Memorandum for the Record
Boston Region Metropolitan Planning Organization Meeting

December 21, 2017, Meeting

10:00 AM–12:33 PM, State Transportation Building**,** Conference Rooms 2 and 3, 10 Park Plaza, Boston

David Mohler, Chair, representing Stephanie Pollack, Secretary and Chief Executive Officer, Massachusetts Department of Transportation (MassDOT)

Decisions

The Boston Region Metropolitan Planning Organization (MPO) agreed to the following:

- Approve the minutes of the November 2, 2017, meeting
- Release the draft federal fiscal years (FFYs) 2018–22 Transportation Improvement Program (TIP) Amendment Two for a 21-day public review period
- Approve the work program for *FFY 2018 Freight Planning Support*

Meeting Agenda

1. Introductions

See attendance on page 16.

2. Public Comments

Dan Carty (Sudbury Board of Selectmen) advocated to include project #607249 (Intersection Improvements at Route 20 and Landham Road in Sudbury) in the FFYs 2019–23 TIP. This project is a priority for the Town of Sudbury because of high crash rates overall, and relative to other locations in MassDOT Highway District Three. The project is at the 75 percent design stage and would address safety concerns, increased congestion because of development along Route 20, bicycle and pedestrian concerns, and drainage issues. D. Carty expressed concern that proposed changes to evaluation scores for previously scored TIP projects showed a decrease in this project's safety score. (Proposed changes to evaluation scores are presented in item 9 of this agenda and can be found on the MPO's meeting calendar. The overall score for this project remained the same.) Sudbury has communicated with TIP Manager, Alexandra (Ali) Kleyman regarding the score changes and the project's readiness for advertisement. D. Carty requested that MassDOT confirm the project's priority status with a projected advertisement year of FFY 2019.

Lee Auspitz (Resident of Somerville) referred to previous comments made to the MPO board concerning geographical specifics of the Green Line Extension (GLX). L. Auspitz previously asked the MPO, MassDOT, and Massachusetts Bay Transportation Authority (MBTA) to clarify in its documents that the planned GLX does not extend into Medford Hillside. L. Auspitz stated that the latest Massachusetts Environmental Policy Act (MEPA) filing for GLX, a Notice of Project Change filed in October 2017, reintroduces language indicating that the GLX extends into Medford Hillside. L. Auspitz asked that the MPO and MBTA align their documents to address this discrepancy.

3. **Chair's Report**—*David Mohler, MassDOT*

There was none.

4. **Committee Chairs' Reports**—*Jay Monty, At-Large City (City of Everett), Chair, Congestion Management Process (CMP) Committee*

J. Monty reported that the CMP Committee met prior to the MPO board and approved a work plan for FFY 2018. Ryan Hicks, MPO Staff, presented on MBTA Bus Performance Measures, and J. Monty expressed a desire to bring this presentation to the whole board at a future meeting. J. Monty added that members of the CMP Committee would like to see a renewal of the Intersection Improvement Program, an investment program included in previous TIPs that has since been discontinued.

5. **Regional Transportation Advisory Council Report**—*Tegin Teich, Chair, Regional Transportation Advisory Council*

There was none.

6. **Executive Director's Report**—*Karl Quackenbush, Executive Director, Central Transportation Planning Staff*

K. Quackenbush noted the passing of Frank DeMasi, a former long-time member of the Advisory Council and chairman of its subcommittee on freight issues.

7. **Action Item: Approval of November 2, 2017, MPO Meeting Minutes**—*Róisín Foley, MPO Staff*

A motion to approve the minutes of the meeting of November 2, 2017, was made by the Inner Core Committee (City of Somerville) (Tom Bent) and seconded by the North Suburban Planning Council (City of Woburn) (Tina Cassidy). The motion carried.

8. Action Item: Draft FFYs 2018–22 TIP Amendment Two—*Alexandra (Ali) Kleyman, MPO Staff*

Documents posted to the MPO meeting calendar:

1. Table 1: FFYs 2018–22 Draft TIP Amendment Two, MBTA Federal Capital Program
2. Table 2: FFYs 2018–22 Draft TIP Amendment Two, Summary of Proposed Changes
3. Table 3: FTA Formula Funds, FFYs 2018–22 Draft TIP Amendment Two, Project-Level Backup for Informational Purposes
4. Table 4: Administrative Modification to the MBTA's FFY 2017 TIP, for Boston MPO Informational Purposes, FTA Grants Executed on September 5, 2017

A. Kleyman presented Draft FFYs 2018–22 TIP Amendment Two. Amendment Two reflects what the MBTA expects to receive in Federal Transit Administration (FTA) formula funds in each year of the TIP. The increase in FFY 2018 funding includes funding carried over from FFY 2017. The tables contain detail about the overall funding in each program and the specific projects currently planned for implementation during the five years of the TIP. This amendment is being proposed to better align the TIP with the MBTA's finalized Capital Investment Plan (CIP) and address changes in project readiness and funding. Table 3 shows six new projects that have been added because of shifts in funding; the new projects are highlighted in green and were able to be moved into FFYs 2018–22 TIP because the Red and Orange Line Signals Programs required fewer federal dollars.

Discussion

T. Teich asked that the MBTA present its project prioritization process to the board so that members may have a better idea of the reasoning behind the reallocation of dollars among projects in TIP amendments.

Vote

A motion to release Draft Amendment Two to the FFYs 2018–22 TIP for a 21-day public comment period was made by the City of Boston (Boston Transportation Department) (Jim Gillooly) and seconded by At-Large Town (Town of Lexington) (Richard Canale). The motion carried.

9. FFYs 2019–23 TIP Development: Project Evaluation Process—*Alexandra (Ali) Kleyman, MPO Staff*

Documents posted to the MPO meeting calendar:

1. FFYs 2019–23 TIP Development Proposed Evaluation Changes; Table 3: Summary of Potential Rescoring: This table lists projects that have previously

been evaluated by MPO Staff but remain un-programmed in the TIP, their scores under the current evaluation criteria, and potential new scores under the proposed updated criteria being presented by staff at this meeting.

A. Kleyman provided an update on the FFYs 2019–23 TIP development process, including potential rescoring of previously evaluated, but as yet unfunded, projects using proposed changes to the TIP project evaluation criteria. A. Kleyman described work MPO Staff has undertaken to clarify and improve the TIP project evaluation criteria. The goal of this update to the evaluation scoring is to: 1) more clearly define a specific and repeatable methodology for applying certain criteria; 2) define all data needs and sources; 3) clarify what data is needed from project proponents; 4) simplify and organize MPO Staff's internal project database; and 5) more clearly communicate project scoring through the online TIP database. The updates are in the goal areas of Safety, Equity, and Economic Vitality. Each of the proposed changes is described in further detail below.

Safety

Under the current method, crashes are scored with an equivalent property damage only (EPDO) index (crash severity) as well as an EPDO rate (per million vehicle-miles traveled) (crash severity rate). MPO Staff found that the EPDO rate does not adequately account for the difference in the number of crashes for corridor projects versus intersection projects. Using an EPDO rate point scale resulted in overall lower safety scores for intersection projects relative to corridor projects, because corridor projects have the potential for many more crashes over a larger/longer project area. For this reason, as well as to better align the MPO's criteria with how MassDOT measures and assesses safety, MPO Staff are proposing to replace the EPDO rate measure with two separate measures: 1) an intersection crash rate, and 2) a corridor crash rate. The point scales are based on average crash rates in the Boston Region MPO area and align with MassDOT district crash rates. The point scales also separate signalized intersections from un-signalized intersections and introduce scoring based on roadway functional classes for corridor projects.

Equity

Under the current approach, projects received points for equity only if the percentage of a protected population within a half-mile radius of the project area exceeded the regional average, and if there were at least 200 individuals who met the definition of the protected population. MPO Staff are proposing to discontinue the use of this minimum population requirement, in order to align with federal guidance.

Economic Vitality

Under the current scoring for the Economic Vitality criteria, "Serves Targeted Development Site," two points are assigned for new transit access, one point for improved transit access, and one point each for improved bicycle, pedestrian, or road access. MPO Staff are proposing to assign equal weight to all improvements to non-single occupancy vehicle modes by awarding two points for new transit, bicycle, or pedestrian access, and one point for improved transit, bicycle, or pedestrian access. Improved road access would continue to garner one point.

Summary

Under the proposed criteria scoring changes, no project scores increased by more than four points, two project scores stayed the same, and one project score decreased by one point. MPO Staff believes that these changes will result in a more transparent, repeatable, and clearer process that is better aligned with MassDOT's practices, federal guidance, and MPO goals and objectives.

Discussion

J. Gillooly asked if there is still time to submit a new project for evaluation, citing a specific project recently approved by MassDOT's Project Review Committee (PRC). A. Kleyman replied that there is time, and asked J. Gillooly to review the Project Proponent Guide and send her a complete questionnaire as soon as possible.

Marie Rose (MassDOT Highway Division) asked why the table summarizing potential rescoring only includes 11 projects. A. Kleyman clarified that these are projects that have been previously scored by MPO Staff but are as yet unfunded, in order to show the differences between the current scoring system and the proposed system. The overall Universe of Projects for consideration in TIP development contains many more projects, and will be evaluated in the next step in that process.

T. Teich asked A. Kleyman to elaborate on the changes in safety scores. A. Kleyman replied that some of the decreases in points results from the fact that the EPDO rate score includes severity, which weighs fatal crashes more than non-fatal ones, whereas the new scoring criterion that replaces the EPDO rate does not. Severity is still accounted for in other measures included in the safety score. Mark Abbot (MPO Staff) added that staff recommends the MPO move away from using the EPDO rate because it is not widely used in the traffic-engineering field or in MassDOT's own methodologies for assessing safety.

Dennis Crowley (South West Advisory Planning Committee) (Town of Medway) asked what a municipality must do in order to have a project evaluated. A. Kleyman responded

that a project must be PRC-approved, and have a Functional Design Report or equivalent data that can be used to assess a project, which proponents must submit to her for evaluation. These details and information have been sent to all municipal TIP contacts and MassDOT Highway district coordinators. D. Crowley asked if there are any projects that haven't been scored yet. A. Kleyman clarified that there are seven newly submitted projects that MPO Staff is in the process of scoring.

D. Mohler asked whether the board will be provided with the scores of already-programmed projects when programming discussions begin. A. Kleyman responded that scores for programmed projects are included in the materials provided.

T. Teich asked whether the increases in Economic Vitality scores were a result of the differences in weighting for bicycle and pedestrian improvements. A. Kleyman responded that this is correct. D. Mohler asked whether it makes sense to assign the same number of points for new bicycle and pedestrian access as for transit. T. Teich agreed that in terms of large-scale benefit it might not make sense to weight them the same. K. Quackenbush noted that this aspect of the suggested changes came to MPO Staff from the Metropolitan Area Planning Council (MAPC), so MAPC might need to be available to provide input about the thinking behind this change. Jim Fitzgerald (City of Boston) (Boston Planning & Development Agency) agreed with D. Mohler, T. Teich, and J. Gillooly that this should be re-thought. D. Mohler asked MAPC staff in attendance to bring more information on this aspect of the re-scoring to a future meeting.

J. Gillooly asked A. Kleyman to clarify changes to the criteria in the Equity goal area. A. Kleyman explained that the suggested change eliminates the minimum population requirement; thus, projects receive points for exceeding the regional average regardless of the actual number of individuals affected by the project. D. Mohler asked how the new criteria accounts for differences in impact for specific projects if there is no minimum requirement. Elizabeth (Betsy) Harvey, MPO Staff, clarified that staff proposed discontinuing the minimum population requirement because of federal Environmental Justice guidance that requires MPOs to consider all members of protected populations who reside in project areas regardless of the number of individuals. D. Mohler asked E. Harvey to provide him with a list of actual population numbers for the re-scored projects, adding that he did not agree with the assertion that projects which serve one individual of a protected class should be awarded points equal to projects that serve thousands of protected individuals. [Points are awarded only if the share of a protected population in the affected project area is higher than the region's median.]

Dennis Giombetti (MetroWest Regional Collaborative) (City of Framingham) asked if board members could see the range of equity points that were awarded to projects. D.

Mohler replied that projects either receive one point or two points in six categories of protected classes. The protected populations are minority, low-income, limited English proficiency, people will disabilities, elderly people, and individuals with no vehicle access in their households. The difference between one point and two points varies between more than 1,000 individuals and more than 2,000 individuals, depending on the protected class.

D. Crowley noted as a counterpoint to earlier statements by D. Mohler, T. Teich, J. Fitzgerald, and J. Gillooly that weighting transit more heavily than other modes under the Economic Vitality criteria may put more suburban communities at a disadvantage.

T. Teich asked if members could have the list of all evaluation criteria for reference. A. Kleyman replied that staff wanted to understand if these proposed changes were approved before revising the full list of criteria and providing it to the board.

Aaron Clausen (North Shore Task Force) (City of Beverly) added that, pertinent to the discussion of points awarded for improvements to transit, the Economic Vitality criteria is not the only place within the overall criteria in which transit is considered. Other considerations of transit are included in additional criteria in other evaluation categories.

D. Mohler stated that he needed more time to look at the raw data related to equity and discuss the changes with staff before agreeing to the changes. K. Quackenbush agreed to provide members with more information so that they could reach a resolution at the next meeting.

10. **Work Plan for *FFY 2018 Freight Planning Support*—*Bill Kuttner, MPO Staff***

B. Kuttner presented the FFYs 2018 work program for Freight Planning Support and the results of last year's program. In FFY 2017, staff produced the featured study, "Weight and Height Restrictions that Impact Truck Travel," which can be accessed on the MPO's meeting calendar. This study investigated bridges in the MPO area that restrict the weight or height of vehicles permitted to pass over or under them, and characterized the severity of height and weight restrictions on the freight network in the MPO region. Staff found that most weight restrictions are not on major corridors, and weight restrictions on major corridors are not overly restrictive to truck traffic. Staff analyzed freight crashes and found that height restrictions most likely would cause problems under rail alignments. The information developed by this study will be used to evaluate projects considered for inclusion in two MPO planning documents: the Long-Range Transportation Plan (LRTP) and the TIP.

For FFY 2018, staff proposes to begin organizing data and developing maps of the industrial geography of the region in a freight logistics database. This work will complement efforts currently underway at the Federal Highway Administration (FHWA) to expand and improve its freight analysis framework capabilities. FHWA has made available some of its initial planning products and has indicated that it would welcome input from states and MPOs to improve these resources. Ultimately, data developed in this effort will be used to estimate truck trip generation in the Boston region and to identify opportunities to introduce or expand rail freight services. Staff will pursue a two-way data exchange with federal partners to complete the regional and statewide picture and ensure that planners outside of Massachusetts are looking at reliable information about the region. The total cost of this project is estimated to be $55,600.

Discussion

Laura Gilmore (Massachusetts Port Authority) thanked B. Kuttner for his ongoing freight work, and asked him to elaborate further on industrial geography mapping efforts. B. Kuttner replied that there are many places in the region where industrial geographies are in flux. The goal of the database is to map these locations to create an accurate picture of freight logistics in the region. L. Gilmore asked how this work may intersect with the Massachusetts State Freight Plan. B. Kuttner replied that the development of the Freight Plan is mostly finished, with information from last year's Freight Program incorporated. Staff will use the State Freight Plan in the Needs Assessment for the next LRTP.

Vote

A motion to approve the work program for FFY 2018 Freight Planning Support was made by the Inner Core Committee (City of Somerville) (T. Bent) and seconded by At-Large Town (Town of Lexington) (R. Canale). The motion carried.

11. Planning for Connected and Autonomous Vehicles—*Karl Quackenbush, Executive Director, and Scott Peterson and Bruce Kaplan, MPO Staff*

K. Quackenbush introduced S. Peterson and B. Kaplan's presentation of a UPWP-funded study entitled, "Connected and Autonomous Vehicles and the Boston MPO—A First Look." The potential consequences of connected and autonomous vehicles (CAVs) for transportation planning could be far reaching—extending to areas of safety, energy consumption, air quality, congestion, travel times, equity, and accessibility. Because the nature of this technology's development and deployment is uncertain, MPO Staff cannot predict its impact accurately. There are numerous risks and deep concerns about CAV, both personal and social—issues of legal liability, privacy, reliability, and cybersecurity, for example—that have yet to be addressed. As a "first look," this report reviews

developments in CAV technology, discusses the range of potential benefits and impacts that could result once it is in use, and recommends concrete actions that the MPO can take now in order to incorporate—and simultaneously understand—CAV.

What is CAV technology?

Connected vehicles (CVs) communicate with nearby vehicles and infrastructure. They are not automated. Autonomous vehicles (AVs) operate in isolation from other vehicles using internal sensors. Connected automated vehicles (CAVs) combine autonomous, automated, and connected vehicle technology and can be used to refer to a wide range of vehicles. In an effort to standardize descriptive language for CAV technology, the Society of Automotive Engineers International defines six levels of driving automation, with level 0 being no automation and level 5 being full automation, in all driving modes. Vehicles operating at or above Level 3 have been dubbed highly autonomous vehicles (HAVs).

CAV technology is expected to influence multiple transportation modes including shared mobility services, ridesourcing transportation network companies (TNCs), public transit, and the freight industry. There are pilot CAV programs in many of these industries. HAV technology stands to benefit transportation network companies in both the long and short terms. The initial high cost of HAVs may cause people to choose options besides car ownership, such as using TNCs. If the ownership and operating costs of HAVs persist in being unaffordable to many, TNC usage could become permanent. HAVs themselves could present a major opportunity to transform the nature of the TNC industry. TNCs could become exclusively driverless shared autonomous vehicle fleets. Uber and Lyft have even suggested moving to a shared autonomous vehicle (SAV) model, in which a subscriber would be able to use a convenient on-demand driverless taxi service, potentially eliminating the need for vehicle ownership.

Adoption

Opinions about when HAVs will appear vary widely. Some of the latest research, based on previous vehicle technology deployment, suggests that although HAVs will be available for purchase in the 2020s, they would remain a minority of vehicles on the road until the 2050s. The United States Government Accountability Office (GAO) estimates that although most vehicle travel will occur by HAVs in the 2040s, they still won't be the majority of vehicles on the road until the 2050s. Industry estimates are more optimistic, predicting that HAVs will be ready for use by the end of this decade and early 2020s.

Federal, state, and local agencies are supporting deployment of CV technology through various initiatives. The National Highway Traffic Safety Administration (NHTSA)

released its Federal Automated Vehicles Policy, updated September 20, 2016, to aid the deployment of safe, highly autonomous vehicles. On September 6, 2017, the US House of Representatives passed the SELF DRIVE Act, which eases CAV development and deployment. As of September 2017, 21 states and Washington DC have passed legislation related to autonomous vehicles; and legislation is pending in many other states. Executive orders related to autonomous vehicles were issued in four additional states. As of June 2017, two Massachusetts Senate and six Massachusetts House bills regarding AV policy had been filed. The Autonomous Vehicles Working Group, chaired by MassDOT, has drafted proposed regulations as well.

HAV testing has occurred this year in the Boston area. Cambridge-based NuTonomy has already completed two rounds of HAV testing. Two other companies—Optimus Ride and Delphi—have been approved for HAV testing in the Marine Industrial Park.

Safety

One of the most promising outcomes predicted for CAV adoption is improvement in personal safety. CAVs can address human errors caused by fatigue, distraction, under-reaction, over-reaction, and limited situational awareness. However, one study posits that 49 percent of crashes involve at least one limiting causal factor that could reduce the effectiveness of or even disable CAV technology. Other authors note that not all crashes are caused by drivers. This might be especially critical prior to complete market penetration and adoption of HAVs, when HAVs need to operate in mixed traffic.

Congestion and Roadway Operations

It is not clear how HAVs and SAVs will affect congestion and roadway operations. CAV technology could assist in optimizing roadway usage through efficient vehicle operations and transportation system efficiency. On the other hand, CAV technology could worsen congestion. Initial HAVs may require longer distances between vehicles than auto drivers currently use; this could lead to slower traffic flows until the technology is perfected. The convenience offered by HAVs and SAVs may lead to increased trip making, which may exacerbate existing congestion. Benefits from CAV technology may also have less of an impact on non-limited access roadways than anticipated. Conflicting turning movements, pedestrians, and bicyclists are among the issues with which CAV technology has had trouble.

Accessibility and Mobility

HAVs could improve accessibility to employment, health care, education, commerce, and other essential services. HAVs could offer the opportunity for independent travel to those segments of society currently unable to operate automobiles—the elderly, youth, disabled, impaired, and those who have no license, for example. However, automobiles

equipped with CAV technology are initially expected to cost roughly 35 percent more to purchase than regular vehicles. When combined with service costs, this could result in an increase of annual costs of between $1,000 and $3,000 per vehicle. This annual cost would not be wholly offset by anticipated savings in fuel and insurance spending. Using an SAV for travel is not predicted to be cost-effective if a person's annual vehicle-miles traveled (VMT) is more than 6,000 miles.

The convenience and independence offered by having HAVs available at all times might reduce peoples' desire to own a vehicle. A study predicted that 43 percent fewer households would own automobiles following the introduction of HAVs. There is concern about how the introduction of HAVs and SAVs will impact issues surrounding social equity. Low-income residents may be unable to afford HAVs or SAVs if higher operating, maintenance, and up-front capital costs make them cost-prohibitive. In an age of limited resources, favoring HAVs may lead to transit service cuts, not to mention the degradation and decline in safety of existing service and facilities.

Productivity

One of the anticipated benefits of CAV technology is that it would free up travel time otherwise spent driving, which in theory would allow people to be more productive. However, a recent study asserts the opposite, claiming that 62 percent of Americans would not be more productive using HAVs.

Air Quality and Energy

Air quality stands to be affected positively by the introduction of CAVs. The efficiencies associated with automated driving, such as fuel-efficient braking and acceleration, would lead to better vehicle performance and better fuel economy, which translates into less vehicle emissions and energy usage. CAVs could improve energy efficiency by 2 to 25 percent depending on assumptions. Conversely, increased trip making, longer trip lengths, and greater VMT associated with HAVs could lead to more emissions and greater energy expenditure.

Parking Demand and Land Use

Some have estimated that introduction of HAVs could eliminate the need for on-street parking, and reduce the need for off-street parking facilities by 80 percent. Furthermore, HAVs could park optimally, using as little land as possible. Land currently used for parking could be freed up and reused for other types of development.

Economic Impacts

HAVs appear to present quite a few economic benefits. The improved accessibility and mobility afforded by HAVs could result in more people being able to participate in the

labor force. However, the introduction of HAVs could have profound economic effects on peoples' livelihoods. Employment associated with the automobile industry would decrease in the long run if fewer vehicles were needed overall because of vehicles' increased longevity. Professional drivers—including delivery people, cabdrivers, TNC drivers, freight operators, and school bus drivers—would need to find new work. The advent of HAVs also could affect public revenue streams; municipalities currently collect money from parking in many ways, and states collect various taxes (including excise and gasoline taxes) associated with vehicle use.

The role of CAVs in MPO Planning

Planners have begun to address the future adoption of CAV technology in three areas—long- and short-range planning, travel demand modeling, and scenario planning. Although CAV technology currently has a high national profile, it has made very few appearances in recent city and regional planning documents; for example, it has not been included in a single MPO TIP, as of September 2017. A 2015 survey of plans produced by most of the 68 largest communities in the US noted that only six percent of plans consider the potential impact of driverless technology; and only three percent take into account TNCs, despite the fact that TNCs already operate in 88 percent of US communities.

Only a few metropolitan areas have used regional travel demand models to measure the impacts of CAV technology; and even fewer attempts have been made to model SAVs. There are three examples of agencies using trip-based models like the one used by the Boston Region MPO to model CAV technology. Two separate tests for HAV introduction were made using the regional model maintained by the Capital Area Metropolitan Planning Organization, the MPO for Austin, Texas. Auckland, New Zealand also tested the introduction of HAVs and SAVs with its regional travel demand model. Introduction of HAV technology was tested by the Fehr and Peers consulting firm using seven different regional MPO travel demand models. Eight separate distinct model components representing various aspects of CAV technology were adjusted. In terms of modeling results, VMT increased between 12 percent and 68 percent in each of the seven tested regional models. In five of the models, transit trips dropped between 8 and 43 percent, while transit trips rose by 5 percent and 16 percent in the other two models.

Scenario Planning

FHWA is currently developing a guidebook—Scenario Planning for Connected and Autonomous Vehicles—to provide state and local agencies with information and tools to help them account for these uncertainties. Several agencies have performed scenario-planning work in which HAV and SAV deployment play prominent roles. Two different

kinds of scenario planning have occurred: non-quantified scenario planning, also known as scenario thinking, and quantified planning. Scenario thinking is used only to gauge stakeholder and public opinions regarding alternate futures, not to measure their impacts. One of the scenarios examined in the Pennsylvania Department of Transportation's LRTP, PA On Track, emphasizes statewide adoption of technology, including CAV technology and deployment.

Two large MPOs have conducted scenario-planning exercises in which multiple futures were envisioned and then modeled. The Atlanta Regional Commission designed four future scenarios, all of which contain deployment and adoption of CAV technology to varying degrees. The Delaware Valley Regional Planning Commission's latest scenario planning effort, Greater Philadelphia Future Forces, examined five differing futures for the next 50 years. One scenario, "Transportation on Demand," assumed that HAVs would comprise 30 percent of the vehicle mix and would be used mostly as SAVs by TNCs.

Next Steps for the Boston Region MPO

In addition to updating discrete policies and actions, planning for CAV technology must be integrated into specific MPO products and programs that deal with the operation and maintenance of the regional transportation system. In accordance with this FHWA guidance, the study presents 20 concrete actions that the Boston Region MPO may take, which are associated with specific planning programs and products—grouped into three major categories: data/planning tools, planning processes, and outreach. A list of these actions can be found on the MPO's meeting calendar.

Discussion

R. Canale thanked staff for this effort, and stated that technology likely would not be the limiting factor in adopting CAVs, but rather the legal, policy, and regulatory issues that the MPO is poised to negotiate.

J. Gillooly commented that the difficulty in planning for CAVs is evidenced by the potential for them to impact bicyclists and pedestrians, modes which are only just beginning to be fully integrated into the design for many roadway improvements. S. Peterson replied that much of this work is speculative, and outcomes depend entirely on the business model that wins out in the end. Depending on whether individual CAV ownership or SAV use becomes more popular, VMT could rise or fall.

12. Addressing Safety, Mobility, and Access on Subregional Priority Roadways: Route 1A Corridor Study in Wrentham—*Mark Abbott, MPO Staff*

M. Abbott presented the Route 1A Corridor Study in Wrentham. The MPO conducts a version of "Addressing Safety, Mobility, and Access on Subregional Priority Roadways" each year. The purpose of these studies is to identify roadway segments in the Boston region that are of concern to stakeholders, but that have not been identified in the LRTP regional needs assessment. Since 2013, staff has studied six corridors in five different subregions.

The corridor investigated in this iteration of the study, Route 1A in Wrentham, is about 3.1 miles long, from Downtown Wrentham to the Plainville border. All segments of the corridor are owned and maintained by MassDOT Highway Division District 5. The roadway is classified as an Urban Minor Arterial. The corridor is a two-lane roadway that widens to four lanes in the vicinity of I-495 and the Wrentham Village Premium Outlets. On an average day, it carries about 17,500 vehicles in the downtown area, about 13,500 vehicles south of Wampum Corner, and nearly 23,000 vehicles in the section between I-495 and the Wrentham Outlets. The speed limit on this corridor is generally 40 mph, except for 25 and 35 mph in the downtown area, and 20 mph at Wampum Corner.

Safety is the key factor that led this corridor to be selected for study. The corridor has a crash rate much higher than the average of urban minor arterials in the state. Moreover, the corridor has four crash clusters that are Highway Safety Improvement Program (HSIP) eligible, that is, they are ranked in the top-five percent of crash locations in the Boston Region MPO area. The intersection of Route 1A at Premium Outlets Boulevard is ranked 22 in the State top-200 crash locations, based on 2012–14 crash data. In the recent seven years (2010–16), there were two pedestrian crashes and one bicycle crash in the corridor.

Short-term improvements suggested by MPO Staff include relocating roadway regulatory signs to suitable locations, installing duplicate stop signs at Creek Street and Beach Street, altering traffic control at two intersections in Wrentham Common, and regular maintenance of roadway pavement markings. Long-term improvements include adding sidewalks and sufficient shoulders for pedestrian and bicycle accommodations, as well as various proposed alternatives to improve traffic circulation and safety at Wrentham Common, the I-495 Interchange, and the vicinity of the Wrentham Outlets.

The short-term improvements should be implemented as soon as resources are available from highway maintenance or local Chapter 90 funding. In the long term, staff

proposes three different improvement stages, depending on the future available funding sources. This study provides a vision for the corridor's long-term development in addressing safety, mobility, and access for all transportation users.

Discussion

D. Crowley noted that there is a potential TIP project that would add a southbound off-ramp from I-495, which is a recommendation of this study. D. Crowley noted that in order for issues with the interchange to be solved, Wrentham would have to come up with funds for engineering and design, which likely would exceed its budget; this points to the issues of smaller towns surrounding completion of needed projects.

13. Members' Items

J. Gillooly announced that the next public meeting for Boston's MPO-funded Rutherford Avenue/Sullivan Square project will take place on January 24, 2018. This meeting will be a design workshop.

R. Canale stated that he will not continue to serve on the MPO after January, 2018, and that David Kucharsky will be the Town of Lexington designee.

D. Mohler announced that John Bechard has been chosen as the new Deputy Chief Engineer at MassDOT. He may or may not replace Marie Rose as the MPO member designee for the MassDOT position.

14. Adjourn

A motion to adjourn was made by MassDOT Highway Division (John Romano) and seconded by the City of Boston (Boston Transportation Department) (J. Gillooly). The motion carried.

Attendance

Members	Representatives and Alternates
At-Large City (City of Everett)	Jay Monty
At-Large City (City of Newton)	
At-Large Town (Town of Arlington)	Laura Wiener
At-Large Town (Town of Lexington)	Richard Canale
City of Boston (Boston Planning & Development Agency)	Jim Fitzgerald
City of Boston (Boston Transportation Department)	Jim Gillooly
Federal Highway Administration	
Federal Transit Administration	
Inner Core Committee (City of Somerville)	Tom Bent
Massachusetts Department of Transportation	David Mohler
MassDOT Highway Division	John Romano Marie Rose
Massachusetts Bay Transportation Authority (MBTA)	Eric Waaramaa
Massachusetts Port Authority	Laura Gilmore
MBTA Advisory Board	Micha Gensler
Metropolitan Area Planning Council	
MetroWest Regional Collaborative (City of Framingham)	Dennis Giombetti
Minuteman Advisory Group on Interlocal Coordination (Town of Bedford)	Richard Reed
North Shore Task Force (City of Beverly)	Aaron Clausen
North Suburban Planning Council (City of Woburn)	Tina Cassidy
Regional Transportation Advisory Council	Tegin Teich
South Shore Coalition (Town of Braintree)	
South West Advisory Planning Committee (Town of Medway)	Dennis Crowley
Three Rivers Interlocal Council (Town of Norwood/NVCC)	Tom O'Rourke

Other Attendees	Affiliation
Dan Carty	Town of Sudbury
Rich Benevento	WorldTech
Lee Auspitz	Resident of Somerville
Steve Olanoff	TRIC Alternate
Frank Tramontozzi	City of Quincy
Alison Felix	MAPC
Lenard Diggins	MBTA ROC

MPO Staff/Central Transportation Planning Staff
Karl Quackenbush, Executive Director
Mark Abbott
Lourenço Dantas
Annette Demchur
Róisín Foley
Betsy Harvey
Alexandra (Ali) Kleyman
Bill Kuttner
Robin Mannion
Anne McGahan
Scott Peterson
Jen Rowe
Michelle Scott
Chen-Yuan Wang