

Cambridge Street approaching the Brighton Substation. The mapped right-of-way land use is associated with roadways, railroad corridors, sidewalk areas, and other developed space that is not otherwise mapped by MassGIS as commercial/industrial/residential. The mapped tax-exempt land consists primarily of land owned by MIT along Vassar Street and Memorial Drive. The mapped open land areas total approximately 10.30 acres, primarily located between I-90 and Lincoln Street in Boston. However, this estimate is a little misleading because MassGIS includes certain developed land on Brighton and excludes MassDCR's Magazine Beach property (identified by MassGIS as unknown (about 4 acres). MassGIS also includes certain MIT parking lots on Vassar Street and the Grand Junction Railroad corridor under this land use mapping category. The mapped residential land uses associated with this route is relatively low (2.73 acres) and concentrated primarily around the Brighton Substation area, and Waverly Road and Brookline Street in Cambridge.

Noticed Alternative Route B30 West

The predominant mapped land uses associated with the Noticed Alternative Route B30 West are commercial and industrial land uses totaling 22.98 acres. These mapped land uses include business areas near the New Substation and Kendall Square area, along Broadway, Prospect Street, Green Street and Mt. Auburn Street in Cambridge, and along North Harvard Street in Boston, approaching the Brighton Substation. Mapped residential land uses also occupy a significant portion of the route, totaling 21.39 acres. These residential areas are located primarily along Broadway and Green Street in Cambridge, and along Franklin Street in Brighton, approaching the Brighton Substation. Other dominant mapped land uses include tax-exempt land (18.63 acres) and right-of-way (12.97 acres). The mapped right-of-way land use is associated with roadways, railroad corridors, sidewalk areas, and other developed space that is not otherwise identified by MassGIS as commercial/industrial/residential. The mapped tax-exempt land consists primarily of land owned by Harvard University along North Harvard Street in Boston and Mt. Auburn Street in Cambridge.

Comparison of Potential Impacts

The differentiating factor between these two routes is mapped commercial/industrial land uses and residential land uses. For perspective, the Noticed Alternative Route B30 West would involve construction near an additional 6.78 acres of mapped commercial and industrial land uses and an additional 18.66 acres of mapped residential land use areas when compared to the Preferred Route B29F West. These types of land uses are more likely to be affected by sound, dust, traffic disruption, restricted property access and other short-term construction-related impacts when compared to other predominant land uses identified along the routes. Accordingly, the Preferred Route B29F West was determined to be superior to the Noticed Alternative Route B30 West with respect to potential land use impacts.

Impact Mitigation

Neither the Preferred Route B29F West nor the Noticed Alternative Route B30 West will permanently affect adjacent land uses as the Project will be installed entirely underground. Temporary impacts to residences and businesses include traffic disruption, including road closings and construction sound. These types of temporary impacts will be minimized using proper construction BMPs, TMPs, and restricted work hours to reduce sound, traffic, and air quality impacts during construction.

5.8.5.3 Sensitive Receptors

Sensitive receptors directly abutting the Preferred Route B29F West and the Noticed Alternative Route B30 West are summarized in the following table. The locations of the sensitive receptors included in the scoring analysis are depicted on Figure 4-27A provided in Section 4.

Table 5-42 Number of Sensitive Receptors Directly Abutting the Preferred Route B29F West and the Noticed Alternative Route B30 West

Sensitive Receptors	Preferred Route B29F West	Noticed Alternative Route B30 West
Police Stations	0	0
Fire Stations	0	0
Hospitals	0	0
Schools (including colleges and universities)	4	5
Nursing Homes/Elder Care Facilities	0	1
Funeral Homes	0	0
Places of Worship	0	8
Daycare Facilities	0	3
District Courts	0	0
Parks and Recreation Facilities	1	4
TOTAL	5	21

Preferred Route B29F West

The Preferred Route B29F West passes by five sensitive receptors in Cambridge, including the MIT campus and related campus facilities, Harvard Campus and related facilities, Morse Elementary School, City of Cambridge public playground (Lindstrom Field), and the Malik Academy/Al Bustan Pre-school located on Memorial Drive in Cambridge.

Noticed Alternative Route B30 West

The Noticed Alternative Route B30 West passes by 21 sensitive receptors including several houses of worship, the MIT campus and related facilities, the Harvard University campus and related facilities, local schools, childcare facilities, a senior center, and the Cambridge YMCA.

Comparison of Potential Impacts

The Preferred Route B29F West avoids work near 16 fewer sensitive receptors when compared to the Noticed Alternative Route B30 West and was accordingly determined to be superior to the Noticed Alternative Route B30 West for this criterion.

Impact Mitigation

Depending on their location, sensitive receptors could be affected by temporary construction impacts such as traffic disruption, property access, sound, and dust. Potential mitigation measures for these types of impacts are discussed separately in the sound and multimodal traffic impacts criteria. Section 5.5.2 describes air quality mitigation measures, including dust control. Regarding site access to these facilities, the Company will develop TMPs that will detail how access will be maintained. Prior to finalization of those TMPs, the Company will meet with local officials, MIT representatives and other abutters along the route to understand their access requirements and will modify the plans, as necessary. During and after work hours, the Company will take appropriate measures to allow safe and unencumbered access to the abutting properties.

5.8.5.4 Public Shade Trees

Table 5-43 below provides a tally of the public shade trees located within the public way of the Preferred Route B29F West and Noticed Alternative Route B30 West.

Table 5-43 Number of Public Shade Trees within the Public Way of the Preferred Route B29F West and the Noticed Alternative Route B30 West

Route	Number of Public Shade Trees within the Public Way
Preferred Route B29F West	455
Noticed Alternative Route B30 West	580

Preferred Route B29F West

The Preferred Route B29F West passes by 455 public shade trees, predominantly along Vassar Street and Memorial Drive in Cambridge, and along Cambridge Street and Lincoln Street in Boston.

Noticed Alternative Route B30 West

The Noticed Alternative Route B30 West passes by 580 public shade trees, predominantly along Broadway, Green Street, Mt. Auburn Street, JFK Street and Prospect Street in Cambridge and along North Harvard Street and Franklin Street in Boston.

Comparison of Potential Impacts

The Company will avoid public shade tree removal to the maximum extent practicable. The Preferred Route B29F West could potentially require the removal of 2 or 3 public shade trees located near the shoulder of Cambridge Street (to be determined during detailed design). The off-road segment of the route would follow the future alignment of Cambridge Street as part of the MassDOT Allston Multimodal Project. The Noticed Alternative Route B30 West contains 130 more public shade trees along the route when compared to the Preferred Route B29F West, and thus has greater potential for impacts to roots, limbs, and potential tree removal during construction. In addition, The Company therefore determined that the Preferred Route B29F West is superior to the Noticed Alternative Route B30 West relative to this criterion.

Impact Mitigation

The Company would implement the same practice to protect public shade trees regardless of the route selected. Please refer to Section 5.8.2.4 for a description of typical mitigation measures that would be employed by the Company to protect public shade trees during construction.

5.8.5.5 Sound

As was previously described for the Putnam Study Area (see Section 5.8.25), the construction equipment used with underground transmission line construction is like that used during typical public works projects (e.g., road resurfacing, storm sewer installation, water line installation). Table 5-13 in Section 5.8.2.5 includes maximum sound levels from typical equipment that will be used during construction of the underground cable at a typical reference distance of 50 feet.

Preferred Route B29F West

There are approximately 402 residential units located within 50 feet of the roadways comprising the Preferred Route B29F West. There are also 4 sensitive receptors that are adjacent to this route, including the MIT campus and related campus facilities, Morse Elementary School, City of Cambridge public playground (Lindstrom Field), and the Malik Academy/Al Bustan Pre-school located on Memorial Drive in Cambridge.

Noticed Alternative Route B30 West

There are approximately 1,190 residential units located within 50 feet of the roadways comprising the Noticed Alternative Route B30 West. The Noticed Alternative Route B30 West also passes by 20 sensitive receptors including several houses of worship, the Harvard University campus and related facilities, local schools, childcare facilities, a senior center, and the Cambridge YMCA

Comparison of Impacts

The Noticed Alternative Route B30 West involves work near more than three times as many residential units (1,190 versus 402), and five times as many sensitive receptors (20 versus 4) relative to the Preferred Route B29F West. Accordingly, because the Noticed Alternative Route B30 West has a greater potential to disrupt 788 additional residential units and 16 additional sensitive receptors from sound generated during construction, the Company determined that the Preferred Route B29F West is superior to the Noticed Alternative Route B30 West relative to the sound criterion.

Impact Mitigation

The timing and sequencing of the work will be coordinated with local and state officials to minimize potential sound impacts consistent with applicable local regulations and ordinances. Sound from cable splicing operations would be minimized through use of specialized low-sound equipment such as low-sound generators, and by reducing or eliminating the use of motorized equipment during evening and overnight work. Other potential mitigation measures include working with the municipalities and state agencies to coordinate work, use of a low sound/muffled generator, and portable sound walls (temporary sound barriers) as needed, blocking the path of generators. However, as previously noted, the use of physical sound barriers is not typically the Company's first response to addressing a claim of excessive sound. The Company would first explore other opportunities to reduce sound, including requiring the use of newer, lower sound equipment.

5.8.5.6 Subsurface Contamination

Subsurface excavation has the potential to encounter contaminated soils and groundwater from historical releases and/or urban/historic fill in the vicinity of the Preferred Route B29F West and the Noticed Alternative Route B30 West. A review of the MassDEP waste site list on-line database was performed to determine the potential to encounter subsurface contamination directly abutting each route.

Preferred Route B29F West

Table 5-44 MassDEP-Listed Sites Directly Abutting the Preferred Route B29F West

Release Tracking Number (RTN)	Location	Description / Status
3-0003081	207 Magazine Street, Cambridge	RAO Class A3; AUL date 6/18/2003
3-0013933	812 Memorial Drive, Cambridge	RAO Class A3; AUL date 6/13/2002
3-0015067	170 Cambridge Street, Boston	RAO class PA; AUL date 11/30/2016
3-0019125	289 Vassar Street, Cambridge	RAL Class PC; AUL date 12/29/2004
3-0019155	229 Vassar Street, Cambridge	RAO Class A3; AUL date 10/1/2004
3-0020017	289 Vassar Street, Cambridge	RAO Class Unknown; AUL date 12/29/2004
3-0028799	304 to 345 Vassar Street, Cambridge	RAO Class B2; AUL date 10/27/2010
3-0032806	820 Memorial Drive, Cambridge	PSC Class PA; AUL date 5/13/2019
3-0019635	Cambridge Street and Soldiers Field Road, Boston	Chapter 21E, Tier II
3-0032166	59 Vassar Street, Cambridge	Chapter 21E, Tier II
3-0034686	Amherst Alley, Cambridge	Chapter 21E, Tier II

Noticed Alternative Route B30 West

Table 5-45 MassDEP-Listed Sites Directly Abutting the Noticed Alternative Route B30 West

Release Tracking Number (RTN)	Location	Description / Status
3-0001421	190-203 Broadway, Cambridge	RAO Class A3; AUL date 6/14/1994
3-0001978	198 Western Avenue, Boston	RAO Class Unknown; AUL date 7/26/1995
3-0012975	281 Broadway, Cambridge	RAO Class A2; AUL date 6/3/1996
3-0023185	1 Hampshire Street, Cambridge	RAO Class A3; AUL date 2/1/2007
3-0027709	198 Western Avenue, Boston	RAO Class B2; AUL date 12/5/2013
3-0034105	242 Windsor Avenue, Cambridge	PSC Class PA; AUL date 6/15/2018
3-0034843	322-346 Binney Street, Cambridge	Chapter 21E, Tier II
3-0033194	5 Stadium Way, Boston	Chapter 21E, Tier II
3-0033235	5 Stadium Way, Boston	Chapter 21E, Tier II

Comparison of Potential Impacts

The Preferred Route B29F West involves work near two additional MassDEP-listed sites when compared to the Noticed Alternative Route B30 West, and thus has a greater potential to encounter subsurface contamination during construction. Accordingly, the Company determined that the Noticed Alternative Route B30 West is superior to the Preferred Route B29F West relative to this criterion.

Impact Mitigation

If contaminated soils and/or groundwater are encountered, they will be managed pursuant to URAM provisions of the MCP. The Company will prepare a soil and groundwater management plan, and will contract with a LSP as necessitated by conditions encountered along the underground transmission line alignment, consistent with the requirements of the MCP at 310 C.M.R. 40.0460 et seq. All excess soil and groundwater will be managed in accordance with local, State and Federal regulations.

5.8.5.7 Wetland Resource Areas, Buffer Zones and Tidelands

Preferred Route B29F West

Wetland resource areas and Chapter 91 jurisdictional tidelands associated with the Preferred Route B29F West are associated with the River Street Bridge crossing of the Charles River. These jurisdictional wetland resource areas include Riverfront Area (410 linear feet), the 100-foot Buffer Zone (1,627 linear feet) associated with Inland Bank, and Bordering Land Subject to Flooding (9 linear feet). Portions of River Street and Cambridge Street adjacent to the River Street Bridge, and Memorial Drive also contain filled tidelands subject to jurisdiction under Chapter 91 (1,124 linear feet).

Noticed Alternative Route B30 West

Wetland resource areas and Chapter 91 jurisdictional tidelands associated with the Noticed Alternative Route B30 West are associated with the Anderson Bridge crossing of the Charles River. These jurisdictional wetland resource areas include Riverfront Area (291 linear feet), the 100-foot Buffer Zone (449 linear feet) associated with Inland Bank, and Bordering Land Subject to Flooding (19 linear feet). Portions of JFK Street and North Harvard Street adjacent to the Anderson Bridge also contain filled tidelands subject to jurisdiction under Chapter 91 (104 linear feet).

Comparison of Potential Impacts

Both routes avoid wetland resource areas associated with the Charles River by crossing over the waterway on the Anderson and River Street Bridges, likely within the roadway deck. Work in the 100-foot Buffer Zone, Riverfront Area and Chapter 91 jurisdictional tidelands is limited to the bridge crossings and transmission line installation work in the roadway segments identified above

(with the roadways and bridge deck being restored to their preexisting conditions following construction). Accordingly, the Company determined that the Preferred Route B29F West and the Noticed Alternative Route B30 West result in generally equivalent impacts for this criterion.

Impact Mitigation

The proposed underground cable construction along these routes is confined to existing paved roadways, no permanent impacts to wetlands or waterbodies are anticipated. As necessary, sediment controls and erosion prevention measures will be employed as work approaches the Charles River at the bridge crossings, including installation of compost filter tubes and silt fencing and catch basin inlet protection, as appropriate.

5.8.5.8 Cultural Resources

The Project is subject to review by the MHC in compliance with G.L. c. 9, §§ 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). The Company undertook a cultural resource investigation to identify historic and archaeological resources adjacent to the Preferred Route B29F West and the Noticed Alternative Route B30 West. The following Table 5-46 summarizes the results of the investigations.

Table 5-46 Number of Cultural Resource Sites Near the Preferred Route B29F West and the Noticed Alternative Route B30 West

Cultural Resources	Number of Cultural Resources	
	Preferred Route B29F West	Noticed Alternative Route B30 West
Inventory Points Adjacent to Route	6	84
Inventory Points Intersected by Route	4	8
Archaeological Sites within 0.25 miles of Route	2	5
Archaeological Sites Intersected by Route	1	1

Preferred Route B29F West

The six inventory points adjacent to the route include:

- ◆ Boston Woven Hose and Rubber Complex at Broadway;
- ◆ Metropolitan Storage Warehouse at 134 Massachusetts Avenue;
- ◆ Cambridge Armory at 120 Massachusetts Avenue;
- ◆ Fort Washington on Vassar Street;
- ◆ Shell Sign at 187 Magazine Street; and
- ◆ B&B Chemical Company at 780 Memorial Drive.

The four inventory points intersected by the route include:

- ◆ Charles River Basin Historic District along Memorial Drive and the Charles River;
- ◆ Memorial Drive;
- ◆ River Street Bridge; and
- ◆ An unnamed property.

Noticed Alternative Route B30 West

There is a total of 84 inventory points adjacent to the Noticed Alternative Route B30 West in Cambridge and Boston. For brevity and ease of review, these points are not listed here. For perspective, several of these inventory points are associated with Harvard University, private residential dwellings bordering the routes, public facilities (Cambridge Police Headquarters at 5 Western Avenue, Central Square Post Office at 770 Massachusetts Avenue in Cambridge), places of worship (Prospect Congregational Church at 99 Prospect Street in Cambridge, Saint Peter's Episcopal Church at 834 Massachusetts Avenue in Cambridge, St. Paul's Rectory at 32 Mt. Auburn Street in Cambridge, St. Paul's Church at 24 Arrow Street in Cambridge), Harvard Square area, New England Gas and Electric Buildings located at 45 Prospect Street and 671-675 Massachusetts Avenue in Cambridge, and the Anderson Bridge in Cambridge and Boston.

The eight inventory points intersected by the route include:

- ◆ Central Square Historic District centered along Massachusetts Avenue;
- ◆ Harvard Square Historic District;
- ◆ Charles River Basin Historic District along Memorial Drive and the Charles River;
- ◆ Memorial Drive;
- ◆ Anderson Bridge;
- ◆ Harvard Business School;
- ◆ St. Anthony's area in Boston; and
- ◆ Franklin Street in Boston.

Comparison of Potential Impacts

Both routes are located entirely within the existing paved limits of roadways, landscaped islands and/or sidewalks except for a small stretch of off-road work associated with the Preferred Route B29F from the River Street Bridge to Cambridge Street in Boston. The River Street Bridge and Anderson Bridge are on the MHC's inventory list. However, the transmission line work on these bridges will likely be conducted within the roadway deck of the bridges and will not result in any alterations or modifications to the façade of the bridges. As previously noted, the River Street

Bridge is also scheduled to be rehabbed by MassDOT and Eversource is coordinating directly with MassDOT to ensure that a slot is available to accommodate the new transmission line relative to other existing utility infrastructure.

The Preferred Route B29F West passes by 78 fewer historic properties and intersects 4 fewer inventory points compared to the Noticed Alternative Route B30 West (including avoidance of work in the Harvard Square and Central Square areas of Cambridge). The Preferred Route B29F West also has fewer archaeological resources located within 0.25 miles of the route. The Company is also coordinating with MassDOT to accommodate transmission line construction within the River Street Bridge that is scheduled to be rehabbed by MassDOT independent of this project. While the potential for impacts to cultural resources is considered low due to the nature of proposed work in public roads, given the substantial difference between the number of cultural resources associated with each route, the Company determined that the Preferred Route B29F West has less overall potential for impacts to the identified cultural resources when compared to the Noticed Alternative Route B30 West.

Impact Mitigation

While the need for mitigation to cultural resource impacts associated with these routes is not anticipated, the MHC will be consulted regarding a determination of the effect. Potential effects, if any, to historic and archaeological resources will be addressed with the MHC through Section 106 of the National Historic Preservation Act and the State Register Review processes.

5.8.5.9 Article 97

Neither the Preferred Route B29F West nor the Noticed Alternative Route B30 West require Article 97 approval. Accordingly, the Company concludes that there will be no impact to this criterion from construction using either route.

5.8.5.10 Summary of Environmental Impacts

Based upon the above comparisons, the Preferred Route B29F West and the Noticed Alternative Route B30 West have relatively minimal environmental effects, and most of those effects would be temporary and can be minimized using the proposed mitigation measures. Table 5-47 below provides a comparison of the routes based on the criteria evaluated.

Overall, the Preferred Route B29F West was determined to be superior to the Noticed Alternative Route B30 West on six criteria: transportation impacts, land use, sensitive receptors, public shade trees, sound, and cultural resources. The Noticed Alternative Route B30 West was determined to be superior to the Preferred Route B29F West on one criterion: subsurface contamination. For the balance of the criteria analyzed (wetlands and Article 97), the Routes were determined to be comparable from an environmental impact perspective.

Table 5-47 Comparison of the Preferred Route B29F West and the Noticed Alternative Route B30 West

Evaluation Criteria	Preferred Route B29F West	Noticed Alternative Route B30 West
Transportation Impacts	+	-
Land Use	+	-
Sensitive Receptors	+	-
Public Shade Trees	+	-
Sound	+	-
Subsurface Contamination	-	+
Wetland Resource Areas, Buffer Zones and Tidelands	=	=
Cultural Resources	+	-
Article 97	=	=
NOTES: + Indicates less potential for impact, which means superior for use. - Indicates more potential for impact, which means inferior for use. = Indicates comparable impacts.		

5.8.5.11 Comparison of Costs

The cost comparisons (-25%/+25%) of the Preferred Route B29F West and the Noticed Alternative Route B30 West are provided below in Table 5-48.

Table 5-48 Cost Estimate for Preferred Route B29F West and Noticed Alternative Route B30 West

Route	Cost (\$ millions)
Preferred Route B29F West	\$194.0
Noticed Alternative Route B30 West	\$215.4

5.8.5.12 Comparison of Reliability

The Preferred Route B29F West and the Noticed Alternative Route B30 West are each reliable means for providing a transmission line connection between the New Substation and the existing Brighton Substation.

5.8.5.13 Overall Comparison

Overall, the Preferred Route B29F West was determined to be superior to the Noticed Alternative Route B30 West on most of the environmental criteria analyzed. That said, the potential environmental effects from construction are expected to be minimal, and most of those effects will be temporary and can be minimized using appropriate mitigation measures.

The Preferred Route B29F West was determined to be superior to the Noticed Alternative Route B30 West based on cost (it is approximately \$21.4 million dollars less expensive to construct) . Both routes are reliable means for providing a transmission line connection between the New Substation and existing Brighton Substation.

The Company will work closely with the City of Cambridge, City of Boston, state agencies, abutters to the Project and area neighborhoods to ensure that temporary construction impacts are minimized, and that the new transmission line is installed in the least impactful way possible.

5.8.6 Somerville Routes

The Somerville Routes analyzed by the Company in further detail below included the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway).

5.8.6.1 Transportation Impacts

To compare potential construction related transportation impacts of the Preferred Route S1A and the Noticed Alternative Route S11C, the Company reviewed existing traffic and parking conditions, roadway widths, travel lanes, bicycle lanes, pedestrian use, and the presence of public transit service along each route, as well as the options for general traffic mitigation along each route.

Preferred Route S1A (Hampshire Street/D2 Site)

The Preferred Route S1A is approximately 1.25 miles long, located within Cambridge and Somerville. This route heads west from the New Substation site onto Broadway for about one block before turning northwest onto Hampshire Street. Broadway is 32 to 60-feet wide in this section and has sidewalks and dedicated bike lanes on both sides of the road (delineated by paint and pylons). However, there is not on-street parking present on Broadway between the intersection with Galileo Galilei Way and Hampshire Street. Hampshire Street is approximately 40-feet wide, accommodates two-way vehicular traffic with on-street parking, has sidewalks on both sides and has dedicated bike lanes. Hampshire Street is classified by MassDOT as an urban principal arterial roadway.

From Hampshire Street, the route follows Columbia Street into Somerville to its intersection with Windsor Place. Columbia Street varies in width between 26-feet at its narrowest point to 30-feet at its widest point. Columbia Street accommodates two-way vehicular traffic along its entire length, with sidewalks on both sides and on-street parking in select locations. Columbia Street is classified by MassDOT as an urban minor arterial roadway.

From Columbia Street, the route crosses Windsor Place and heads north across a private commercial parking lot towards the MBTA commuter rail tracks (Fitchburg Route Main Line). The railroad tracks would be crossed using a trenchless construction technique. After crossing the tracks, the route turns in a northwesterly direction around the eastern edge of the site of the

MBTA’s new Union Square train station platform, across a parcel of land that is being redeveloped by the City of Somerville and a private developer for mixed uses, generally following the approximate alignment of two proposed roadways associated with the development identified as Milk Alley and Bennett Court, to Prospect Street. As described in further detail in Section 5.2.1, the Company has identified a potential route variation across this development parcel, referred to as Route Variation S1. This variation could minimize potential construction sequence, coordination and site restoration challenges associated with ongoing construction on this parcel.

From the D2 Site, the route crosses over Prospect Street and accesses the Somerville Substation facility from the east. Prospect Street is approximately 36-feet wide in this location and is classified by MassDOT as an urban principal arterial roadway.

Local public transit opportunities along this route include MBTA bus routes 747 following Broadway and Hampshire Street in Cambridge and Columbia Street in Somerville. MBTA bus route 85 and 747 follow Prospect Street past the Somerville Substation entrance. Bus stops for the referenced bus routes exist in several locations on these referenced streets. The Charles River TMA EZRide Shuttle Route operates along a segment of Broadway and Galileo Galilei Way in and around the Kendall Square area of Cambridge. The MBTA recently constructed a new train station platform as part of the Green Line Extension Project adjacent to the D2 Site on Prospect Street in Somerville, directly across the street from the Somerville Substation site.

Table 5-49 Description of Road Segments Along the Preferred Route S1A (Hampshire Street/D2 Site)

Segment	Approximate Average Road Width (feet)	Extent of Sidewalks, Bike Lanes and On-Street Parking	Public Transportation Route?	Automatic Traffic Recorder (ATR) Hourly Total Vehicular Volume
Broadway	32 to 60	<ul style="list-style-type: none"> • Sidewalks on both sides • No on-street parking between Galileo Galilei Way and Hampshire Street • Dedicated Bike Lanes and Separated Bike Lanes 	Yes	642
Hampshire Street	40	<ul style="list-style-type: none"> • Sidewalks on both sides • On-street parking on both sides • Dedicated Bike Lanes 	Yes	534
Columbia Street	26 to 30	<ul style="list-style-type: none"> • Sidewalks on both sides • On-street parking on both sides • No bike lanes 	Yes	475,66 ¹³⁰

¹³⁰ ATR data was collected from two locations on Colombia Street, including: Hampshire Street to Cambridge Street and from Cambridge Street to Windsor Place.

Table 5-49 Description of Road Segments Along the Preferred Route S1A (Hampshire Street/D2 Site) (Continued)

Segment	Approximate Average Road Width (feet)	Extent of Sidewalks, Bike Lanes and On-Street Parking	Public Transportation Route?	Automatic Traffic Recorder (ATR) Hourly Total Vehicular Volume
Windsor Place (cross over street)	25	<ul style="list-style-type: none"> • Sidewalks on both sides • No on-street parking at crossing location • No bike lanes 	N/A	N/A
MBTA Commuter Rail Tracks Trenchless Crossing	N/A	N/A	Yes	N/A
D2 Development Site	N/A	N/A	N/A	N/A
Prospect Street	36	<ul style="list-style-type: none"> • Sidewalks on both sides • No on-street parking • Dedicated Bike Lane and Pavement Markings 	Yes	735

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

The Noticed Alternative Route S11C is approximately 1.64 miles. This route is located within Cambridge and Somerville. Beginning at the New Substation site in Cambridge, the Noticed Alternative Route S11C heads west onto Broadway for about 0.08 miles, before turning north through the Broadway/Galileo Galilei Way intersection, across a sidewalk, onto land owned by the City of Cambridge. In this location, Broadway accommodates two-way traffic and is about 32 to 70-foot wide (including bike lanes and on-street parking). There are dedicated bike lanes and sidewalks on both sides of the road. There is on-street parking on the south side of the road. MassDOT’s functional classification of Broadway is urban principal arterial roadway.

The route continues north on the City of Cambridge property adjacent to the easterly edge of the MBTA Grand Junction Railroad right of way. As previously noted, the Grand Junction Railroad is presently a lightly used rail facility with two to four trains running per day through Cambridge. This corridor is the only north-south rail connection east of Framingham and Worcester. From this point northward, the route collocates with the future alignment of the City of Cambridge’s Grand Junction Multi-Use Path, including switching from city owned land on the east side of the existing railroad corridor to city owned land on the west side of the railroad corridor, following the alignment of the future pathway. These crossovers would occur at the following at-grade street crossings: Binney Street, Cambridge Street and Medford Street/Gore Street. Binney Street is classified by MassDOT as an urban minor arterial roadway. There are sidewalks on both sides of the road at this crossing location. Cambridge Street is also classified by MassDOT as an urban minor arterial roadway. There are dedicated bike lanes marked at the Cambridge Street at-grade

crossing. The Cambridge/Somerville municipal boundary is located just south of Medford Street. After crossing Medford Street/Gore Street (urban minor arterial roadway), the Noticed Alternative Route S11C continues north along the western edge of the MBTA right of way up to the intersection of the Grand Junction railroad tracks and the MBTA commuter rail tracks (Fitchburg Route Main Line). At this juncture, the Noticed Alternative Route S11C would cross beneath the MBTA commuter rail tracks and McGrath Highway (Route 28) using a trenchless construction technique, before entering a paved parcel of land owned by Eversource on Linwood Street. The Noticed Alternative Route S11C transitions back to conventional open-trench construction and turns northwest onto Linwood Street for approximately 0.3 miles to the intersection with Washington Street. Linwood Street is roughly 40-feet wide, accommodates two-way vehicular traffic, has sidewalks on both sides and on-street parking throughout much of its length. It is predominantly bordered by commercial and industrial uses including several Eversource facilities, a U-Haul facility, auto parts store and a Mercedes-Benz auto dealership. Linwood Street is classified by MassDOT as a local roadway.

At the Linwood Street/Washington Street intersection, the Noticed Alternative Route S11C heads in a southwesterly direction on Washington Street for approximately 0.2 miles before turning south onto Prospect Street and into the Somerville Substation. The Washington Street segment of this route passes beneath Route 28. Washington Street is a busy travel corridor, particularly at the intersection located beneath the Route 28 overpass. It is approximately 28 to 50-feet wide and bordered predominantly by mixed commercial uses, restaurants, residential housing and the Somerville Police and Fire Department facilities. Washington Street accommodates two-way vehicular traffic, has sidewalks on both sides of the road, dedicated bike lanes, and on-street parking in select locations. Washington Street is classified by MassDOT as an urban principal arterial roadway.

The Prospect Street segment is predominantly bordered by commercial development, including a Dunkin Donuts, restaurant uses and gym facility. The east side of Prospect Street is bordered by the D2 mixed use development. Prospect Street is approximately 34-feet wide, accommodates two-way vehicular traffic, has sidewalks on both sides of the road and dedicated bike lanes. There is no on-street parking along this segment of road. Prospect Street is classified by MassDOT as an urban principal arterial roadway.

Local public transit opportunities along this route include MBTA bus routes 64, 68, 85 and 747 following Broadway up to the Grand Junction railroad right of way; MBTA bus route 69 at the Cambridge Street crossing; MBTA bus routes 87 and 88 following McGrath Highway; and MBTA bus routes 85, 86, 90, 91 and 747 from the Linwood Street/Washington Street intersection up to the Somerville Substation site on Prospect Street. Bus stops for the referenced bus routes exist in discrete locations on Broadway and Cambridge Street in Cambridge, and Washington Street and Prospect Street in Somerville near the Somerville Substation site. The Charles River TMA EZRide Shuttle Route operates along certain roadway segments in and around the Kendall Square area of Cambridge. As noted above, the Noticed Alternative Route S11C would cross beneath the MBTA commuter rail tracks (Fitchburg Route Main Line) using a trenchless construction technique to

reach Linwood Street in Somerville. The MBTA is also constructing a new train station platform as part of the Green Line Extension Project adjacent to the D2 Site on Prospect Street in Somerville, directly across the street from the Somerville Substation site.

Table 5-50 Description of Road Segments Along the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Segment	Approximate Average Road Width (feet)	Extent of Sidewalks, Bike Lanes and On-Street Parking	Public Bus Route?	Automatic Traffic Recorder (ATR) Hourly Total Vehicular Volume
Broadway	32 to 70	<ul style="list-style-type: none"> • Sidewalks on both sides • Limited on-street parking on south side • Dedicated Bike Lanes 	Yes	642
Grand Junction Railroad Corridor	N/A	<ul style="list-style-type: none"> • Future multi-use pathway 	No	N/A
Linwood Street	40	<ul style="list-style-type: none"> • Sidewalks on both sides • On-street parking both sides • No bike lanes or pavement markings 	No	115
Washington Street	28 to 50	<ul style="list-style-type: none"> • Sidewalks on both sides • On-street parking both sides • Dedicated Bike Lane 	Yes	1311
Prospect Street	34	<ul style="list-style-type: none"> • Sidewalks on both sides • No on-street parking • Dedicated Bike Lane and Pavement Markings 	Yes	735

Comparison of Potential Impacts

Each route would require implementation of TMPs and close coordination with the cities of Cambridge and Somerville, as well as the MBTA, to ensure that transportation impacts are minimized. Traffic management measures, including use of police details, temporary roadway closures and detours and temporary lane closures or shifts, would be required regardless of the route selected. However, nearly 50% (0.79 miles) of the Noticed Alternative Route S11C is located off-road on land owned by the City of Cambridge, MBTA easement or private property owners, thereby avoiding or otherwise minimizing the extent of transportation impacts to dedicated bicycle facilities, on-street parking, pedestrian crossings and roadway closures and detours. The Linwood Street segment of the Noticed Alternative Route S11C also involves construction in front of Eversource-owned properties, including its Somerville Service Center. The types of transportation impacts described above would be greater during construction of the Preferred Route S1A because most of the route is located on local roads providing access to dense

residential neighborhoods and/or commercial and industrial businesses. Coordination with the MBTA during construction of the Noticed Alternative Route S11C along the Grand Junction railroad corridor is manageable given the infrequent train traffic this rail corridor experiences, and feedback obtained from the MBTA during consultation meetings. The work limits would also be located outside the MBTA right-of-way within an easement provided by the City of Cambridge. In addition, the Noticed Alternative Route S11C proposes to cross beneath McGrath Highway and the MBTA commuter rail line using a trenchless construction technique within work hours prescribed by the MBTA and MassDOT, thus avoiding transportation impacts to these facilities during construction. Construction of the Preferred Route S1A across the D2 Site could temporarily affect pedestrian access to the recently constructed Green Line station platform.

In consideration of the above, the Company determined that the Noticed Alternative Route S11C is superior to the Preferred Route S1A relative to this criterion.

Impact Mitigation Measures

Upon completion of the detailed design work and prior to the start of construction, the Company will work closely with the Cities of Somerville and Cambridge, MBTA and MassDOT to develop a TMP. The TMP will be submitted for review and approval by municipal and state authorities with jurisdiction over the impacted facility prior to construction. The Company will also closely coordinate with local officials and abutting property owners and businesses. Please refer to Section 5.8.2.1 for a description of the topics to be addressed in the TMP.

Both routes present an opportunity to partner with and/or facilitate construction of multimodal transportation projects in Cambridge. For example, the Noticed Alternative Route S11C would collocate with a future multi-use pathway to be constructed by the City of Cambridge along the Grand Junction Railroad Corridor. The Hampshire Street segment of Preferred Route S1A between Broadway and Columbia Street would be restored by Eversource following construction to accommodate greater separation of bicycle facilities as outlined in the City of Cambridge Bicycle Network Vision,¹³¹ and related improvements to sidewalks and on-street parking areas. The detailed design aspects for either of these routes would be advanced in consultation with the City of Cambridge.

5.8.6.2 Land Use

The following table summarizes the general land uses within 100 feet of the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway) and the Preferred Route S1A (Hampshire Street/D2 Site). The corresponding MassGIS mapped land-use areas are depicted on Figure 5-22.

¹³¹ See <https://www.cambridgema.gov/Departments/communitydevelopment/2020bikeplanupdate/2020bicyclenetworkvision>

Table 5-51 Summary of MassGIS Land Use Mapping within 100 feet of the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

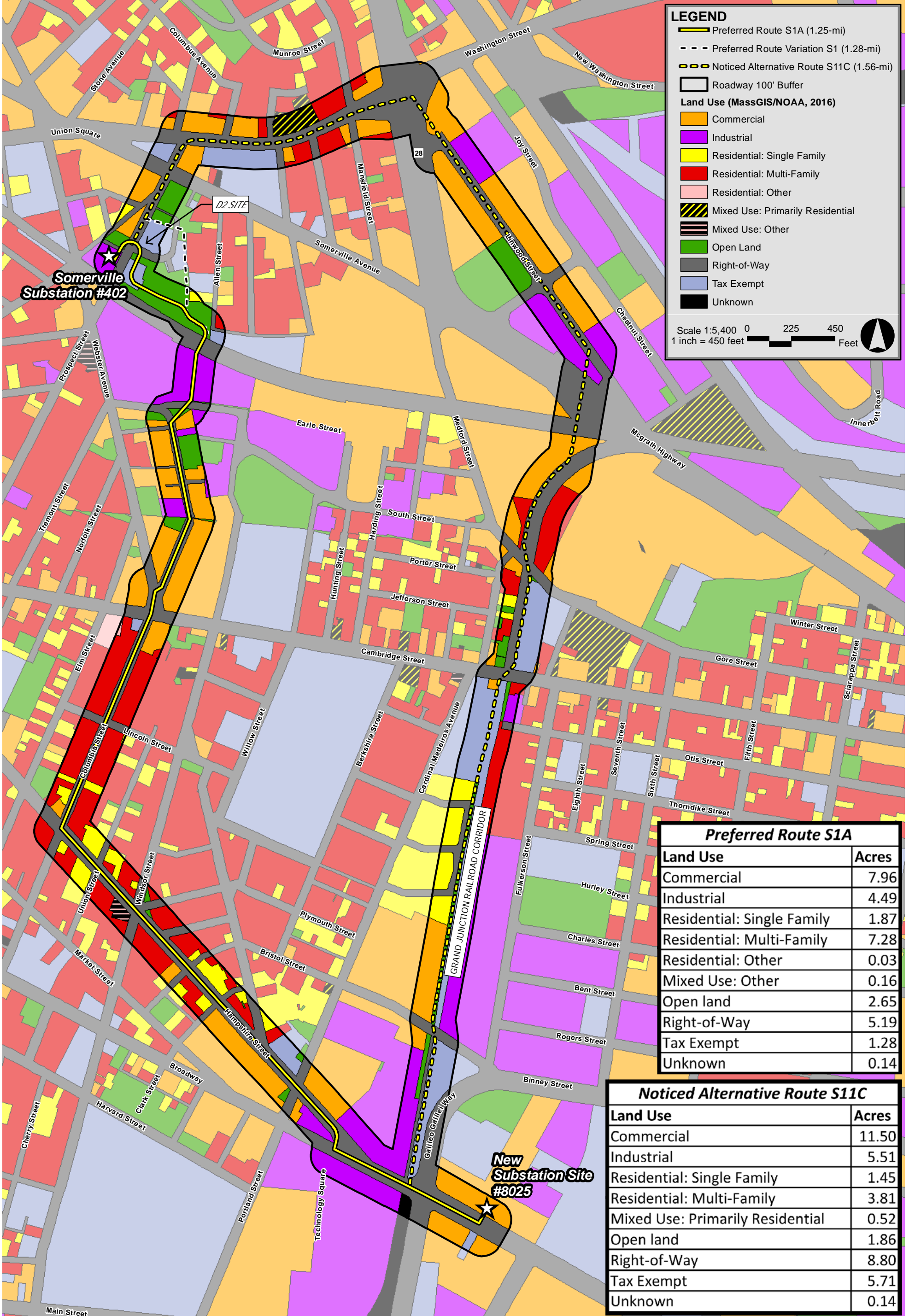
MassGIS Land Use Mapping	Preferred Route S1A (Hampshire Street/D2 Site) (acres)	Noticed Alternative Route S11 C (Grand Junction RR Multi-Use Pathway)
Commercial	7.96	11.5
Right-of-Way (roads, railroads, sidewalk areas, etc.)	5.19	8.8
Tax-Exempt Lands (religious institutions, schools, etc.)	1.28	5.71
Industrial	4.49	5.51
Residential – multi-family	7.28	3.81
Open Land (greenspace and landscaped areas, etc.)	2.65	1.86
Residential – single family	1.87	1.45
Mixed use – primarily residential	--	0.52
Unknown	0.14	0.14
Residential – other	0.03	--
Mixed use – other	0.16	--

Preferred Route S1A (Hampshire Street/D2 Site)

The predominant mapped land use associated with the Preferred Route S1A is commercial use totaling 7.96 acres, followed by residential (multi-family) (7.28 acres), right-of-way (5.19 acres) and industrial (4.49 acres). The mapped commercial and industrial land use areas are generally centered around Hampshire Street and Broadway in Cambridge and north of Cambridge Street along Columbia Street in Somerville. As previously noted, the D2 Site across the street from the Somerville Substation is currently being redeveloped with mixed uses including residential and commercial components. Most of the mapped residential land uses (multi-family and single-family) exist along Hampshire Street and Columbia Street up to the Cambridge Street intersection in Cambridge, and in the Allen Street neighborhood of Somerville, east of the D2 Site.

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

The predominant mapped land use associated with the Noticed Alternative Route S11C is commercial use totaling 11.5 acres, followed by right-of-way (8.8 acres), tax-exempt land (5.71 acres), and industrial (5.51 acres). Mapped residential land use (multi-family) includes 3.81 acres associated with the City of Cambridge’s Miller River Apartment complex located near Medford and Gore Street, the Metro 9 condominium complex north of Medford/Gore Street, and pockets of multi-family homes in the adjacent residential neighborhoods of Cambridge and Somerville. Mapped single-family residential land uses (1.45 acres) generally occur to the west of the route in the Cornelius Way, Michael Way, Wellington-Harrington neighborhoods of Cambridge and near



the Somerville Substation on Newton Street. The primary mapped tax-exempt land is associated with the St. Anthony of Padua Catholic Church located south of Cambridge Street and land owned by the City of Cambridge along the Grand Junction Railroad corridor where a future greenspace and multi-use pathway is proposed. The tax-exempt land also includes the Miller River Apartment complex noted above. The mapped commercial and industrial areas are centered around the Kendall Square area in Cambridge and the Linwood Street, Washington Street, Prospect Street route segments in Somerville. Eversource also has a service center on Linwood Street in Somerville.

Comparison of Potential Impacts

Mapped land uses near the Preferred Route S1A and the Noticed Alternative Route S11C have some diversity. For example, the predominant mapped land use associated with the Noticed Alternative Route S11C is commercial whereas the predominant land use associated with the Preferred Route S1A is residential (multi-family). The Noticed Alternative Route S11C also contains greater areas of mapped tax-exempt lands owned by the City of Cambridge, portions of which are in the process of being converted to public open space and a future multi-use pathway, and the Catholic Church. Both routes have comparable lengths, with the Noticed Alternative Route S11C being approximately 0.31 miles longer. The Preferred Route S1A is predominantly located on public roadways and passes by more sidewalk areas and adjacent roads relative to the Noticed Alternative Route S11C that would collocate with a future multi-use pathway along much of its length, parallel to the Grand Junction Railroad corridor off existing public roads.

Residential properties directly abutting the Routes is a key differentiator as these areas are more likely to be temporarily affected during construction when compared to other land uses located further away on other streets that are not directly affected by construction. As described in the scoring analysis provided in Section 4, the number of direct residential abutters to the Noticed Alternative Route S11C totals 370 units whereas the number of direct residential abutters to the Preferred Route S1A is significantly greater, totaling 560 units. Moreover, routing through commercial and industrial land use areas is generally preferable to residential land use areas because they are more conducive to this type of infrastructure. In addition, collocating with the City of Cambridge's future multi-use pathway along the Grand Junction Railroad corridor would avoid some work in public roads and minimizes the amount of work and potential impacts to both residential and commercial/industrial land uses during construction. In consideration of the above and recognizing that the number of residences directly abutting the Preferred Route S1A is significantly greater (>1.5:1 ratio), the Noticed Alternative Route S11C was determined to be superior with respect to land use impacts.

Impact Mitigation Measures

Neither the Preferred Route S1A nor the Noticed Alternative Route S11C will permanently affect adjacent land uses as the Project will be installed entirely underground. Temporary impacts to residences, businesses and sensitive receptors may include traffic disruption, including road

closings and construction sound. These types of impacts will be minimized using proper construction BMPs, TMPs, and restricted work hours to reduce sound, traffic, and air quality impacts during construction.

5.8.6.3 Sensitive Receptors

Sensitive receptors directly abutting the Preferred Route S1A and the Noticed Alternative Route S11C are summarized in the following table. The locations of the sensitive receptors included in the scoring analysis are depicted on Figure 4-27D provided in Section 4.

Table 5-52 Number of Sensitive Receptors Directly Abutting the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Sensitive Receptors	Preferred Route S1A (Hampshire Street/D2 Site)	Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)
Police Stations	0	1
Fire Stations	0	0
Hospitals	0	0
Schools (including colleges and universities)	1	1
Nursing Homes/Elder Care Facilities	0	0
Funeral Homes	0	0
Places of Worship	1	1
Daycare Facilities	0	0
District Courts	0	0
Parks and Recreation Facilities	1	0
TOTAL	3	3

Preferred Route S1A (Hampshire Street/D2 Site)

The Preferred Route S1A passes by three sensitive receptors, including Bunzey Park, Hilltop Church, and the MIT property along the Grand Junction railroad near the Galileo Galilei Way and Broadway intersection.

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

The Noticed Alternative Route S11C passes by three sensitive receptors, including the Somerville Police Department on Washington Street, St. Anthony of Padua Catholic Church, and the same MIT property described above.

Comparison of Potential Impacts

The Preferred Route S1A and the Noticed Alternative Route S11C pass by the same number of sensitive receptors. Accordingly, the Company determined that the Preferred Route S1A and the Noticed Alternative Route S11C are equivalent for this criterion.

Impact Mitigation Measures

Depending on their location, sensitive receptors could be affected by temporary construction impacts such as traffic disruption, property access, sound, and dust. Potential mitigation measures for these types of impacts are discussed separately in the sound and multimodal traffic impacts criteria. Section 5.5.2 describes air quality mitigation measures, including dust control. Regarding site access to these facilities, the Company will develop TMPs that will detail how access will be maintained. Prior to finalization of those TMPs, the Company will meet with local officials, MIT representatives and other abutters along the route to understand their access requirements and will modify the plans, as necessary. During and after work hours, the Company will take appropriate measures to allow safe and unencumbered access to the abutting properties.

5.8.6.4 Public Shade Trees

Table 5-53 below provides a tally of the public shade trees located within the public way of the Preferred Route S1A and the Noticed Alternative Route S11C.

Table 5-53 Number of Public Shade Trees within the Public Way to the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Route	Number of Public Shade Trees within the Public Way
Preferred Route S1A (Hampshire Street/D2 Site)	173
Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)	84

Preferred Route S1A (Hampshire Street/D2 Site)

The Preferred Route S1A (Hampshire Street/D2 Site) passes by 173 public shade trees. Most of these trees border the public roads comprising this route, including Broadway, Hampshire Street, and Columbia Street up to the D2 Site.

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

The Noticed Alternative Route S11C passes by 84 public shade trees. Most of these public shade trees exist near the Broadway/Galileo Galilei Way intersection area, on either side of the Grand Junction Railroad corridor and Linwood Street in Somerville.

Comparison of Potential Impacts

The Preferred Route S1A contains more shade trees within the public way when compared to the Noticed Alternative Route S11C. However, most of the work associated with the Preferred Route S1A would be confined to the existing roadway limits and other developed areas such as the D2 Site where the potential to impact shade trees is considered low, whereas a portion of the Noticed Alternative Route would occur off-road parallel to the Grand Junction Railroad corridor where it collocates with the City of Cambridge's future multiuse pathway project. According to discussions with Cambridge officials, it is anticipated that some of the existing vegetation along this corridor will be removed to construct the multi-use pathway and has been accounted for in the City's design plans. However, it is likely that additional public shade trees would be removed during construction of the Noticed Alternative Route S11C, including where the route transitions from Broadway across Galileo Galilei Way and a sidewalk to reach the Grand Junction railroad corridor and the future multi-use pathway alignment. The need for such tree removal work would be confirmed by Eversource in consultation with Cambridge officials during the detailed design phase, should the Noticed Alternative Route S11C be advanced to construction.

In consideration of the above, the Company determined that the Preferred Route S1A is superior to the Noticed Alternative Route S11C for this criterion.

Impact Mitigation Measures

The Company would implement the same practice to protect public shade trees regardless of the route selected. Please refer to Section 5.8.2.4 for a description of typical mitigation measures that would be employed by the Company to protect public shade trees during construction.

5.8.6.5 Sound

As was previously described for the Putnam Study Area (see Section 5.8.2.5), the construction equipment used with underground transmission line construction is like that used during typical public works projects (e.g., road resurfacing, storm sewer installation, water line installation). Table 5-13 in Section 5.8.2.5 includes maximum sound levels from typical equipment that will be used during construction of the underground cable at a typical reference distance of 50 feet.

Preferred Route S1A (Hampshire Street/D2 Site)

There are approximately 433 residential units located within 50 feet of the roadways comprising the Preferred Route S1A. There are also three sensitive receptors that are adjacent to this route, including Bunzey Park, Hilltop Church, and the same MIT property referenced above.

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

There are approximately 59 residential units located within 50 feet of the roadways comprising the Noticed Alternative Route S11C. There are also 3 sensitive receptors that are adjacent to this route, including the Somerville Police Department, St. Anthony of Padua Catholic Church, and MIT property.

Comparison of Potential Impacts

The Preferred Route S1A involves work near 433 residential units relative to the Noticed Alternative Route S11C, which involves work near 59 residential units (a difference of 374 residential units). Both routes pass the same number of sensitive receptors. Because the Preferred Route S1A has a greater potential to disrupt residences from sound generated during construction, the Company determined that the Noticed Alternative Route S11C is superior to the Preferred Route S1A relative to the sound criterion.

Impact Mitigation

The timing and sequencing of the work will be coordinated with local and state officials to minimize potential sound impacts consistent with applicable local regulations and ordinances. Sound from cable splicing operations would be minimized through use of specialized low-sound equipment such as low-sound generators, and by reducing or eliminating the use of motorized equipment during evening and overnight work. Other potential mitigation measures include working with the municipalities and state agencies to coordinate work, use of a low sound/muffled generator, and portable sound walls (temporary sound barriers) as needed, blocking the path of generators. However, as previously noted, the use of physical sound barriers is not typically the Company's first response to addressing a claim of excessive sound. The Company would first explore other opportunities to reduce sound, including requiring the use of newer, lower sound equipment.

5.8.6.6 Subsurface Contamination

Subsurface excavation has the potential to encounter contaminated soils and/or groundwater from historical releases and/or urban/historic fill in the vicinity of the Preferred Route S1A and the Noticed Alternative Route S11C. A review of the MassDEP waste site list on-line database was performed to determine the potential to encounter subsurface contamination directly abutting each route.

Preferred Route S1A (Hampshire Street/D2 Site)

There are 20 MassDEP-listed sites directly abutting the Preferred Route S1A, as described in Table 5-54.

Table 5-54 MassDEP-Listed Sites Directly Abutting the Preferred Route S1A (Hampshire Street/D2 Site)

Release Tracking Number (RTN)	Location	Description / Status
3-0001421	190-203 Broadway, Cambridge	RAO Class A3; AUL date 6/14/1994
3-0016632	56 Webster Avenue, Somerville	RAO Class A3; AUL date 4/28/2011
3-0019742	481 Columbia Street, Somerville	Tier 2; AUL date 8/9/2004
3-0020926	520 Columbia Street, Somerville	RAO Class A3; AUL date 10/11/2013
3-0020989	600 Windsor Place, Somerville	RAO Class A3; AUL date 11/16/2006
3-0023185	1 Hampshire Street, Cambridge	RAO Class A3; AUL date 2/1/2007
3-0029452	26 Bennett Street, Somerville	RAO Class A3; AUL date 10/13/2011
3-0019742	481 Columbia Street, Somerville	Chapter 21E Tier II
3-0025215	305 Webster Avenue, Somerville	Chapter 21E Tier II
3-0028512	9, 11, 13, 17 Allen Street, Somerville	Chapter 21E Tier II
3-0030510	15 Bennett Street, Somerville	Chapter 21E Tier II
3-0030848	40 Bennett Street, Somerville	Chapter 21E Tier II
3-0030850	51 Allen Street, Somerville	Chapter 21E Tier 1D
3-0031024	27 Bennett Street, Somerville	Chapter 21E Tier 1D
3-0031025	26-28 Prospect Street, Somerville	Chapter 21E Tier 1D
3-0032129	27 Bennett Street, Somerville	Chapter 21E Tier 1D
3-0032130	48-51 Allen Street, Somerville	Chapter 21E Tier 1D
3-0032131	40 Bennett Street, Somerville	Chapter 21E Tier 1D
3-0032133	26-30 Prospect Street, Somerville	Chapter 21E Tier 1D
3-0034843	322-346 Binney Street, Cambridge	Chapter 21E Tier II

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

There are 13 MassDEP-listed sites directly abutting the Noticed Alternative Route S11C, as described in Table 5-55.

Table 5-55 MassDEP-Listed Sites Directly Abutting the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Release Tracking Number (RTN)	Location	Description / Status
3-0018323	220 Washington Street, Somerville	RAO Class B2; AUL date 5/22/2007
3-0027087	179 Washington Street, Somerville	Chapter 21E Tier 1D
3-0028512	9, 11, 13, 17 Allen Street, Somerville	Chapter 21E Tier II
3-0030510	15 Bennett Street, Somerville	Chapter 21E Tier II
3-0031024	27 Bennett Street, Somerville	Chapter 21E Tier 1D
3-0031025	26-28 Prospect Street, Somerville	Chapter 21E Tier 1D
3-0032129	27 Bennett Street, Somerville	Chapter 21E Tier 1D

Table 5-55 MassDEP-Listed Sites Directly Abutting the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway) (Continued)

Release Tracking Number (RTN)	Location	Description / Status
3-0032133	26-30 Prospect Street, Somerville	Chapter 21E Tier 1D
3-0032211	10 Poplar Street, Somerville	Chapter 21E Tier II
3-0034095	389 Binney Street, Cambridge	Chapter 21E Tier II
3-0034843	322-346 Binney Street, Cambridge	Chapter 21E Tier II
3-0034864	223 Washington Street, Somerville	Chapter 21E Tier II
3-0035313	15 Lambert Street, Cambridge	Chapter 21E Tier II

Comparison of Potential Impacts

Five of the sites overlap both routes (RTN Nos. 3-0031024, 3-0031025, 3-0032129, 3-0032133 and 3-0034843). In addition, as depicted on Figure 4-29D in Section 4, most of the other listed sites associated with the Preferred Route S1A are predominantly located on the D2 Site that is currently under construction and are being managed as part of that separate mixed use development project.

In consideration of the above, the Company determined that the Preferred Route S1A and the Noticed Alternative Route S11C are comparable relative to subsurface contamination.

Impact Mitigation Measures

Contaminated soils and/or groundwater will be managed pursuant to the URAM provisions of the MCP. The Company will prepare a soil and groundwater management plan, and will contract with a LSP as necessitated by conditions encountered along the underground transmission line alignment, consistent with the requirements of the MCP at 310 C.M.R. 40.0460 *et seq.* All excess soil and groundwater will be managed in accordance with local, State and Federal regulations.

In addition to the above procedures, the portion of the Noticed Alternative Route S11C that collocates with Cambridge’s future multi-use pathway along the Grand Junction railroad corridor would adhere to MassDEP’s “Best Management Practices for Controlling Exposure to Soil During the Development of Rail Trails”¹³² during construction. Although this guidance was developed by MassDEP in response to the growing number of rail trail projects being proposed along unused or abandoned railroad corridors, MassDEP has indicated that the best management practices outlined in the guidance are relevant for any proposed activity along former railroad corridors, including the installation of linear utilities. This guidance provides a structured approach to ensure proper best management practices are developed to assess and mitigate any potential risks to human health and the environment associated with the former use of the railroad corridor. Both

¹³² See <https://www.mass.gov/service-details/soil-along-proposed-rail-trails>

the City of Cambridge and Eversource have extensive expertise in working in areas that may contain contaminated soils subject to the 21E Program requirements and this Project will be performed in accordance with all applicable site cleanup regulations and protocols, including the MassDEP Rail Trail Guidance, as appropriate.

5.8.6.7 Wetland Resource Areas, Buffer Zones and Tidelands

Neither the Preferred Route S1A nor the Noticed Alternative Route S11C involves work in or near wetland resource areas. Accordingly, the Company concludes that there will be no impact to this criterion from construction using either Route.

5.8.6.8 Cultural Resources

The Project is subject to review by the MHC in compliance with G.L. c. 9, §§ 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). The Company undertook a cultural resource investigation to identify historic and archaeological resources adjacent to the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway). The following Table 5-56 summarizes the results of the investigations.

Table 5-56 Number of Cultural Resource Sites Adjacent to the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Cultural Resources	Number of Cultural Resources	
	Preferred Route S1A (Hampshire Street/D2 Site)	Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)
Inventory Points Adjacent to Route	2	15
Inventory Points Intersected by Route	2	1
Archaeological Sites within 0.25 miles of Route	1	1
Archaeological Sites Intersected by Route	0	0
TOTAL	5	17

Preferred Route S1A (Hampshire Street/D2 Site)

The two inventory points located adjacent to the Preferred Route S1A include:

- ◆ Rufus Lamson House (72, 74 Hampshire Street); and
- ◆ James Barnes House (111 Hampshire Street).

The two inventory points intersected by the Preferred Route S1A include:

- ◆ Boston Woven House and Rubber Complex (Broadway and Cardinal Medeiros Avenue); and

- ◆ Bennett Street Industrial Area (Prospect Street).

As noted on the table, there is one archaeological site located within 0.25 mile of the Preferred Route S1A. The MHC considers this information confidential.

Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

The fifteen inventory points located adjacent to the Noticed Alternative Route S11C include:

- ◆ Boston Woven House and Rubber Complex (Broadway and Cardinal Medeiros Avenue);
- ◆ North Packing and Provision Company (35-37 Medford Street);
- ◆ North Packing and Provision Company (37R Medford Street);
- ◆ James Kiley Wagon Shop (5-9 Linwood Street);
- ◆ 157-161 Washington Street;
- ◆ 163-179 Washington Street;
- ◆ Andrew Kidder house (198 Washington Street);
- ◆ Oren Knapp Building (205 Washington Street);
- ◆ Hannah Allen Building (208-210 Washington Street);
- ◆ Boston Elevated Railway Garage (228 Washington Street);
- ◆ William Walker House (215 Washington Street);
- ◆ Union Gulf Service Station (231 Washington Street);
- ◆ US Post Office (237 Washington Street);
- ◆ Union Square Fire Station (92 Union Square); and
- ◆ Bennett Street Industrial Area (Prospect Street).

The one historic inventory point intersected by the Noticed Alternative Route S11C includes:

- ◆ Union Square Commercial District.

There is one archaeological site located within 0.25 mile of the Noticed Alternative Route S11C. The MHC considers this information confidential.

Comparison of Potential Impacts

The Noticed Alternative Route S11C involves work at 12 additional historic properties when compared to the Preferred Route S1A, including off-road work along the Grand Junction Railroad corridor. While the potential for impacts is considered low given the nature of in-road construction and work in previously disturbed areas along a rail corridor, the difference in the

number of historic properties (+12) could indicate a greater potential for impacts during construction. Accordingly, the Company determined that the Preferred Route S1A is superior to the Noticed Alternative Route S11C relative to this criterion.

Impact Mitigation Measures

While the need for mitigation to cultural resource impacts associated with these routes is not anticipated, the MHC will be consulted regarding a determination of the effect. Potential effects, if any, to historic and archaeological resources will be addressed with the MHC through Section 106 of the National Historic Preservation Act and the State Register Review processes.

5.8.6.9 Article 97

Neither the Preferred Route S1A nor the Noticed Alternative Route S11C involve work on Article 97 land. Accordingly, the Company concludes that there will be no impact to this criterion from construction using either Route.

5.8.6.10 Summary of Environmental Impacts

Based upon the above comparisons, the Preferred Route S1A and the Noticed Alternative Route S11C have relatively minimal environmental effects, and most of those effects would be temporary and can be minimized using the proposed mitigation measures. Table 5-57 below provides a comparison of the routes based on the criteria evaluated.

Overall, the Preferred Route S1A was determined to be superior to the Noticed Alternative Route S11C on two criteria: public shade trees and cultural resources. The Noticed Alternative Route S11C was determined to be superior to the Preferred Route S1A on three criteria: transportation impacts, land use, and sound. For the balance of the criteria analyzed (sensitive receptors, subsurface contamination, wetlands, and Article 97), the Routes were determined to be comparable from an environmental impact perspective.

Table 5-57 Comparison of the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Evaluation Criteria	Preferred Route S1A(Hampshire Street/D2 Site)	Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)
Transportation Impacts	-	+
Land Use	-	+
Sensitive Receptors	=	=
Public Shade Trees	+	-
Sound	-	+
Subsurface Contamination	=	=

Table 5-57 Comparison of the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway) (Continued)

Evaluation Criteria	Preferred Route S1A (Hampshire Street/D2 Site)	Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)
Wetland Resource Areas, Buffer Zones and Tidelands	=	=
Cultural Resources	+	-
Article 97	=	=
NOTES: + Indicates less potential for impact, which means superior for use. - Indicates more potential for impact, which means inferior for use. = Indicates comparable impacts.		

5.8.6.11 Comparison of Costs

The planning grade cost estimates (-25%/+25%) of the Preferred Route S1A and the Noticed Alternative Route S11C are provided below in Table 5-58.

Table 5-58 Cost Estimate for the Preferred Route S1A (Hampshire Street/D2 Site) and the Noticed Alternative Route S11C (Grand Junction RR Multi-Use Pathway)

Route	Cost (\$ millions)
Preferred Route S1 (Hampshire Street/D2 Site)	\$98.6
S-11C Noticed Alternative Site (Grand Junction RR Multi-Use Pathway)	\$130

The \$31 million dollars in additional cost associated with the Noticed Alternative Route S11C is due, in part to its length and the complexity of construction along the Grand Junction Railroad corridor, including the need to potentially install sheet pile along the trench line to protect the adjacent railroad tracks and several complex pipe jacking crossings of the railroad tracks to align with the future multi-use pathway. The Noticed Alternative Route S11C also requires a trenchless crossing beneath the MBTA commuter rail and McGrath Highway in Somerville. Contrast this alignment with the Preferred Route S1A, which primarily involves conventional open cut trenching in public roads for most of its length except for a short pipe jacking crossing beneath the railroad tracks approaching the D2 Site in Somerville.

5.8.6.12 Comparison of Reliability

The Preferred Route S1A and Noticed Alternative Route S11C are each reliable means for providing a transmission line connection between the New Substation and existing Somerville Substation.

5.8.6.13 Overall Comparison

The Noticed Alternative Route S11C was determined to be nominally superior to the Preferred Route S1A on the environmental criteria analyzed (3 versus 2). However, the Company determined that the modest environmental advantages of the Noticed Alternative Route S11C did not warrant the incremental \$31 million in costs that it would take to construct that route. Further, there are greater coordination and constructability challenges associated with Noticed Alternative Route S11C including working adjacent to and within the active MBTA railroad right-of-way for much of the route's length, the costs and challenges of shoring the trench during construction to avoid undermining the railroad tracks, several complex trenchless crossings at roadway intersections where the route aligns with the City's future multi-use pathway project, and a trenchless crossing of the commuter rail tracks and McGrath Highway to reach Linwood Street in Somerville. Moreover, the incremental environmental impacts associated with Preferred Route S1A will be largely temporary and can be minimized using mitigation measures.

Both routes have the benefit of partnering with the City of Cambridge to collocate with and/or contribute to future multimodal transportation improvement projects including the multi-use pathway construction along the Grand Junction Railroad corridor for the Noticed Alternative Route S11C or bike lane upgrades to Hampshire Street for the Preferred Route S1A. Specifically, the Hampshire Street segment of Preferred Route S1A between Broadway and Columbia Street would be restored by Eversource following construction to accommodate greater separation of bicycle facilities as outlined in the City of Cambridge Bicycle Network Vision, and related improvements to sidewalks and on-street parking areas.

Both routes are reliable means for providing a transmission line connection between the New Substation and existing Somerville Substation.

The Company will work closely with the City of Cambridge and Somerville, abutters to the Project, landowners (including the D2 Site developer) and area neighborhoods to ensure that temporary construction impacts are minimized, and that the new transmission line is installed in the least impactful way possible. The Company continues to work closely with the owners of the D2 Site to ensure that the work is properly coordinated and that the work zones are properly restored to the satisfaction of the landowner and the City of Somerville following construction.

5.9 Overall Comparison and Conclusions

The following Tables 5-59 through 5-63 below provide an overall summary comparison of the potential for environmental impacts, costs, and reliability between the Preferred Routes and the Noticed Alternative Routes within each respective study area.

The total overall cost to construct the Preferred Routes is approximately \$572.8 million dollars while the total overall cost to construct the Noticed Alternative Routes is approximately \$673.8 million dollars.

In the Putnam routes, as summarized on Table 5-59 below, the Preferred Route P13 was determined to be superior to the Noticed Alternative Route P11 from both an environmental impact and cost perspective, primarily because it is a more direct and shorter route.

Table 5-59 Overall Comparison Summary (Putnam Routes)

	Preferred Route P13	Noticed Alternative Route P11
Overall Potential for Environmental Impacts	+	-
Cost	+	-
Reliability	=	=
NOTES: + Indicates less potential for impact, less expensive to construct, or more reliable, which means superior for use. - Indicates more potential for impact, more expensive to construct, and less reliable which means inferior for use. = Indicates comparable impacts, costs, or reliability.		

In the Kendall study area, as summarized on Table 5-60 below, Route K5A was identified as the Preferred Route because it is approximately \$23 million dollars less expensive to construct when compared to the Noticed Alternative Route K11 and based on the extensive coordination with stakeholders. The alignment of Preferred Route K5A across the Volpe Center site was identified after extensive coordination and with the support of the owner of the development rights and the City of Cambridge to avoid and minimize potential impacts to future development plans on the Volpe Center Site, minimization of impacts to public shade trees, and in consideration of significant utility congestion and planned utility upgrades in Broadway and Third Street. The owner of the development rights has indicated to Eversource that it strongly prefers the Preferred Route K5A over Noticed Alternative Route K11 because it results in less potential impacts and constraints to its future development plans and avoids potential impacts during construction to the mature deciduous trees bordering the Loughery Walkway and Bike Path. Eversource concurs with this assessment.

Table 5-60 Overall Comparison Summary (Kendall Routes)

	Preferred Route K5A	Noticed Alternative Route K11
Overall Potential for Environmental Impacts	-	+
Cost	+	-
Reliability	=	=
NOTES: + Indicates less potential for impact, less expensive to construct, or more reliable, which means superior for use. - Indicates more potential for impact, more expensive to construct, and less reliable which means inferior for use. = Indicates comparable impacts, costs or reliability.		

In the Brighton East study area, as summarized in Table 5-61 below, the Preferred Route B2A East is superior to the Noticed Alternative Route B31 East on most of the environmental criteria analyzed and the least expensive to construct. The Preferred Route B2A East also has the benefit of avoiding residential and commercial areas in Boston by taking advantage of the opportunity to collocate with future development activities on the MassDOT Allston Multimodal Project site. The HDD crossing method avoids and minimizes impacts to MassDCR’s Magazine Beach property, Charles River, and adjacent wetlands. Following construction, the use of the Magazine Beach property will remain entirely consistent with its current land use, including no loss of public recreational open space or natural resources.

Table 5-61 Overall Comparison Summary (Brighton Routes East)

	Preferred Route B2A East	Noticed Alternative Route B31 East
Overall Potential for Environmental Impacts	+	-
Cost	+	-
Reliability	=	=
<p>NOTES: + Indicates less potential for impact, less expensive to construct, or more reliable, which means superior for use. - Indicates more potential for impact, more expensive to construct, and less reliable which means inferior for use. = Indicates comparable impacts, costs or reliability.</p>		

In the Brighton West study area, as summarized in Table 5-62 below, the Preferred Route B29F West was determined to be superior to the Noticed Alternative Route B30 West from both an environmental impact and cost perspective. It is a more direct and shorter route because it crosses the Charles River via the River Street bridge whereas the Noticed Alternative Route B30 West heads further west in a more circuitous route through densely developed residential neighborhoods in Cambridge to reach the Anderson Bridge. The Noticed Alternative Route B30 West would also pass densely developed residential areas of Boston between the Anderson Bridge and the Brighton Substation.

Table 5-62 Overall Comparison Summary (Brighton Routes West)

	Preferred Route B29F West	Noticed Alternative Route B30 West
Potential for Environmental Impacts	+	-
Cost	+	-
Reliability	=	=
<p>NOTES: + Indicates less potential for impact, less expensive to construct, or more reliable, which means superior for use. - Indicates more potential for impact, more expensive to construct, and less reliable which means inferior for use. = Indicates comparable impacts, costs or reliability.</p>		

In the Somerville study area, Table 5-63 below, the Company identified Route S1A as the Preferred Route primarily because it is nearly \$31 million dollars less expensive to construct than the Noticed Alternative Route S11C, and therefore represents a substantial cost savings to the rate payers. It also has fewer constructability challenges as discussed in Section 5.8.6.14 The potential environmental effects are expected to be minimal, and most of those effects will be temporary and can be minimized using mitigation measures. In addition, the Hampshire Street segment of Preferred Route S1A between Broadway and Columbia Street would be restored by Eversource following construction to accommodate greater separation of bicycle facilities as outlined in the City of Cambridge Bicycle Network Vision, and related improvements to sidewalks and on-street parking areas.

Table 5-63 Overall Comparison Summary (Somerville Routes)

	Preferred Route S1A	Noticed Alternative Route S11C
Potential for Environmental Impacts	-	+
Cost	+	-
Reliability	=	=
<p>NOTES: + Indicates less potential for impact, less expensive to construct, or more reliable, which means superior for use. - Indicates more potential for impact, more expensive to construct, and less reliable which means inferior for use. = Indicates comparable impacts, costs, or reliability.</p>		

5.10 Overall Conclusion

The total overall cost to construct the Preferred Transmission Line Routes is approximately \$572.8 million dollars whereas the total overall cost to construct the Noticed Alternative Transmission Line Routes is approximately \$673.8 million dollars. The difference between these two sets of lines is \$101.0 million dollars.

For these reasons, including the estimated lower overall cost of constructing the Project using the Preferred Routes described herein, the Company concludes that the Project provides the best balance of impacts to the environment, while meeting the identified system need, along with considerations of reliability and cost.