City of Cambridge
Executive Department

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CMA 2024 #167
IN CITY COUNCIL
August 5, 2024

To the Honorable, the City Council:

In response to Awaiting Reports 24-033, 24-034, and 24-039, we report the following on behalf of the Community Development Department, the Police Department, the Department of Public Works, and the Traffic, Parking, and Transportation Department:

Introduction

As a City, we have worked hard to improve the safety of everyone who travels in Cambridge. However, the recent tragic deaths of two people riding bicycles is a heartbreaking reminder of the need to continue our work to make our streets safer. As part of our Vision Zero <https://www.cambridgema.gov/streetsandtransportation/policiesordinancesandplans/visionzero> initiative, we have pledged to eliminate all traffic fatalities and serious injuries. This commitment drives our ongoing efforts to enhance the safety and accessibility of our streets for cyclists, pedestrians, and motorists alike.

In the wake of the tragic losses of Kim Staley and Minh-Thi Nguyen, we will continue to refine and advance our approach to achieving Vision Zero. From continued improvements to our infrastructure to legislative change and better education, we as a City and community will work to ensure that every user of our streets can arrive at their destination safely.

This response represents our initial thoughts on how we can address some of the issues already identified as essential to improving safety, such as mitigating harm from large vehicles, proactive identification of locations in need of infrastructure improvements, and widespread education for all road users on how to use our roads safely for their own benefit and to protect everyone around them.
This is the first step, and we will continue to work together on this journey towards safer streets through updates to the Council, online resources, and other outreach. The City of Cambridge remains determined in its commitment to Vision Zero and to create a safe, connected, and sustainable transportation network. We will share updates on our approaches and progress with the City Council and the community regularly in the coming months and years.

Large Vehicles-Safety and Driver Education

The recent fatal crashes have clearly highlighted the disproportionate impact that large vehicles have in our city. In the last ten years, we have experienced 22 fatal crashes on roads under City and State jurisdiction. Of these, every one of the 7 crashes that resulted in the death of a person riding a bicycle involved a truck. And of the 10 fatalities involving people walking, 2 have involved trucks. While trucks may be an unavoidable part of urban life, we must find ways to reduce their all too frequent deadly impact.

In 2015, the Department of Public Works partnered with the Volpe National Transportation Research Center to improve the safety of large vehicles in the City fleet. This work resulted in the development of a specification for the installation of truck sideguards on large vehicles in the City fleet, and laid the groundwork for the eventual adoption of the Truck Safety Ordinance, which is described in more detail in the section below.

Large Vehicles-Local Regulations and Advocacy

Locally, Cambridge, Boston, Somerville, and Newton have all enacted truck safety requirements for vendors doing business with their cities. The Commonwealth is making similar changes at the state level. The Cambridge Truck Safety Ordinance, adopted by the City Council in November of 2020, applies to Class 3 or above motor vehicles, trailers, semi-trailers or semi-trailer units, with Gross Vehicle Weight Rating over 10,000 pounds that can travel more than 15 MPH being used by a City vendor under a City Contract worth more than $10,000. These regulations require that eligible vehicles, with some exceptions, be outfitted with side guards, convex mirrors, cross-over mirrors, and safety decals.

At the state level, in 2022 the legislature passed *An Act to Reduce Traffic Fatalities* (Sections 9 and 10 of Chapter 358 of the Acts of 2022 M.G.L. c. 90, § 7) This act included a number of safety measures aimed at protecting vulnerable road users, including provisions requiring additional safety equipment for large vehicles owned by or working under contract with the Commonwealth. The Massachusetts Department of Transportation is currently enacting regulations to implement elements of this law.

Local and state action is a first step, but ultimately the issue of truck safety needs to be addressed at the national level. Large vehicles are primarily subject to federal regulations, interstate commerce laws, and other laws that restrict the ability of states and municipalities to regulate truck safety equipment. Fundamentally, sideguards and other safety equipment must be a national standard for all trucks licensed to drive on our roads, as has been the case in other countries, including European countries, for more than 20 years. Because of the limited ability to influence truck safety at the local level, it will be essential for us to advocate to enact change at higher levels.

Last month, the City testified at the MassDOT hearing on regulations implementing elements of the State's *Act to Reduce Traffic Fatalities*. We will use this momentum to keep pushing for change by teaming up with other cities, state agencies, our elected officials, and both local and national safety advocates, aiming to achieve significant changes in federal truck safety regulations.

Large Vehicles-Voluntary Adoption of Truck Safety Equipment

While we work toward the ultimate goal of regulatory changes at the national level and continue to require improved safety equipment for trucks doing business with the City, we also need to work towards widespread local adoption of truck safety equipment. By advocating for voluntary adoption, we can make a local impact in the shorter term.

There is a clear need to find ways to encourage voluntary adoption of safety equipment and improved training for drivers on the specific challenges of large vehicles in our dense urban environment. We are currently exploring approaches to achieving this.

These approaches could include;

- Outreach to truck companies to ensure that their drivers receive appropriate education on issues unique to operating in dense urban areas
- Developing messaging on the importance of following posted speed limits, awareness of people walking or riding in truck blind spots, and the danger of right hooks from turning vehicles
- Produce testimonials about the experience of driving in a compact, urban setting like Cambridge
- Make technical specifications and cost information for truck sideguards and other safety equipment widely available
- Outreach to local institutions, large employers, and large developers to encourage them to add sideguards and other safety equipment to their fleets and encourage the same from their vendors that operate in Cambridge
- Outreach to large retailers who receive deliveries in Cambridge about truck sideguards and other safety equipment
- Collaboration with truck industry groups to encourage education and adoption of safety technologies to a wider range of their membership

While both recent fatal crashes are still under investigation, it is probable that sideguards and other safety equipment, like convex mirrors, cross-over mirrors, and safety decals, on the trucks could have prevented fatal injuries.

Automated Enforcement

In addition to sideguards, automated camera enforcement is another important element of ensuring a safe city. Automated camera enforcement is not allowed under current state law. As you know, the City Council has long advocated for change in state legislation to allow Cambridge to use automated camera enforcement to enhance traffic safety, including as recently as last year's submission of a Home Rule Petition titled "Petition For An Act Authorizing The City Of Cambridge To Employ Automated Enforcement Within The City Of Cambridge". We will continue to advocate for this change at the state level.

Infrastructure Design

We are proactively looking at ways to address crash risks along our streets through engineering design. Many recent projects have included separated bicycle lanes, for which MassDOT's *Separated Bicycle Lane Planning Design Guide* states that "the goal is to provide clear messages regarding right of way to all users moving through the intersection in conjunction with geometric features that result in higher compliance where users are expected to yield." With that goal in mind, all projects include a review of crash data to understand the problems that road users may be experiencing. This is combined with community feedback to establish baseline issues along a street and at its intersections.

Depending on the condition of the roadway, design projects range from small pavement marking and signage changes to larger roadway reconstruction projects. Many safety issues are addressed at the same

time as regular maintenance activities, while others can be part of multi-year planning and construction processes, such as the Five Year Plan for Sidewalk and Street Reconstruction and the Cycling Safety Ordinance (CSO). For safety interventions that require more than signage, pavement markings, or simple traffic signal adjustments, both the Five Year Plan and CSO provide a range of design options to address safety concerns. With reconstruction (the Five Year Plan), we have the opportunity to reconstruct the roads and sidewalks, adding raised crosswalks, traffic signals, cycle tracks, and more, using durable, long-lasting materials.

When roadway segments are not part of the plan for reconstruction, the CSO provides for quick build options using signs, markings, flex posts, and minor signal changes to retrofit a corridor for safety. The CSO, first passed in 2019, required separated bike lanes to be built on roadways identified in the Cambridge Bicycle Plan as needing greater separation for people biking when these streets were reconstructed as part of the Five Year Plan. It was then amended in 2020, to add requirements for the installation of approximately 25 miles of separated bike lanes within seven years. The location of those facilities was informed by both the Cambridge Bicycle Network Vision and specific requirements in the Ordinance. Implementation of the CSO is ongoing, with more than 16 miles of separated bike lanes now installed after four years.

Design at Intersections

As projects are implemented, specific attention is paid to intersection design, as turning maneuvers are a source of many of the crashes that happen on our roadways. For reconstruction projects and CSO projects alike, adding separated bike lanes not only adds a physical form of separation, but also creates distance between people biking and driving as well. At intersections, this distance provides for better sightlines for drivers, as in many cases people riding bikes are moved out of a blind spot along the side of the vehicle. People biking also have a better view of the vehicle alongside them and can identify if a driver is attempting to turn into their path. Whereas without separation, a cyclist may not know a turn is coming until the vehicle enters the cyclist's path, with separation the cyclist may see the turn into the space between the lanes, allowing for acknowledgement and yielding by either party, whomever has the right of way. The separation also narrows the width of the roadway's driving space, which can slow the speed of turning vehicles and reduce the amount of exposure that a bicyclist or a pedestrian has to moving vehicles.

Where an intersection may be signalized and where space permits, traffic signal separation of movements can be an effective safety option. In such locations, drivers, pedestrians, cyclists, and other vulnerable users, may get different signal indications to control conflict points, i.e. no vehicle turns across a bike lane and crosswalk during a specific time in the signal cycle. This can remove the human factor of judging for the best time to proceed through an intersection, especially when an intersection may be large or complex.

Infrastructure Changes at Recent Fatal Crash Locations

We are currently conducting safety reviews and evaluating changes to the Mt. Auburn Street/Dewolfe Street and Hampshire Street/Portland Street Intersections. In both fatal crashes, both the cyclist and the truck driver were traveling in the same direction when the truck driver made a right-hand turn, colliding with the cyclist. While plans are still under development, we are looking at the following areas for improvement:

Intervention	Goal
Signal changes Modify/add signal equipment Signal timing changes	Provide greater separation between modes Improve compliance with bike signals
Improved/additional signage	Increase understanding and compliance of bike signals Increase driver awareness
Pavement marking changes	Clarify lane use and permitted movements from each vehicle and bike lane
Short-and-long term changes to the intersection layout	Tighten turning radii to slow turning movements

Intersection Safety Audit Program

Since the adoption of Vision Zero, the City has had a protocol in place to respond to fatal crashes. Shortly after a fatality, a multi-disciplinary team of staff from departments across the City conduct a site visit to evaluate the location of the fatal crash for opportunities for short- and long-term improvements. For example, after fatal crashes occurred in Harvard Square, short-term improvements included the accelerated installation of a quick build separated bicycle lanes on Mass Ave between Harvard Yard and the Out of Town News Kiosk, and the elimination of a travel lane on Mass Ave in front of the COOP in advance of capital construction projects. A fatal crash in Inman Square accelerated a redesign and reconstruction of the entire square.

We are now developing an enhanced Safety Audit program that will formalize the process of evaluating locations where fatal or serious crashes occur, as well as proactively identifying, assessing, and mitigating intersections in need of safety improvements.

Preliminary Framework

We are developing a full protocol for an intersection Safety Audit. This will include: evaluating crash histories, identifying a prioritized list of intersections, and developing a plan to make ongoing improvements. At this point, the framework is still under development and subject to change. We will provide additional information in the fall.

Elements of the Safety Audit framework will include:

Prioritization and Rankings of Intersections-Crash Study

In order to prioritize our work, we need to examine the crash histories at intersections across the City. For this prioritization, we first limit our analysis to city-owned intersections where we can make necessary changes ourselves. State-owned intersections are among the highest crash locations within our borders. However, we will analyze those locations independently of City-owned locations and we will work closely with state agencies as a parallel effort to address safety on state-owned roads.

Second, we need to define “most dangerous.” Generating a list of dangerous intersections begins with the examination of reported crash data. From there, we need a methodology to filter and weight the data based on our priorities. We are still in the process of refining our methodology for weighting and ranking

the crash data. Raw data, without refinement, show a simplistic view of how many crashes are reported, but does not account for a variety of important factors.

Some of the factors that are being examined to finalize our ranking and weighting criteria include:

- Involvement and/or injury of vulnerable road users, e.g. people walking, people riding bikes or other micromobility devices.
- Severity of injuries
- Involvement of large vehicles
- Relative recency of crashes and impact of any roadway changes. For example, looking back ten years identifies Inman Square as a top crash location. The recent redesign must be factored into the data to account for the infrastructure improvements.

General criteria for the analysis will include:

- Analysis of all crashes over the previous 10-year period (crash date and time, manner of collision, user types involved [vehicle, bike, ped], severity of injury, and road surface and weather conditions).
- Analysis will use both the MassDOT IMPACT crash database and Cambridge Police crash data.
- Written police Crash Reports will be an essential part of the analysis and ranking process. While databases such as the MassDOT IMPACT database and the Cambridge Crash Open Data database provide a significant amount of detail, it is essential to look at complete crash reports to properly evaluate crashes and eventually evaluate an intersection for improvements. The reports contain information not available in the database summaries and will help us determine any recuring causes of crashes.

Evaluation of Intersections for Improvements

Once the prioritized list is completed, we will evaluate intersections for improvements using a toolbox of interventions, pulled from a variety of best practices such as the NACTO guide “Don’t Give Up at the Intersection” and MassDOT's Complete Streets design guidelines. Ultimately each intersection will be evaluated to determine the set of interventions needed based on the specific geometry, crash history, and patterns of that particular intersection. Elements of the individual intersection evaluations will include:

- *Crash Diagram*
  Using a MassDOT template, we will produce a crash diagram for the intersection showing the location of each crash, grouped by manner of location, and also showing the road user types involved. This diagram will be informed by the written crash reports and is an effective way to show common causes of crashes on a single page.

- *Site Visit*

Similar to the post-serious-crash protocol, evaluation will include a site visit. During the visit, staff will observe and discuss:

- Behavior of the road users (speed, attentiveness, compliance with traffic controls)
- Operation of traffic controls, particularly traffic signals
- Condition of traffic controls (signs, markings, flex posts, signals, etc.)
- Layout of intersection elements and placement of signal equipment

- Sight lines and visibility of vulnerable users
- Sun glare and other natural elements

- *Discussion of Changes*
  - Review the site visit observations and come to consensus on issues
  - Discuss any causes of crashes found in multiple reports
  - Discuss the list of short- and long-term improvements and assign each item to the relevant department

- *Audit Report*

For each intersection evaluated, we will prepare a technical memorandum explaining the audit process, findings, proposed improvements, and timelines for implementation. The final report will be published to the City's Vision Zero web site.

Immediate Action Items

- Complete infrastructure safety audits at locations of two recent fatal crashes.
- Develop plans to implement safety improvements resulting from the audits.
- Generate a list of and rank intersections deemed the most dangerous.
- Complete Safety Audits of top 5 locations based on ranking priorities.
- Plan for changes to the five most dangerous locations in the city's control, included any immediate changes and plans for any changes that require more time to implement.
- Begin work with MassDOT and DCR on high crash locations outside of the City's jurisdiction.
- Provide a timeline for improvements in early Fall 2024.
- Make information on safety audit results available on Vision Zero website.

Enforcement

The Cambridge Police Department (CPD) conducts education and enforcement with the goal of reducing harm to those traveling in and through Cambridge and educating all roadway users about safety as part of CPD's and the City's commitment to Vision Zero. Locations for education and enforcement are determined by collision data, community feedback, and in coordination with other City agencies.

Areas of enforcement focus include speeding, impaired operation, turn restrictions, trucks operating on restricted ways, bicycle lane violations, bicycle violations, bus lane violations, distracted driving, and red-light/stop sign violations. Additionally, CPD was awarded grant funds which allow officers to focus on any risk-taking behavior which endangers the safety of bicyclists and/or pedestrians. Educational efforts around traffic and road safety also focus on hot spots and traffic infractions that frequently contribute to serious injury crashes and traffic congestion.

Education

All road users benefit from knowing and following the rules of the road and being considerate of other travelers. The Community Development Department, Cambridge Police Department, School Department, Traffic, Parking and Transportation Department, and the Cambridge Bicycle Committee all participate in educational efforts around traffic safety.

CDD creates and widely distributes a variety of outreach and educational materials that focus on all

modes, hosts free bike workshops and skill-building sessions for the public and City employees, and provides support for local organization and private entities engaged in outreach and education. This September, there will be a free workshop to teach people urban cycling skills.

These resources are translated into multiple languages and distributed on the City website and in physical copies including the "Street Code: Rules and etiquette for getting there together <https://www.cambridgema.gov/-/media/Files/CDD/Transportation/multimodalcommunications/2023streetcode.pdf>," public service announcement posters on Bluebikes stations, and the Getting Around Cambridge Map safety information. People can learn in person at free City bike workshops, which cover practical issues like how to be safe around vehicles and pedestrians, rules of the road/traffic laws, winter cycling, bike maintenance, and how to safely ride, store, and charge an E-bike. The City also supplements this information with free bike helmets and bike lights. A new adult learn-to-ride class will be offered soon, to respond to the growing interest in bike riding.

Youth Education
We offer youth education during our Safe Routes to School program in all Cambridge public elementary and middle schools: 2nd grade pedestrian training, 4th grade classroom bicycle training, and 6th grade on-road bicycle training. The pedestrian lessons teach the importance of safe walking behaviors and the basic elements of pedestrian infrastructure. The bicycle safety lesson includes how to correctly fit a helmet, rules of the road, and basic bicycle maintenance. Sixth grade students learn about the rules of the road, riding on roads with and without bike lanes, avoiding being "doored," intersection safety, balancing at low speeds, dealing with potholes and other roadway obstructions, and basic bicycle repair and maintenance. Students ride a city-owned bike fleet of child-specific bicycles for off-road drills and an on-road group bike ride that visits local bicycle infrastructure and allows students to practice the skills they learned with the additional supervision of Cambridge Police Officers. In response to lessons learned during recent community engagement efforts, CDD adapted its 12-person Mayor's Summer Youth Employment Program team focus to examine rules adherence to develop ways to talk about transportation etiquette and safety with youth.

University Education
Each year, new university students come to Cambridge from around the world. To ensure that they learn safe transportation habits, the City distributes safety information to Harvard and MIT, for inclusion in their education and outreach efforts. These materials include the Getting Around Cambridge safety information, the Street Code, and the newly created information sheet highlighting safe bike riding behavior around large vehicles.

This summer, the City will work with Harvard, MIT, and Lesley to ensure that information about truck safety is included in their orientation package for incoming students. Staff will conduct bike safety workshops with incoming students and attend a Harvard Bike Festival and MIT bike event this September, which will emphasize safety with a scavenger hunt focused on bike safety and infrastructure, and a series of group rides led by MassBike. Harvard is hoping to make this an annual event to educate people who are new to campus or the region who may be unfamiliar with local bike lanes or rules of the road.

General Public Education
There are many opportunities for engaging people in Cambridge at various events including the Cambridge River Festival; Fresh Pond Day, Summer Food events; Danehy Park Family Day; and Cambridge Science Festival. City staff hand out information and talk with attendees. At the Bike Committee-sponsored community rides, staff and committee volunteers provide information to ride

participants and community members. Bicycle safety quizzes and information are featured prominently at these citywide events.

Additionally, as part of the City's upcoming ARPA-funded Bicycle Access Program, we have an opportunity to directly communicate truck and traffic safety information to the more than 1,000 people we expect to take part in this program.

To help improve safety for all modes, Cambridge makes efforts to engage with and include drivers in outreach and education around transportation. For example, information on safe driving and changes being made on our streets is included in the annual Resident Parking Information Brochure that goes to every resident receiving a resident parking sticker or visitor parking permit. Topics covered in past years include lower speed limits, no turn on red regulations, Vision Zero, and the need to watch for people bicycling before opening a car door among others. This year we plan to supplement this information with a safety insert to go out with each brochure.

The City is also building a fall 2024 social media campaign around the safety information found in the Street Code. This safety information also reaches employees, both Cambridge residents and people who live outside the city, through the required distribution of materials at properties regulated under the Parking and Transportation Demand Management Ordinance. In the past, the City has worked with statewide advocacy groups to encourage changes to driver education curriculum, and we will restart this coordination effort this year.

Bus and Ridehail Driver Education

The City works with the MBTA to regularly update training protocols for operators, ensure that bus-bike interactions are as safe as possible, and to advocate for policy and systems changes as needed. In 2020, the City, in collaboration with the Livable Streets Alliance, MassBike, The Loop Lab, and the MBTA, created a new training series for MBTA bus operators, including 11 video modules outlining proper bus operator behaviors around people biking, focusing on turns, speed, communication, and empathy. In addition to this video series, the training curriculum was also updated to incorporate more bike-bus scenarios.

As noted above, there are many commercial vehicles operating on streets in Cambridge. Cambridge has reached out to companies and organizations operating ridehail vehicles to share educational materials and discuss ways of promoting safe driving. We have distributed Watch For Bikes window stickers to taxi companies and ridehail companies to remind drivers and passengers to be careful opening car doors. The next generation of education for ridehail drivers is under discussion and staff will provide an update to the Council in the future.

Sharing Information and Next Steps

As described above, we are still refining and developing our programs. We will provide further updates as work continues. The City's Vision Zero Website, found under the Street and Transportation section of the City's website, will be the central clearinghouse for information on the wide range of work we are doing to improve safety on our streets.

Very truly yours,

Yi-An Huang

City Manager