

Duke Street Traffic Mitigation Pilot Report – Phase 1

August 2022



Background



The Duke Street corridor has long been associated with the evening congestion that results in regional cut-through traffic on neighborhood streets. While there are broader City goals to reduce single occupancy vehicle travel and increase transit ridership to reduce congestion in the region, many strategies to effectively work toward these goals are longer term. Over the past 10 years, the City has sought funding for larger capital projects that support these goals.

The City recognizes that traffic congestion is a top concern for residents and that it impacts quality of life in Alexandria. With more people working from home, traffic volumes were down substantially over the last year but are beginning to return to more normal numbers.

To better understand how driver behavior shifts when traffic changes are made, the City proposed a two-phased pilot. The first phase modified signal timing during the evening rush hours to make it faster for drivers cutting through Alexandria to use major streets (like Quaker Lane and Duke Street) to access the Telegraph Road ramp rather than using neighborhood streets. The second phase would go even further by restricting access from West Taylor Run Parkway directly onto the Telegraph Road ramp at all times. With this change, the backups on Duke Street due to ramp traffic should substantially improve. Phase II is planned for Fall 2022.



The Pilot – Phase I

The first phase of this pilot focused on changing signal timing to allow more green time for Quaker Lane and Duke Street and shortening green time from the local streets. The goal was to shift cut-through traffic from residential streets to the arterials. The pilot ran from January through April during the weekday evening rush hours. The analysis looked at the five streets that saw the most cut-through traffic during this time:

Cambridge Road

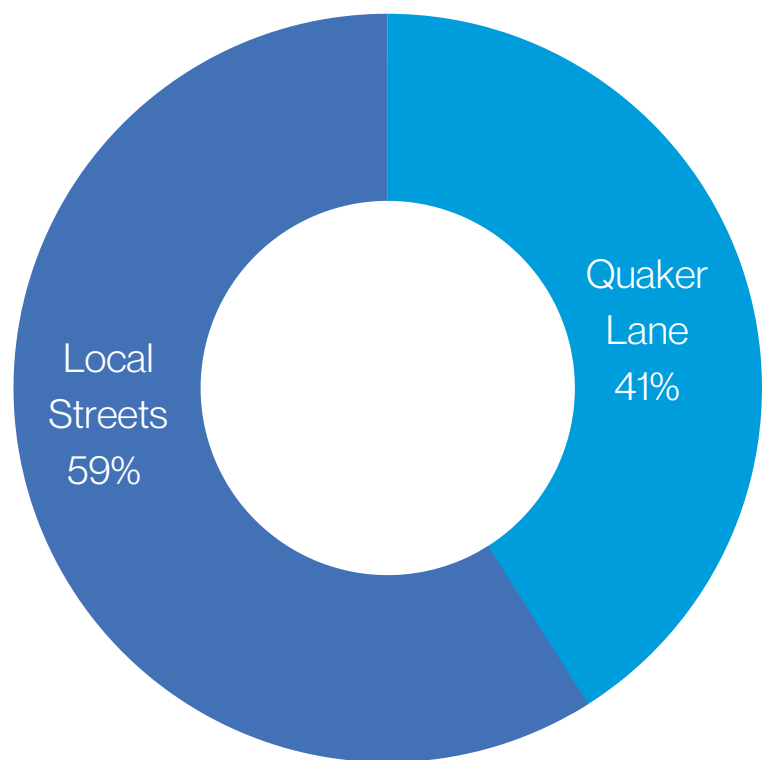
Fort Williams Parkway

Quaker Lane

West Taylor Run

Parkway

Yale Drive



Information from StreetLight Data, a platform that uses anonymized data from Bluetooth devices, was used to understand how people were traveling through the City. The data is averaged over the specific time identified. The BEFORE data was an average of data from January – April 2019 AND January – February 2020, from 4-7pm on weekdays (Tuesday-Thursday).

The Findings

- The goal of the pilot was to shift 20% of cut-through traffic off neighborhood streets, and the final results show a **41% decrease in cut-through traffic on neighborhood streets** and a **78% increase in cut-through traffic using Quaker Lane**.
- The most dramatic decrease in cut-through traffic was on **Yale Drive** (89%) where the No Left Turn sign was installed.
- **Travel times** on all streets were faster than in the BEFORE period, but they declined by 20% for drivers using the Quaker Lane to Duke Street route to the Telegraph ramp.
- Total traffic on the Telegraph Road ramp from eastbound Duke Street only increased by 4% but cut-through traffic increased by 10%. When it is faster to cut-through the City, more drivers are likely to do so instead of staying on the interstate.
- **West Taylor Run Parkway** benefited from reduced cut-through traffic less than other streets with only a 12% decline in cut-through traffic volumes. In both the before and after periods, 72% of traffic on this street is cut-through traffic.
 - The Phase II Pilot will focus on decreasing cut-through traffic on this street.

Street	Cut-Through Traffic Volumes		
	Before	After	% Change
Cambridge Road	328	136	-59%
Fort Williams Parkway	86	32	-63%
Quaker Lane	1,062	1,893	78%
West Taylor Run Parkway	698	617	-12%
Yale Drive	280	31	-89%
Telegraph Ramp from Eastbound Duke Street	2,463	2,709	10%

Related Projects

- **Duke Street at West Taylor Run** is one of the City's highest crash intersections and a known factor contributing to the traffic congestion on Duke Street where drivers access the Telegraph Road ramp. The City was awarded \$5.7m to fund intersection improvements and construct an additional access ramp to Telegraph Road in 2025.
- Increasing transit ridership means investing in more frequent and reliable service. The City has been focusing on the three corridors identified for Bus Rapid Transit (BRT) since 2008. In 2020, the City was awarded \$75m to construct a **transitway along Duke Street**.
- The City's **Smart Mobility Program** focuses on reducing congestion by using technology and has prioritized Duke Street for a number of initiatives including **Transit Signal Priority** (complete) and **Adaptive Traffic Signal Control**.



For more information, visit the [Duke Street Traffic Mitigation Pilot Website](#)

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