Heights Boulevard;
- Reviewing the potential benefits of implementing queue jump lanes at Dufferin Street and Lawrence Avenue West and at Keele Street and Lawrence Avenue West; and,
- Extending the No-Stopping restrictions on both sides of Dufferin Street up to 10AM and 7PM.

Other transit improvements found in the Dufferin Street Avenue Study TMP are summarized below:

- Operational improvements: Express Bus Service through working with TTC and Metrolinx, green light phase extension for buses and pavement marking at key stops;
- Physical improvements: transit shelters, seating, and security cameras;
- Repurpose southbound curb lane to transit/HOV only: Bridgeland Avenue to Cartwright Avenue;
- Repurpose northbound curb lane to transit/HOV only: Yorkdale out ramp to Bridgeland Avenue / Yorkdale Road;
- Bus lane from Bridgeland Avenue to Cartwright Avenue: Repurposed Lane; and,
- Future transit network improvements: impact of RER, SmartTrack, Go Transit Barrie Corridor improvements, including new stations and fare integration.

7.3 Auto

The purpose of developing the 2041 Aimsun Base scenario is to identify the future background traffic conditions and to assess the transportation improvement alternatives required to meet future development and growth within the study area (without the proposed full expansion of the Yorkdale Shopping Centre).

The 2041 Base scenario builds on the calibrated 2019 Aimsun model (as described in **Section 4.4.6)** which analyzed the AM, PM, and Saturday peak periods. The transportation network has been updated to include the planned road improvements from approved secondary plans and studies, as illustrated in **Figure 7-6**.

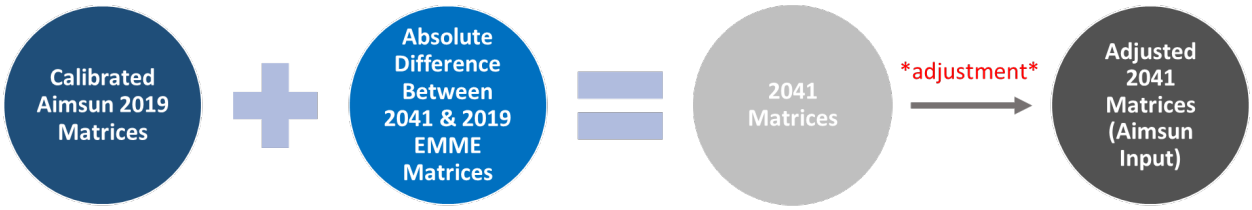
Figure 7-6. 2041 Base Aimsun Network Updates

**red lines present the new planned road improvements added to the network.*

7.3.1 2041 Base Aimsun Demand Loading

The Aimsun traffic demand was developed based on Weekday AM, Weekday PM, and Saturday Midday Origin-Destination matrices generated from the GTAv4 EMME macro model. As the demand matrix was previously adjusted during the Aimsun base model calibration, the additional growth between existing and future demand is calculated as follows in **Figure 7-7**. This approach preserves the 'calibration adjustments' of the base model and only adds the layer of additional growth projected in EMME.

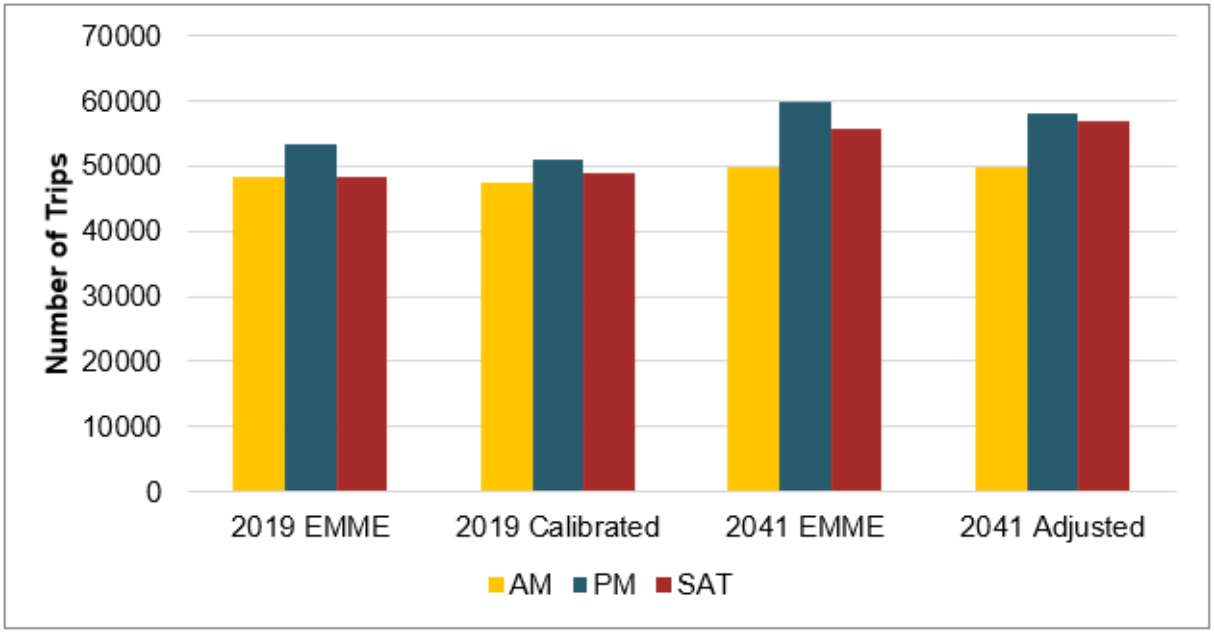
Figure 7-7. Aimsun Future Travel Demand Matrix Development



Adjustment: EMME forecast indicates some OD pairs will experience negative growth. Those negative growth were considered in the analysis, however, if the negative growth results in a negative total trip then percentage difference will be considered instead of adding absolute difference.

The change in overall peak hour demand is shown in the **Figure 7-8**. Comparing the 2041 EMME against the 2019 EMME, the total EMME demand increased by 3%, 12%, and 15% for AM, PM, and Saturday, respectively. Although the adjusted demand total is slightly lower, compared to the 2019 calibrated demand, the percentage increase for the Aimsun input matrix is 5%, 14%, and 16% for the AM, PM, and Saturday, respectively.

Figure 7-8. 2041 Base – Network Demand Growth



Upon developing the Aimsun matrix, the 3-hour simulation was loaded based on the time-slicing profile carry forwarded from the existing condition. A 30-minute warm-up period also precedes the 3-hour simulation.

7.3.2 2041 Base Aimsun Network Performance

The network virtual queue and operations metrics for 2041 Base Condition are summarized in **Table 7-1**.

Table 7-1. 2041 Peak Period - Base Condition Aimsun Network Performance Metrics

Measurements (Network-Wide)	AM	PM	Saturday
Virtual Queue* Metrics			
Max. Virtual Queue (veh)	314	1640	2940
Mean Virtual Queue (veh)	55	811	1610
Vehicles Waiting to Enter Study Area (veh)	3	1097	2932
Network Operations Metrics			
Total Travel Time (min/veh)**	5.9	7.7	6.7
Average Speed (km/hr)	49	41	44
Delay Time* (sec/veh/hr)**	29	41	50

**virtual queues are the vehicles that were blocked from entering the network due to capacity constraints*

***total travel time experienced by all vehicles that have crossed the network at the end of the interval or at the end of the simulation. It does not include the time spent in virtual queue.*

****average delay time per vehicle per kilometre. This is the difference between the expected travel time (ideal conditions) and the simulated travel time. It is calculated as the average of all vehicles.*

The demand forecast projects a total of 120,000, 155,000, and 145,000 auto trips within the study area for the 2041 Weekday AM, Weekday PM, and Saturday Midday peak period, respectively. Based on the above virtual queue measurements, approximately 1%-2% of projected demand cannot enter the network during the peak period (3-hour) due to capacity constraints.

7.3.3 2041 Base Intersection Operations

Figure 7-9 through **Figure 7-11** provide an overview of the intersection operations for all signalized intersections within the larger study area for each peak period / hour. Signal timings have been adjusted where needed based on the future demand pattern.

In the larger study area, hot spots are observed at the major-major intersection at the following locations:

- Wilson Avenue / Keele Street
- Wilson Avenue / Dufferin Street
- Wilson Avenue / Bathurst Street
- Lawrence Avenue / Caledonia Road
- Lawrence Avenue / Dufferin Street
- Lawrence Avenue / Bathurst Street

Within the project focus area around the Yorkdale Shopping Centre, all intersections will operate at LOS C or better during the Weekday AM peak, except Bridgeland Avenue / Dufferin Street and Yorkdale Road / Highway 401 on-ramp. During the Weekday PM and

Saturday Midday peaks, considerable congestions will be expected along Dufferin Street, where most of the intersections will operate at LOS D or worse. Furthermore, the accesses of Yorkdale Shopping Centre along Yorkdale Road will also experience some capacity constraints.

Figure 7-9. 2041 Base Level of Service – Weekday AM Peak Hour

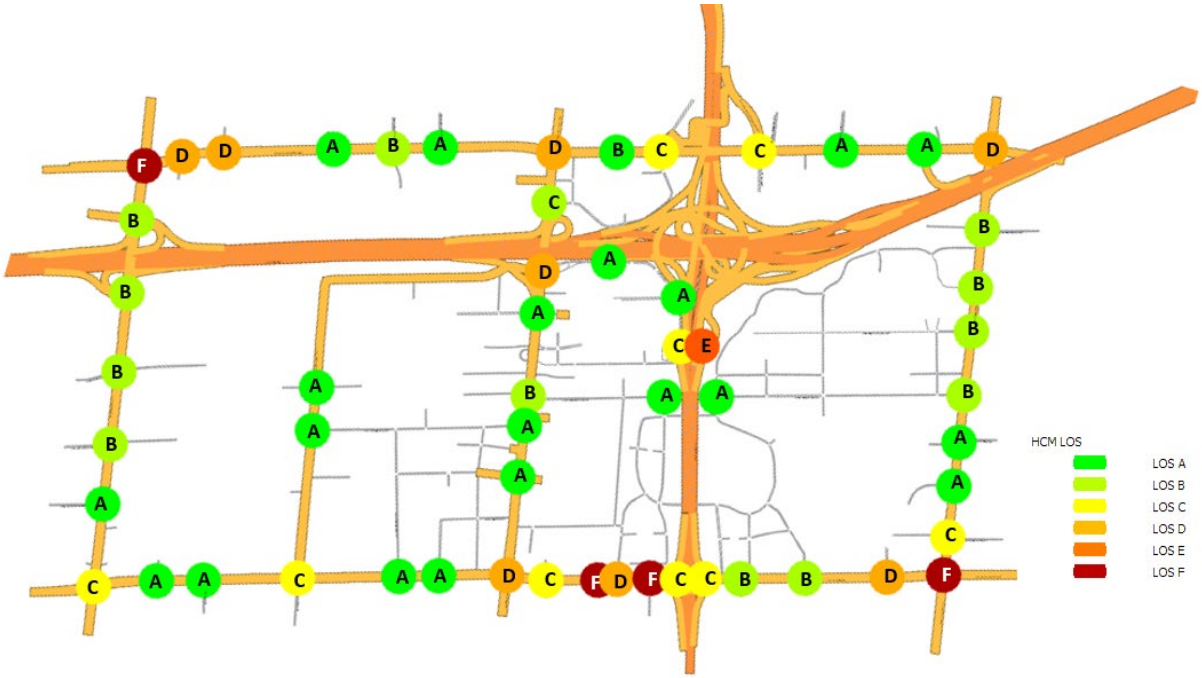


Figure 7-10. 2041 Base Level of Service – Weekday PM Peak Hour

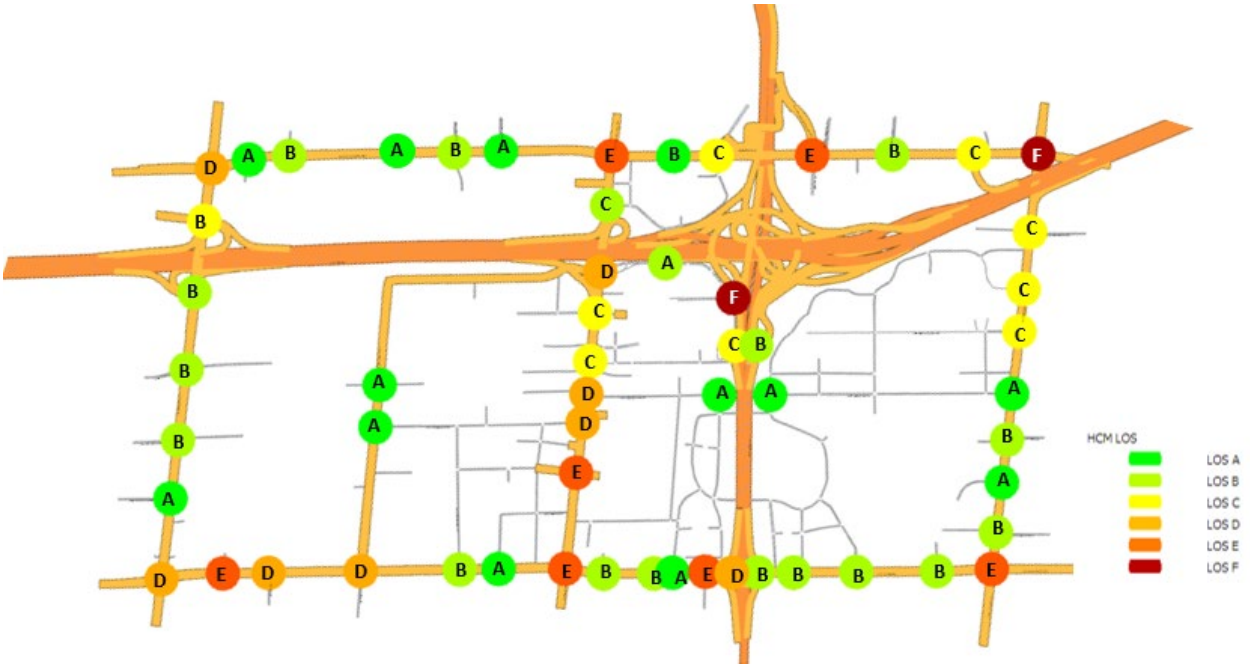
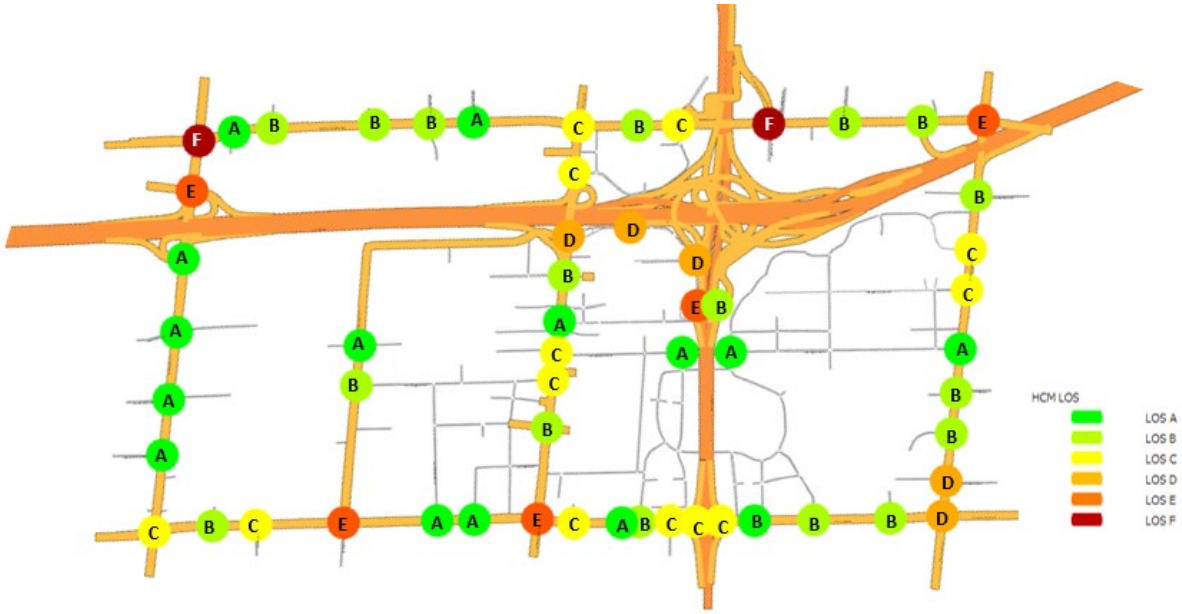



Figure 7-11. 2041 Base Level of Service – Saturday Midday Peak Hour