CITY OF CAMBRIDGE
TRAFFIC, PARKING, + TRANSPORTATION

MEMORANDUM

To: Yi-An Huang, City Manager

From: Brooke McKenna, Acting Chief

Date: December 15, 2022

Subject: AR-22-79 – November 14, 2022

This memorandum has been prepared in response Awaiting Report Item AR-22-79 from the November 14, 2022 City Council Meeting requesting that the Traffic, Parking, and Transportation Department and Department of Public Works meet with and receive input from residents living on the streets in the impacted area to discuss strategies to mitigate and reduce overflow and cut through traffic, including the proposal mentioned in the order, or other traffic calming or traffic diversion methods, and report back to the Council on any short-term recommendations no later than December 19, 2022. The order further requests that a final report be submitted no later than March 27, 2023. This memo is intended to respond to the request for short-term recommendations.

In October 2022, the City of Cambridge made changes to Garden Street to add a quick-build separated bike lane as part of the Garden Street Safety Improvement Project. Major changes to the street included changing the operation of Garden Street to eastbound one-way for vehicles between Huron Avenue and Concord Avenue and a reduction in parking spaces. Work included new traffic signals, updated metal street signs, road markings, bicycle stencils, flex posts, and colored surface treatments.

This project is part of the implementation of the Cycling Safety Ordinance. The Cycling Safety Ordinance, passed in 2019 and amended in 2020, represents a shift from designing our streets primarily around car transportation to also prioritizing cycling, which is resulting in changes in how we allocate space on City streets. The Cycling Safety Ordinance mandates the accelerated development of a full network of separated bike lanes across the City.

The creation of this alternative transportation network is a significant step forward towards creating a sustainable, healthy future for Cambridge, but it does not come without other impacts. In a dense city with limited space on our roadways, making space for separated bike lanes is not easy, and results in reductions in parking and changes to how the roadway network operates. We recognize that it is challenging for many residents, that our roads are becoming more complex, and that we are making difficult trade-off's.

The decision to include the one-way conversion of Garden Street came from the input of the members of the community who took part in the public process in advance of the project implementation. The conversion to one-way was appealing both to local

residents who prioritized retaining parking as well as local cyclists who preferred one-way bike lanes on each side of the street, as safety is better provided for with a consistent bike lane alignment along the longer corridor.

Removal of one of the two travel lanes provided enough space to both retain parking in areas most-requested by the community and to add the one-way bike lanes on each side. We recognize that community engagement could have been improved across the broader community that is now affected by the conversion to one-way and we hear the many voices that feel like they were not involved in planning conversations. This is an area we are committed to continuing to improve.

Data

We collected data in and around the project area on October 12 (before we installed changes to Garden Street), and again during the first week of December. These counts help us to monitor the impacts of the project and we plan to continue interim data collection and analysis in the coming months and share this publicly. Final data collection that reflects the longer-lasting impacts of the project will follow in early Spring 2023.

Traffic impacts from the project were most significant in the days immediately following implementation. Our observations have shown that some of the additional traffic has abated and that the immediate impact on side streets has started to come down as traffic patterns have adjusted (See Appendix A). While there is still some increased traffic on certain side streets, the total volume is within the range across side streets from October before implementation.

When significant changes are made to traffic patterns, it can take three to six months for drivers to adjust to new routes. We are currently six weeks post implementation, and we are still seeing road users learning and making adjustments. This is mostly from people outside of the neighborhood who came to the area infrequently or that are newly returning to the area after COVID-19 office re-openings. People unfamiliar with the area tend to make peculiar choices in response to road changes, and we are still in the settle-in period, without a full picture of what the fully developed effects will be. We recognize that this is also challenging for residents and we will continue to hear from the community, make adjustments, and collect data and observations.

Methods

- The City uses an independent traffic data collection firm to collect speed and volume data. Equipment is placed on the street in the same locations each time to allow for comparisons over time. Weather can impact our ability to collect data, as the equipment can malfunction due to snow, but we will make all efforts to take advantage of good weather days between now and March/April to demonstrate trends over time.
- In the most recent data collection, and moving forward, we will be collecting two days of data each month. We then average the two days to compare to the single day of data collection done prior to the project implementation.
- With speed data, we track the 85th percentile speed which is consistent with industry best practice. This is the speed at or below which 85 percent of the drivers

travel on a road segment. Most motorists (typically 75 percent according to research) drive within 5mph of the 85th percentile speed, making it more representative of the speeds experienced on the roadway when compared to average speeds.

Summary

Graphs showing the comparison between the pre- and post- project speeds and volumes are included in Appendix A, and we've summarized some key points here:

- Overall speed impacts are relatively small and include both increases and decreases. For example, the 85th percentile speed on Shepard Street decreased from 22 mph to 20 mph. On Newell Street, the 85th percentile speed increased from 14 mph to 16 mph. In a number of locations, the 85th percentile speed is slightly above the speed limit, similar to where the numbers were prior to the project implementation. For example, Linnaean Street saw an increase from 27 mph to 28 mph, Bond Street saw an increase from 22 mph to 23 mph, and Concord Avenue saw an increase from 29 mph to 30 mph. Several streets saw small reductions in speed, including Raymond Street moving from 24 mph to 23 mph and Shepard Street dropping from 22 mph to 20 mph. Variations of 1-2 mph are within the margin of error for the data collection equipment, and we will closely monitor trends in these values over the next few months. Like many places in Cambridge, speed continues to be a concern in the project area as it was prior to the project, and we continue to look for ways to decrease speeds across the neighborhood.
- Similar to the speed findings, volumes both increased and decreased across the neighborhood. Madison Street saw a significant increase, going from 893 vehicles per day to 1560 vehicles. While this is a significant change, the numbers are still within typical volumes on a one-way side street. Bond Street saw a drop from 2892 vehicles to 1791 vehicles per day. Huron Avenue west of Garden Street went from 3545 vehicles to 4213 vehicles per day. Raymond Street, where there has been significant concerns about volume increases, went from 2497 vehicles to 3087 vehicles per day. This is a material increase but also continues to be below pre-implementation volumes on Linnaean, Huron, and Shepard and we hope that there will be decreases in volume as traffic patterns adjust.
- The data collected this month will act as the post-installation baseline as we collect additional data in coming months. We will provide regular updates as this data is collected.

Outreach

We began installing the changes on Friday, October 28, 2022. In advance of installation, the community process included:

- May 24: Community Meeting 1 - Broad outline of project, gathered initial community feedback
- July 12: Community Meeting 2 - Presented two draft layouts of Garden Street
- August 9: Community Meeting 3 - Presented a new third draft layout based on community feedback from the previous meeting, alongside the original two draft layouts
- September 20: Community Meeting 4 - Presented details on final layout selection based on community feedback

- September 22: Community Open House on Garden Street - Chance to meet with City staff and ask questions

Our outreach to the neighborhood about the project and these meetings included:

- Postcards: Postcards announcing the start of the project sent to 3,500 addresses in May 2022 and postcards announcing the one-way change and final meetings sent to 4,700 addresses in September 2022
- Physical signage on Garden Street and side streets ahead of each meeting and installation
- Flyers distributed to doors in May 2022 and August 2022
- Conversations with local stakeholders, businesses, and institutions
- Regular emails to a project email list and in the City's daily email update

For more details and examples of outreach, see the "Outreach" section of the project webpage: www.cambridgema.gov/GardenStHuronMason. This project page also contains audio/video recordings of the community meetings and PDF versions of the slides from each presentation.

When it became clear that this project would have wider impacts than just the area immediately adjacent to Garden Street, we widened the outreach area in advance of the final meeting, trying to ensure that a wider area of the neighborhood was aware of the upcoming project and could provide their feedback on the selected alternative prior to installation. While this emailing and flyering of the neighborhood took place in advance of the last community meeting and open-house, we recognize based on feedback from the community that many felt that the outreach effort fell short. We are continuously trying to improve our outreach methods and will continue to do so in the future.

With the installation and conversion to one-way in late October, we saw an increase in traffic on many nearby streets and have heard significant concerns from the wider community about increases in traffic volumes, speeds, and general traffic safety in the neighborhood.

Since late October, we have been listening to the concerns of the neighborhood and making adjustments to the design as well as looking for opportunities for mitigation.

Thus far we have hosted two neighborhood listening sessions, have had many one-on-one conversations with residents, and received feedback via email and an online survey. These feedback opportunities include:

- November 9: First listening session on impacts of the Garden Street Safety Improvement Project, held at the Graham and Parks School. About 80 people attended this meeting.
- November 29: Second listening session on impacts of the Garden Street Safety Improvement Project, held at the Graham and Parks School. About 100 people attended this meeting.

A third listening session will be held on Zoom on January 4, 2023.

Response

In response to the concerns we have been hearing from the community, as well as observations we have been making, we have made or plan to make the following changes:

1. Feedback: Severe traffic congestion on Concord Avenue during the PM commute time
    a. **What we did:** We made signal timing adjustments at the Concord Avenue at Huron Avenue traffic signal to give Concord Avenue more green time. This adjustment was made midday on Monday, November 7. As a result, fewer cars were stuck behind the red light and traffic flowed more efficiently. Before the project, peak-hour traffic queues usually went as far back as Madison Street or Buckingham Street. Peak-hour observations on November 7, 8, and 9 showed queues returning to this pre-project extent.

2. Feedback: Huron Ave is backed up eastbound from Concord Ave to Garden St during the PM commute time.
    a. **What we did:** As part of our original project plan, we made signal timing adjustments at the Garden Street/Huron Avenue/Sherman Street traffic signal to give Huron Avenue more green time. This time was taken from the Garden Street phase, since westbound flows were eliminated with the change to one-way. Appropriate green time was retained for Garden Street to accommodate eastbound traffic as well as bi-directional bicycle traffic. This change was made midday Tuesday, November 8. We made green time adjustments at Walden Street and Sherman Street at the same time to help address a related issue.

3. Feedback: It is hard to turn left onto Sherman Street from eastbound Huron Avenue, because of opposing westbound Huron Avenue traffic.
    a. **Our plan:** We will add a leading protected left turn phase for eastbound Huron Avenue traffic to provide an opportunity for left turns without waiting for a suitable gap. This will help the signal process more left turns and clear the block more efficiently.

4. Feedback: There is a steady flow of left turns from Garden Street onto Walker Street.
    a. **What we did:** We determined that these turns were a result of wayfinding apps trying to loop drivers back around to Linnaean Street. Apps told drivers to take a (now illegal) right onto Garden Street at Linnaean Street and when they couldn't do that, the apps directed them down Walker Street to go back to Linnaean Street to try again. We have confirmed that our changes to wayfinding apps have been accepted and this movement no longer occurs (as of Saturday, November 5). We still see some added traffic compared to before the one-way change, but the high initial volume of turns has subsided.
    b. **What we did**: We have reached out to Harvard transportation staff to request that their drivers not use Walker Street when approaching or departing the loading docks on Garden Street.
    c. **Our Plan**: We will be installing a warning sign for large trucks at the corner of Walker Street and Garden Street warning of the sharp turn on the block of Walker Street between Garden Street and Shepard Street.

5. Feedback: Drivers on Garden Street find themselves stopped behind parked cars at the Concord Avenue traffic signal, thinking they are queued.
    a. **What we're doing:** Tan-colored markings within the buffer zone areas at the crosswalk are planned to be installed to better define the walking, parking, and driving spaces. Once installed (when weather permits), we will evaluate whether these changes fix the issue. Observations indicate that this issue has subsided as drivers adjust to the new configuration of the street.

6. Feedback: People biking and scooting are going the wrong way in the new Garden Street bike lane between Shepard Street and Concord Avenue.
    a. **What we are doing:** The previous condition did not have a bike lane in the eastbound direction, so we are already seeing some eastbound cyclists and scooter riders use the new bike lane instead of traveling the wrong way or using the sidewalk. For those who are still traveling the wrong way within the one-way bike lane, we installed "wrong way" biking signs. These signs were installed at decision points to discourage this practice. We will educate users on-location and coordinate with Harvard about potential outreach strategies to students.

7. Feedback: Through traffic that should be using Concord Avenue, Massachusetts Avenue, and/or Rindge Avenue is using local residential streets.
    a. **Our plan:** We have placed variable message signs at two key decision points on Massachusetts Avenue to direct drivers departing Harvard Square to preferred through routes.

8. Feedback: There are many safety concerns regarding the intersection of Raymond Street and Huron Avenue.
    a. **Our plan:** We will install an all-way stop at the intersection of Raymond Street and Huron Avenue. The Department is also planning to purchase permanent speed feedback signs for locations around the neighborhood. In the meantime, we are working with the Police Department to place the speed feedback trailer on Raymond Street.

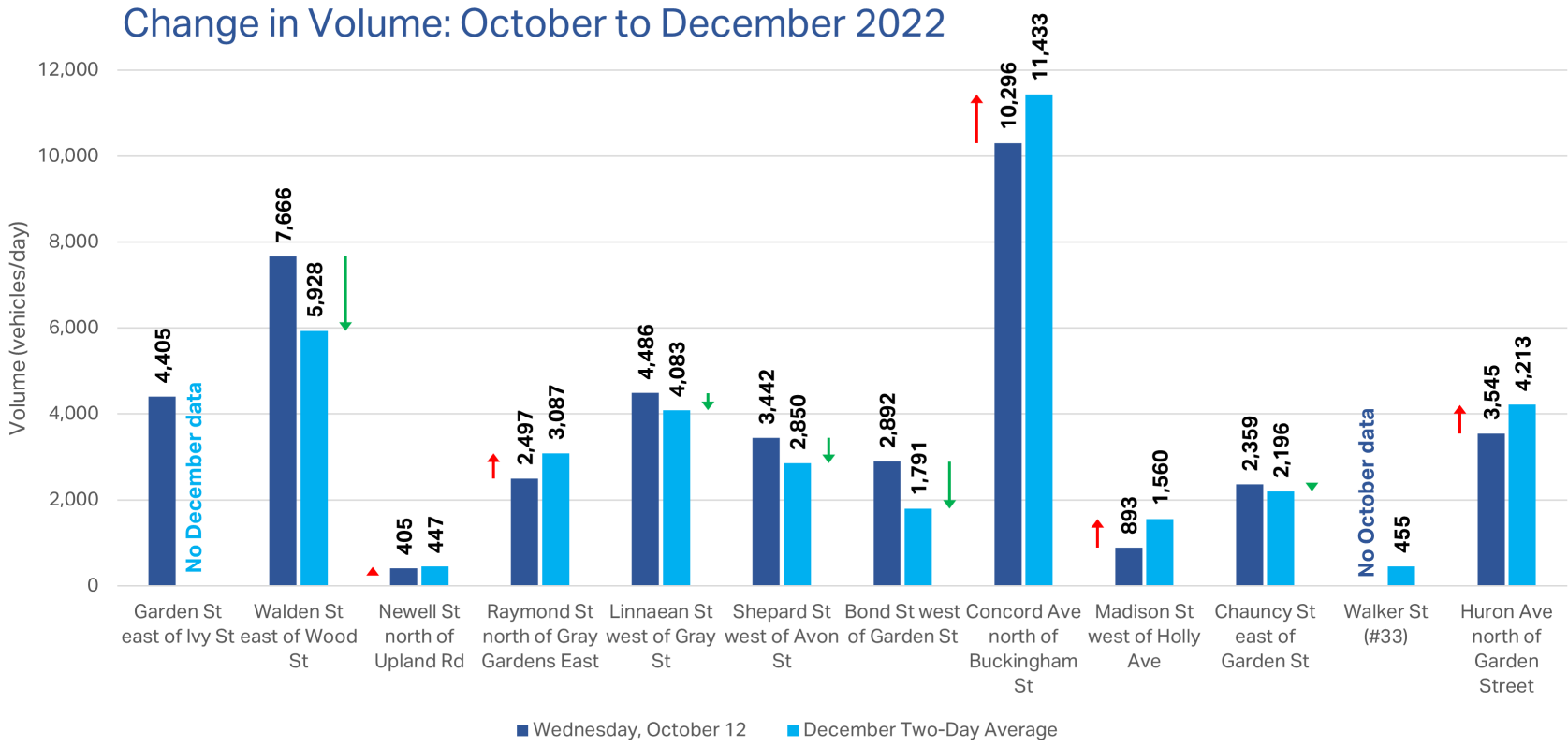
Next Steps

We have received requests from community members to reverse all or part of the one-way Garden Street configuration. There are significant considerations and potential negative impacts to going back to a two-way configuration for any segment of the corridor. Resuming two-way traffic between Linnaean Street and Huron Avenue would introduce new cut through patterns that will need to be further examined and would potentially require additional mitigation on side streets such as new turn restrictions or reversals of travel directions on side streets. The intersection of Garden Street, Huron Avenue, and Sherman Street would also require an additional traffic signal phase resulting in added delay at this key intersection. This phase would be required to move people on bikes into and out of the two-way facility on Garden Street.

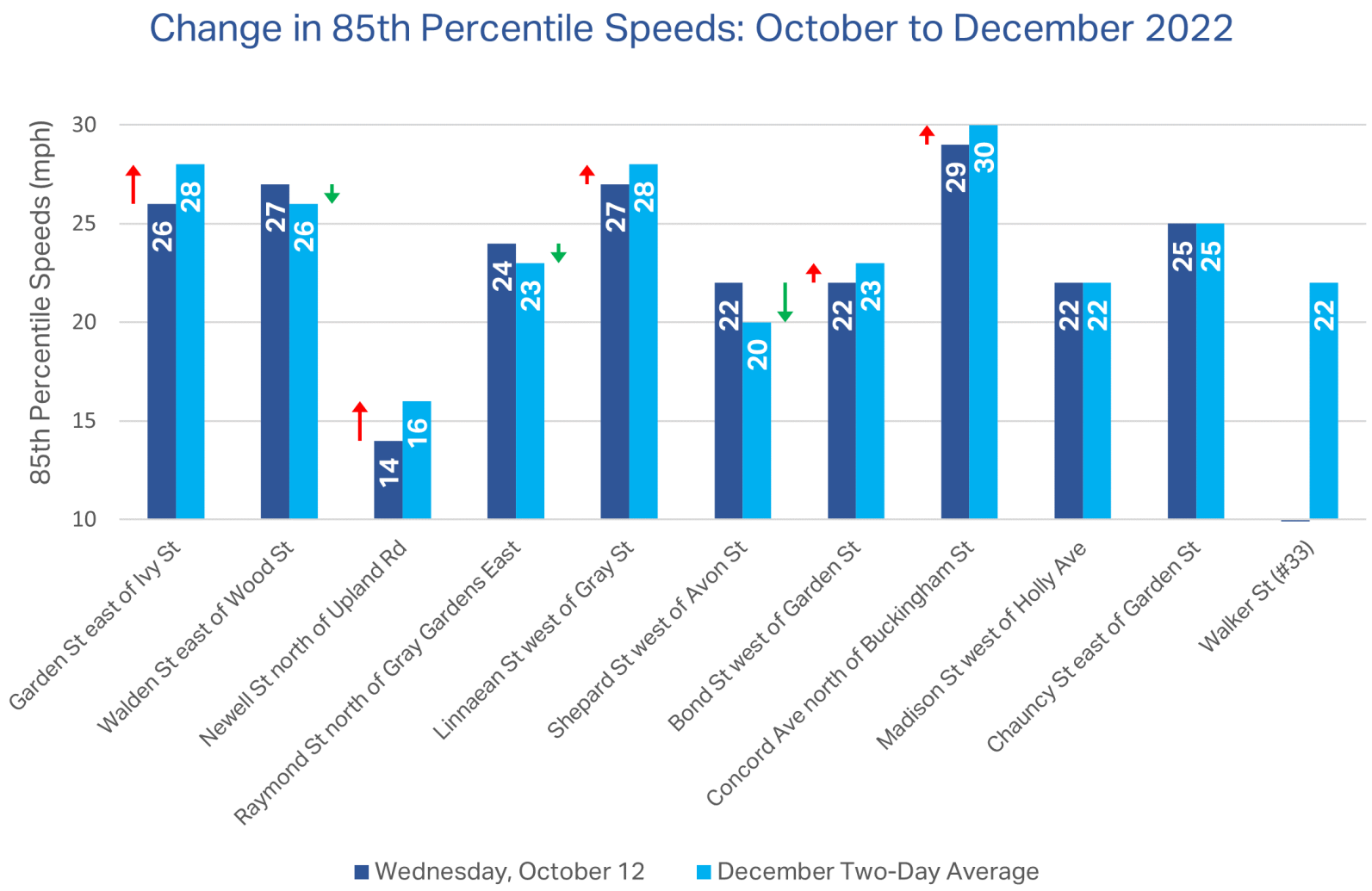
We have also heard strong support for the project from residents of the neighborhood as well as users of the Garden Street bike lanes. We ultimately believe that it is too early in the process to know if the one-way configuration can be successful in the long run. We recognize that these are difficult changes to make and that all options are complex and require trade-offs. A significant reversal would create different negative impacts. However, we are committed to continuing to engage with the entire community, listen,

collect data, and execute mitigation strategies through the Winter before making a final determination in the early Spring.

Appendix A: Change in Volumes



Appendix B: Change in 85th Percentile Speeds



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