Chapter 9—Screening Evaluation

9.1 INTRODUCTION

This chapter presents the preliminary screening that was used to compare the eight alternatives to the 2035 No-Build scenario and assesses their relative benefits and drawbacks.

9.2 SCREENING PROCESS AND CRITERIA

Eight alternatives were screened according to nine criterions:

- Traffic
- Motorized Circulation and Access
- Transit Circulation and Access
- Nonmotorized Circulation and Access
- Safety
- Neighborhood Impacts
- Environmental Impacts
- Business Considerations
- Cost

This section describes the measures that were considered under each criterion. For each measure, an alternative was assigned a score of -1, 0, or +1, depending on how it compared to the 2035 No-Build condition (Figure 9-1). For example, if the analysis showed that an alternative would increase vehicle emissions by more than 0.2% compared to the emissions predicted to occur in 2035 if no alternative is pursued, then this would be considered a negative impact, and the alternative would be assigned a score of -1. If the change from the No-Build condition is predicted to be relatively insignificant, the alternative would be given a score of 0.

Figure 9-1
Impact Summary

Positive Impact	No Impact or Insignificant Impact	Negative Impact
+1	0	-1

9.2.1 Traffic

Traffic was evaluated according to the delay reported by Synchro. The total delay in seconds for the AM and PM peak hours for specific intersections, which are common to all of the alternatives, was used. These regional intersections include:

- Park Drive at Brookline Avenue/Boylston Street
- Kenmore Square (Commonwealth Avenue/Brookline Avenue/Beacon Street)
- Massachusetts Avenue at Beacon Street
- Dartmouth Street at Saint James Avenue
- Arlington Street at Beacon Street
- Arlington Street at Stuart Street/Columbus Avenue
- Charlesgate East at Beacon Street
- Charlesgate West at Beacon Street
- Charlesgate West at Commonwealth Avenue Westbound
- Charlesgate West at Commonwealth Avenue Eastbound
- Charlesgate East at Commonwealth Avenue Westbound
- Charlesgate East at Commonwealth Avenue Eastbound
- Bowker Overpass at Boylston Street
- Charlesgate at Boylston Street and Fenway

If the delay was increased or decreased from the No-Build condition by more than 10%, the alternative was given a score of -1 or +1, respectively. If the delay did not change by more than 10%, the impact was assumed to be neutral and the alternative was assigned a score of 0.

9.2.2 Motorized Circulation and Access

The measures used to evaluate motorized circulation and access were travel times and vehicle route continuity/directness/connectivity.

Impacts to travel times were assessed by comparing total vehicle-hours traveled (VHT) in minutes for AM and PM peak hours in the study area. If VHT increased by more than 2% of the No-Build VHT level, the impact was considered a degradation and the alternative was given a score of -1; if the VHT decreased by more than 2%, it was considered an improvement, and the alternative was given a score of +1. A change of less than 2% was considered neutral, and the alternative was given a score of 0.

Vehicle route continuity/directness/connectivity was qualitatively assessed. For example, some alternatives improved connectivity by introducing a new off-ramp that provides a more direct connection.

9.2.3 Transit Circulation and Access

Changes in access for transit passengers and physical impacts to proposed transit alternatives were estimated. As with vehicle route continuity/directness/connectivity, this was a qualitative assessment. An example is assessing whether an alternative would impact a bus route and perhaps enhance the route.

9.2.4 Nonmotorized Circulation and Access

Bicycle and pedestrian circulation and access were qualitatively assessed based on perceptions of comfort, with consideration given to bike lanes, wide sidewalks, proximity to traffic, and other factors. The future Charlesgate Greenway was included in all scenarios, including the 2035 No-Build condition.

9.2.5 Safety

Safety impacts were assessed using five measures: vehicle crashes, bicycle/pedestrian separation from vehicular traffic, emergency vehicle access, highway operations, and geometrics.

For vehicle crashes, the results of the regional travel demand model were reviewed to determine whether traffic would increase through crash clusters. An increase was considered a negative impact and was assigned a score of -1, and a decrease was assigned a score of +1.

Bicycle and pedestrian safety was qualitatively assessed in terms of potential for bicycle-pedestrian conflicts. For example, increases in traffic on a roadway may prompt some bicyclists to ride on the sidewalk, which would increase the potential for conflicts with pedestrians.

Emergency vehicle access was qualitatively assessed by considering connectivity and directness, as well as changes in traffic congestion.

Highway operations were evaluated using Highway Capacity Software (HCS) to determine the level of service (LOS) on a new ramp or highway weaving section. Lower LOS indicates a negative impact and was assigned a score of -1.

9.2.6 Neighborhood Impacts

Neighborhood impacts include noise, aesthetics, and neighborhood cohesion.

Noise levels were evaluated for the alternatives and compared them to levels anticipated under the 2035 No-Build conditions. Traffic diversions were qualitatively assessed based on the results of the travel demand model. Increased noise levels have a negative effect, and elevated roadways impact aesthetics. Additionally, neighborhood cohesion was assessed by observing the travel demand model and estimating changes in traffic volumes and the resultant congestion. If volumes and congestion appeared to increase, it was considered a detriment to neighborhood cohesion.

9.2.7 Environmental Impacts

The environmental conditions that were considered include air quality, wetland impacts, hazardous material sites, historic districts and sites, and parks/open spaces.

Air quality was estimated from the travel demand model (metric tons of the total CO2 equivalent of CO, NOx, and CO2 for the AM and PM peak hours). Changes of more than 0.2% from the 2035 No-Build condition were considered positive (+1) or negative (–1) impacts.

The remaining factors (wetlands, hazardous material sites, historic districts and sites, and parks/open spaces) were assessed using the geographic information system (GIS) to determine whether the footprints of the alternatives impeded any resources.

9.2.8 Business Considerations

Business considerations include access and physical impacts to development sites; air rights; parking impacts; and truck circulation and access. The Boston Redevelopment Authority (BRA) provided information on which parcels have planned developments in order to determine if any were within the project area.

For air rights, the 2000 BRA report "A Civic Vision for Turnpike Air Rights in Boston" was used as a reference.

"Access to existing and future development sites" describes indirect impacts that do not require the structure on the property to be removed in order for the alternative to be built. "Physical impacts to development" are direct impacts in which the property overlaps the boundaries of the alternative; therefore, the structure itself would need to be either removed completely or reconstructed to allow for completion of the alternative.

Parking impacts were assessed by determining whether the footprint of the alternative infringed on existing on-street parking; if so, the number of spaces impacted was calculated by dividing the length of the infringement by 25 feet per vehicle. If 15 or more parking spaces were affected, this was considered a significant impact.

Truck circulation and access were qualitatively assessed by reviewing whether any dedicated truck routes would be impacted or whether traffic was forecasted to increase through any nonstandard facilities (e.g., intersections with acute angles).

9.2.9 Cost

The MassDOT Highway Division prepared conceptual estimates of construction costs associated with each of the Back Bay Ramps and Bowker Overpass alternatives. The

cost estimates only include estimated construction cost; no estimates have been provided for potential property impacts or other nonconstruction related costs. The MassDOT costs are provided in Appendix D.

9.3 SCREENING EVALUATION

The Back Bay Ramp and Bowker Overpass alternatives were evaluated using the previously described criteria. Table 9-1 summarizes the Back Bay Ramp alternatives, and Table 9-2 summarizes the Bowker Overpass alternatives.

9.3.1 Massachusetts Turnpike Back Bay Ramp Evaluations

The following section provides an explanation of each evaluation criteria for the Back Bay Ramp alternatives.

Back Bay Ramp Alternative 1: New Westbound Off-Ramp to Berkeley Street

1. Traffic (Neutral): The AM and PM peak-hour delays were below the 10% difference threshold and therefore were given a neutral or 0 score. The AM change resulted in a decrease of 2%, and the PM change was an increase of 5%.
2. Motorized Circulation and Access (Positive): A positive or 1 score was given because it improves existing conditions by increasing the number of Massachusetts Turnpike westbound off-ramps by replacing an on-ramp with an off-ramp; currently, there are many more on-ramps than off-ramps (two off-ramps and seven on-ramps) in the westbound direction within the study area. However, Cortes Street would no longer connect between Arlington Street and Berkeley Street: it would dead end before connecting to Berkeley Street.
3. Transit Circulation and Access (Negative): There is a potential for increased traffic volumes on Saint James Avenue, which could impact nearby bus routes 9, 39, and10, resulting in a negative rating. However, there are no proposed transit changes in the study area, and existing bus routes do not use the existing Massachusetts Turnpike on-ramp from Arlington Street.
4. Nonmotorized Circulation and Access (Neutral): Closure of Cortes Street at its western end may force bicyclists to ride on busier streets. However, this is not a large enough of an impact to result in a negative rating and therefore is considered neutral.
5. Safety (Neutral): Due to an increase in vehicle traffic through the Saint James Avenue/Dartmouth Street and Exeter Street/Huntington Avenue intersections, which are both high crash cluster locations, there will be a negative rating. However, a positive improvement for emergency vehicle access is anticipated because of better connectivity and route directness. Therefore, an overall rating of neutral was given.

6. Neighborhood Impacts (Neutral): The proposed ramp is located in the same location of the current Arlington Street on-ramp, so there will be no change to existing conditions, resulting in a neutral rating.
7. Environmental Impacts (Positive): A positive score was given because of a slight improvement to air quality.
8. Business Considerations (Negative): Because the proposed on-ramp impacts with proposed Air Right Parcels 18, 19, and 20, a negative rating was given.

TABLE 9-1
Massachusetts Turnpike Back Bay Ramp Alternatives Screening Summary

Evaluation	Measure	Back Bay Ramp Alternative 1	Back Bay Ramp Alternative 2	Back Bay Ramp Alternative 3	Back Bay Ramp Alternative 4
Traffic	Delay	0	0	0	0
	Overall Traffic Rating	Neutral	Neutral	Neutral	Neutral
Motorized Circulation and Access	Travel Times	0	0	0	0
	Vehicle Route Continuity/Directness/Connectivity	+1	0	+1	+1
	Traffic Diversions	0	0	+1	0
	Overall Motorized Circulation and Access Rating	Positive	Neutral	Positive	Positive
Transit Circulation and Access	Changes in Access for Transit Passengers	-1	-1	-1	0
	Physical Impact to Proposed Transit	0	0	0	0
	Overall Transit Circulation and Access Rating	Negative	Negative	Negative	Neutral
Nonmotorized Circulation and Access	Bicycle and Pedestrian Access	0	0	-1	0
	Overall Nonmotorized Circulation and Access Rating	Neutral	Neutral	Negative	Neutral
Safety	Vehicle Crashes	-1	-1	0	0
	Changes in Bicycle and Pedestrian Route Separation	0	0	0	0
	Changes in Emergency Vehicle Access	+1	0	0	0
	Highway Operations	0	0	-1	0
	Overall Safety Rating	Neutral	Negative	Negative	Neutral
Neighborhood Impacts	Noise	0	0	0	0
	Aesthetics	0	0	0	-1
	Neighborhood Cohesion	0	0	+1	+1
	Overall Neighborhood Impacts Rating	Neutral	Neutral	Positive	Neutral
Environmental Impacts	Air Quality	+1	+1	+1	0
	Wetlands	0	0	0	0
	Hazardous Material Sites	0	0	0	0
	Historic Districts and Sites	0	0	0	-1
	Parks/Open Space	0	-1	0	0
	Overall Environmental Impacts Rating	Positive	Neutral	Positive	Negative
Business Considerations	Access to Existing and Future Developments Sites (Indirect Impacts)	0	0	0	0
	Physical Impacts to Developments (Direct Impacts)	0	-1	0	0
	Air Rights	-1	-1	-1	0
	Parking Impacts	0	0	-1	-1
	Truck Circulation and Access	0	0	0	0
	Overall Business Considerations Rating	Negative	Negative	Negative	Negative
	Summary Comments	Cost: $100,800,000 2 Conditions improved 4 Conditions not significantly impacted 2 Conditions worsened	Cost: $122,700,000 0 Conditions improved 5 Conditions not significantly impacted 3 Conditions worsened	Cost: $52,400,000 3 Conditions improved 1 Conditions not significantly impacted 4 Conditions worsened	Cost: $137,100,000 1 Condition improved 5 Conditions not significantly impacted 2 Conditions worsened

TABLE 9-2
Bowker Overpass Alternatives Screening Summary

Evaluation	Measure	Bowker Overpass Alternative 1	Bowker Overpass Alternative 2	Bowker Overpass Alternative 3	Bowker Overpass Alternative 4
Traffic	Delay	-1	-1	-1	-1
	Overall Traffic Rating	Negative	Negative	Negative	Negative
Motorized Circulation and Access	Travel Times	0	0	0	0
	Vehicle Route Continuity/Directness/Connectivity	-1	0	0	+1
	Traffic Diversions	0	0	0	+1
	Overall Motorized Circulation and Access Rating	Negative	Neutral	Neutral	Positive
Transit Circulation and Access	Changes in Access for Transit Passengers	-1	0	0	0
	Physical Impact to Proposed Transit	0	0	0	0
	Overall Transit Circulation and Access Rating	Negative	Neutral	Neutral	Neutral
Nonmotorized Circulation and Access	Bicycle and Pedestrian Access	-1	-1	-1	-1
	Overall Nonmotorized Circulation and Access Rating	Negative	Negative	Negative	Negative
Safety	Vehicle Crashes	-1	-1	-1	-1
	Changes in Emergency Vehicle Access	-1	-1	-1	-1
	Highway Operations	0	0	0	0
	Overall Safety Rating	Negative	Negative	Negative	Negative
Neighborhood Impacts	Noise	0	+1	0	+1
	Aesthetics	+1	+1	+1	+1
	Neighborhood Cohesion	-1	-1	0	0
	Overall Neighborhood Impacts Rating	Neutral	Positive	Positive	Positive
Environmental Impacts	Air Quality	+1	0	-1	-1
	Wetlands	0	0	0	0
	Hazardous Material Sites	0	0	0	0
	Historic Districts and Sites	-1	-1	-1	-1
	Parks/Open Space	0	-1	+1	+1
	Overall Environmental Impacts Rating	Neutral	Negative	Negative	Negative
Business Considerations	Access to Existing and Future Developments Sites (Indirect Impacts)	0	0	0	0
	Physical Impacts to Developments (Direct Impacts)	0	0	0	0
	Air Rights	0	0	0	0
	Parking Impacts	0	0	0	0
	Truck Circulation and Access	0	0	0	0
	Overall Business Considerations Rating	Neutral	Neutral	Neutral	Neutral
	Summary Comments	Cost $46,200,000 0 Conditions improved 3 Conditions not significantly impacted 5 Conditions worsened	Cost $51,400,000 1 Condition improved 3 Conditions not significantly impacted 4 Conditions worsened	Cost $212,000,000 1 Condition improved 3 Conditions not significantly impacted 4 Conditions worsened	Cost $325,000,000 2 Conditions improved 2 Conditions not significantly impacted 4 Conditions worsened

9. Cost: A cost of $100,800,000 is for the direct construction costs. This number does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Back Bay Ramp Alternative 1 indicates that it would improve two conditions (Motorized Circulation and Access and Environmental Impacts) and it would worsen two conditions (Transit Circulation and Access and Business Considerations); four conditions would remain the same or neutral (Traffic, Nonmotorized Circulation and Access, Safety, and Neighborhood Impacts).

Back Bay Ramp Alternative 2: New Westbound Off-Ramp to Trinity Place/Stuart Street

1. Traffic (Neutral): The AM and PM peak-hour delays were below the 10% difference threshold and therefore were given a neutral or 0 score. The AM change resulted in a decrease of 2%, and the PM the change was an increase of less than 0.5%.
2. Motorized Circulation and Access (Neutral): It improves existing conditions by increasing the number of off-ramps in the study area (currently, two off-ramps and seven on-ramps). However, a 0 or neutral score was given because of the removal of two-westbound on-ramps. In addition, this new off-ramp may not be as direct: most traffic using the new off-ramp does a slight U-turn as it heads north on Trinity Place and then west and southwest on Saint James Street/Huntington Avenue.
3. Transit Circulation and Access (Negative): There are potential impacts due to increased traffic volumes, which could impact nearby bus routes 9, 39, 10, 170, 502, and 503; therefore, a negative rating was given.
4. Nonmotorized Circulation and Access (Neutral): There are no apparent changes in the study area because of the new off-ramp; therefore, a neutral score was given.
5. Safety (Negative): Because of an increase in vehicle traffic through the Saint James Avenue/Dartmouth Street and Exeter Street/Huntington Avenue intersections, both high crash cluster locations, a negative rating was given.
6. Neighborhood Impacts (Neutral): Traffic impacts are mostly limited to the Massachusetts Turnpike westbound and the Bowker Overpass/Charlesgate areas. Because there are no significant increases in traffic volumes, a neutral score was given.
7. Environmental Impacts (Neutral): The proposed ramp does improve air quality; however there is an impact to the Frieda Garcia Park with the new off-ramp, so a neutral rating was given.
8. Business Considerations (Negative): The proposed on-ramp impacts with proposed Air Right Parcels 16 and 17. It also impacts the John Hancock Parking Garage. Therefore, a negative rating was given.

9. Cost: A cost of $122,700,000 is for the direct construction costs. This number does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Back Bay Ramp Alternative 2 indicates that it would not improve any conditions and it would worsen three conditions (Transit Circulation and Access, Safety, and Business Considerations); five conditions would remain the same or neutral (Traffic, Motorized Circulation and Access, Nonmotorized Circulation and Access, Neighborhood Impacts, and Environmental Impacts).

Back Bay Ramp Alternative 3: New Westbound Off-Ramp to Brookline Avenue

1. Traffic (Neutral): The AM and PM peak-hour delays were below the 10% difference threshold and therefore were given a neutral or 0 score. The AM change resulted in a decrease of 2%, and the PM change was an increase of 3%.
2. Motorized Circulation and Access (Positive): It improves existing conditions by increasing the number of off-ramps in the study area (currently, two off-ramps and seven on-ramps). A +1 or positive score was given because of the increased access to the Longwood Medical Area (LMA) and Fenway neighborhood. There is a minor impact to the Newbury Street extension since it will no longer connect to Brookline Avenue.
3. Transit Circulation and Access (Negative): There is the likelihood of increased traffic volumes on Brookline Avenue and at Kenmore Square, which has potential impacts to nearby bus routes 8, 19, 60, and 65; therefore, a negative rating was given.
4. Nonmotorized Circulation and Access (Negative): The presence of the Kenmore Massachusetts Bay Transportation Authority (MBTA) station and the retail and commercial activity in Kenmore Square to the north of the proposed off-ramp intersection, as well as Fenway Park and the retail and desirable destinations along Brookline Avenue and Lansdowne Street to the south, create significant pedestrian travel along Brookline Avenue that could be impacted by the increased traffic along Brookline Avenue due to the new off-ramp.
5. Safety (Negative): Because of a new weave section being created on the Massachusetts Turnpike between the existing Massachusetts on-ramp and the proposed off-ramp, a negative rating was given.
6. Neighborhood Impacts (Positive): The proposed ramp results in slight decreases in traffic volumes on the study area's streets, so a positive score was given.
7. Environmental Impacts (Positive): Because the proposed ramp does improve air quality, a positive rating was given.
8. Business Considerations (Negative): The proposed on-ramp impacts with proposed Air Right Parcels 12, 13, 14, and 15. It will also impact the Hotel

Commonwealth's expansion and result in the removal of approximately 60 on-street parking spaces. Therefore, a negative rating was given.

9. Cost: A cost of $52,400,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Back Bay Ramp Alternative 3 indicates that it would improve three conditions (Motorized Circulation and Access, Neighborhood Impacts, and Environmental Impacts) and it would worsen four conditions (Transit Circulation and Access, Nonmotorized Circulation and Access, Safety, and Business Considerations); one condition would remain the same or neutral (Traffic and Nonmotorized Circulation and Access).

Back Bay Ramp Alternative 4: New Eastbound On-Ramp from the Bowker Overpass

1. Traffic (Neutral): The AM and PM peak-hour delays were below the 10% difference threshold and therefore were given a neutral or 0 score. The AM change resulted in a decrease of 2%, and the PM change was an increase of less than 1%.
2. Motorized Circulation and Access (Positive): It improves existing conditions by providing an eastbound on-ramp for the LMA and Fenway neighborhood as well as some parts of the Back Bay neighborhoods, improving regional access from these neighborhoods. Therefore, a +1 or positive score was given.
3. Transit Circulation and Access (Neutral): There are no apparent impacts to nearby bus routes 8, 19, 60, and 65; therefore, a neutral rating was given.
4. Nonmotorized Circulation and Access (Neutral): There are no apparent impacts or improvements for pedestrians and bicyclists; therefore, a neutral score was given.
5. Safety (Neutral): Because there are no apparent impacts or improvements, a neutral score was given.
6. Neighborhood Impacts (Neutral): The proposed ramp results in slight decreases in traffic volumes on the study area's streets, but there is an increase in traffic volume to the Massachusetts Turnpike eastbound. There is also an aesthetics impact due to the new on-ramp coming down from the Bowker Overpass, which affects the park. Therefore, a neutral score was given.
7. Environmental Impacts (Negative): The proposed ramp impacts the Olmstead Park System and could potentially impact the historic Fenway Studios, so a negative rating was given.
8. Business Considerations (Negative): The proposed on-ramp impacts with proposed Air Right Parcels 10 and 11. It will also result in the removal of approximately 70 on-street parking spaces on Newbury Street as a result of the

relocation of the Massachusetts Turnpike's alignment to the north. Therefore, a negative rating was given.

9. Cost: A cost of $137,100,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new on-ramp.

Overall, the evaluation of Back Bay Ramp Alternative 4 indicates that it would only improve one condition (Motorized Circulation and Access) and it would worsen two conditions (Environmental Impacts and Business Considerations); five conditions would remain the same or neutral (Traffic, Transit Circulation and Access, Nonmotorized Circulation and Access, Safety, and Neighborhood Impacts).

9.3.2 Bowker Overpass Evaluations

The following section provides an explanation of each evaluation criteria for the Bowker Overpass alternatives.

Bowker Overpass Alternative 1: Bowker Overpass Removed

1. Traffic (Negative): The AM and PM peak-hour delays were both well above the 10% difference threshold and therefore were given a negative score. The change resulted in an increase of 79% and 102% in the AM and PM peak hours, respectively.
2. Motorized Circulation and Access (Negative): A negative score was given because of the removal of the Bowker Overpass and the north-south connection from Storrow Drive to the LMA and Fenway neighborhood.
3. Transit Circulation and Access (Negative): There are potential impacts because of increased traffic volumes on Beacon Street and to Kenmore Square, which will impact bus operations; therefore, a negative rating was given.
4. Nonmotorized Circulation and Access (Negative): A negative score was given because of the increase in traffic volumes on local streets, making it more challenging for pedestrians and bicyclists.
5. Safety (Negative): Because of an increase in vehicle traffic, there could be an increase in the number of crashes, leading to potential impacts to emergency vehicles because of lowered direct connectivity with LMA destinations; therefore, a negative score was given.
6. Neighborhood Impacts (Neutral): There are trade-offs to neighborhood impacts with the removal of the Bowker Overpass. It eliminates high traffic volumes from an elevated roadway, helping to reduce noise impacts. It also eliminates a physical barrier in the middle of the park/open space areas. However, with the overpass removal and higher traffic volumes on other streets, it could create other neighborhood barriers. Therefore, a neutral rating was given.
7. Environmental Impacts (Neutral): Although air quality would be improved, this alternative has the potential of negatively impacting the Back Bay Historic and

Architectural districts as well as the Olmstead Park System. Therefore, a neutral rating was given.

8. Business Considerations (Neutral): A neutral score was given to this alternative.
9. Cost: A cost of $46,200,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Bowker Overpass Alternative 1 indicates that no conditions would improve and five conditions would worsen (Traffic, Motorized Circulation and Access, Transit Circulation and Access, Nonmotorized Circulation and Access, and Safety); three conditions would remain the same or neutral (Neighborhood Impacts, Environmental Impacts, and Business Considerations).

Bowker Overpass Alternative 2: At-Grade Bowker Overpass

1. Traffic (Negative): The PM peak-hour delays were increased by 14%, above the 10% difference threshold; therefore, a negative score was given.
2. Motorized Circulation and Access (Neutral): A neutral score was given because all connections are restored to the existing conditions with the at-grade roadway.
3. Transit Circulation and Access (Neutral): Because the at-grade roadway still provides the existing connections, there are no apparent impacts to transit; therefore, a neutral rating was given.
4. Nonmotorized Circulation and Access (Negative): Because of the increase in traffic volumes with the at-grade Bowker Overpass, conditions would be more challenging for pedestrians and bicyclists. Therefore, a negative score was given.
5. Safety (Negative): The new at-grade roadway introduces three new signalized intersections, which increase the potential conflicts between vehicles, pedestrians, and bicyclists. Therefore, a negative score was given. .
6. Neighborhood Impacts (Positive): A positive score was given because of the removal of the bridge structure.
7. Environmental Impacts (Negative): There are impacts to the area's historic and architectural districts. It also significantly impacts the park and open space areas. Therefore, a negative score was given.
8. Business Considerations (Neutral): A neutral score was given to this alternative.
9. Cost: The cost of $51,400,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Bowker Overpass Alternative 2 indicates that it would improve one condition (Neighborhood Impacts) and would worsen four conditions (Traffic, Nonmotorized Circulation and Access, Safety, and Environmental Impacts);

three conditions would remain the same or neutral (Motorized Circulation and Access, Transit Circulation and Access, and Business Considerations).

Bowker Overpass Alternative 3: New Regional Access

1. Traffic (Negative): There were significant delay increases in both peak hours. The AM peak hour increased by 14%, and the PM peak hour increased by 63%; therefore, a negative score was given.
2. Motorized Circulation and Access (Neutral): A neutral score was given because of improved regional access to and from the Massachusetts Turnpike with the new interchange, which offsets the lack of a direct connection from Storrow Drive across the Massachusetts Turnpike.
3. Transit Circulation and Access (Neutral): The new interchange does not affect existing bus routes; therefore, a neutral rating was given.
4. Nonmotorized Circulation and Access (Negative): The increase in traffic on the local streets will make bicycle and pedestrian movements more challenging; therefore, a negative score was given.
5. Safety (Negative): Based on the increase of traffic on some streets and the likelihood of bicyclists riding on sidewalks as the traffic volumes increase, a negative score was given.
6. Neighborhood Impacts (Positive): Because of the removal of the bridge structure and the increase in area to the park, a positive score was given.
7. Environmental Impacts (Negative): An overall negative score was given because of the impact to the area's historic and architectural districts as well as the impact to air quality. The improved park space does not mitigate these other impacts.
8. Business Considerations (Neutral): A neutral score was given to this alternative.
9. Cost: A cost of $212,000,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Bowker Overpass Alternative 3 indicates that only one condition would improve (Neighborhood Impacts) and four conditions would worsen (Traffic, Nonmotorized Circulation and Access, Safety, and Environmental Impacts); three conditions would remain the same or neutral (Motorized Circulation and Access, Transit Circulation and Access, and Business Considerations).

Bowker Overpass Alternative 4: New Regional and Local Access

1. Traffic (Negative): The AM peak hour increased by 40% and the PM peak hour increased by 46%, both over the 10% threshold; therefore, a negative score was given.

2. Motorized Circulation and Access (Positive): A positive score was given because of improved access between Massachusetts Avenue and Storrow Drive, as well as regional access to and from the Massachusetts Turnpike.
3. Transit Circulation and Access (Neutral): The new interchange and Storrow Drive connection to Massachusetts Avenue does not affect existing bus routes; therefore, a neutral rating was given.
4. Nonmotorized Circulation and Access (Negative): Based on an increase in traffic on some local streets, a negative score was given.
5. Safety (Negative): Based on an increase of traffic on some streets and the likelihood of bicyclists riding on sidewalks (which could impact pedestrians) as the traffic volumes increase, a negative score was given.
6. Neighborhood Impacts (Positive): A positive score was given based on the removal of the bridge structure and the increase in area to the park. In addition, traffic is diverted over a number of streets.
7. Environmental Impacts (Negative): An overall negative score was given because of the impact to the area's historic and architectural districts as well as the impact to air quality. The improved park space does not mitigate these other impacts.
8. Business Considerations (Neutral): A neutral score was given to this alternative.
9. Cost: A cost of $325,000,000 is for the direct construction costs. It does not include potential mitigation, property, or engineering costs associated with the new off-ramp.

Overall, the evaluation of Bowker Overpass Alternative 4 indicates that two conditions would improve (Motorized Circulation and Access and Neighborhood Impacts) and four conditions would worsen (Traffic, Nonmotorized Circulation and Access, Safety, and Environmental Impacts); two conditions would remain the same or neutral (Transit Circulation and Access and Business Considerations).