



Federal Transit  
Administration

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Madison Street Corridor Bus Rapid Transit (BRT)

# Visual Quality Technical Memorandum

Prepared for

**Seattle Department of Transportation  
Federal Transit Administration**

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*Seattle Department of Transportation*



# 1 Introduction

The City of Seattle's Department of Transportation (SDOT) proposes to provide new Bus Rapid Transit (BRT) service on Madison Street between 1st Avenue and Martin Luther King, Jr. Way East (MLK Jr. Way E.), Spring Street between 1st Avenue and 9th Avenue, and 1st Avenue and 9th Avenue between Madison Street and Spring Street as part of the Madison Street Corridor Bus Rapid Transit (Madison BRT) Project.

The visual environment encompasses elements from both the built and natural environments, including buildings, trees, bodies of water, and entire landscapes. This report examines potential impacts of the Madison Bus Rapid Transit on visual quality and protected public views. The project study area includes those areas that can be viewed from the project, otherwise referred to as the project viewshed. In this urbanized environment, the study area or viewshed mostly extends between the building façades on either side of Madison Street and includes vistas at cross streets. This Section first describes the methods for assessing visual quality, followed by an overview of the existing visual quality of the study area. Finally, it describes impacts and, as warranted, mitigation measures.

## 1.1 Applicable Regulations

A visual assessment is included in NEPA environmental evaluations based on 42 U.S.C. 4321, Section 101(b)(2), which states that it is the "continuous responsibility" of the federal government to "use all practicable means" to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings."

SEPA (WAC 197-11 and WAC 468-12) requires all major actions sponsored, funded, permitted, or approved by state and/or local agencies to undergo planning to ensure environmental considerations such as impacts related to aesthetics and visual quality are given due weight in decision-making.

Seattle Municipal Code 25.05.675.P provides public view protection on views of significant natural and manmade features, which for this project include the Puget Sound, Elliott Bay, and Olympic Mountains.

# 2 Project Description

## 2.1 Background

The Madison BRT Project is located in a dense and rapidly developing area that includes portions of Madison Valley, the Central District, Capitol Hill, First Hill, and Downtown Seattle. These areas are among the densest residential neighborhoods in the City and are sizable employment centers due to the presence of two major medical centers and Seattle University. Providing BRT service along this 2.4-mile corridor is identified in the Seattle Transit Master Plan and listed as a near-term action in the 2016 Move Seattle Strategic Vision. This project would improve transit capacity, travel time, reliability, and connectivity in an area that is highly urbanized and has a lower rate of automobile ownership than other parts of the city.

The Madison BRT Project would connect with dozens of bus routes, the Center City Connector Streetcar, the South Lake Union Street Car, and First Hill Streetcar, and would improve access to ferry service at the Colman Dock Ferry Terminal, First Hill medical institutions and housing, Seattle University, and Link light rail. As part of the project, pedestrian and bicycle access along the corridor would also be improved and enhancements would be made to the streetscape and public realm to increase comfort, visibility, and legibility in the Madison Street corridor.

## **2.2 Project Location**

The project site is located in Seattle, Washington (Figure 1). The 2.4-mile corridor would begin and end at MLK Jr. Way E in the east. Figure 2 shows that from MLK Jr. Way E the Madison BRT Project would head west on Madison Street for 2.26 miles to 1<sup>st</sup> Avenue, head north on 1<sup>st</sup> Avenue for 290 feet, head east on Spring Street for 0.43 mile, south on 9<sup>th</sup> Avenue for 290 feet, and head east on Madison Street for 1.78 miles. The project corridor traverses several Seattle neighborhoods: Downtown, First Hill, Capitol Hill, Central Area, and Madison Valley.

### **Downtown**

The Downtown neighborhood is located at the westernmost end of the project corridor from 1<sup>st</sup> Avenue to the Interstate 5 (I-5) crossing. Downtown Seattle is primarily commercial, including large office towers in the city center, and is the largest employment center in the city.

### **First Hill**

Moving east to First Hill, from I-5 to Broadway Avenue, the density decreases and there is a greater mixture of mid- and low-rise buildings with mixed residential-commercial uses. On the summit of First Hill, and heading east toward Broadway, institutional uses line the south side of Madison and commercial uses line the north. Virginia Mason Hospital and Swedish Hospital both have several large medical facility buildings adjacent to, or within, one block of the Madison Street corridor.

### **Capitol Hill**

North of the project corridor, the Capitol Hill neighborhood runs from Broadway Avenue to 26th Avenue. The Pike-Pine corridor, Madison Valley, and Broadway areas are located along the Madison Street corridor. It includes mid-rise development, transitioning into low-rise and mixed commercial and residential development.

### **The Central Area**

South of the project corridor, the Central Area neighborhood also runs from Broadway Avenue to 26th Avenue. It includes mid-rise development, transitioning into low-rise and mixed commercial and residential development. The Seattle University campus is adjacent to the Madison Street corridor.

### **Madison Valley**

The Madison Valley neighborhood is located between 26th Avenue to MLK Jr. Way and east of the project corridor to Madison Park. Low-rise and mixed commercial and residential development dominates the corridor in this neighborhood.

## **2.3 Description of Proposed Work**

The Project would create a new BRT line along the Madison Street corridor. It would include approximately 11 BRT station areas with 21 directional platforms along the project corridor, new Transit Only Lanes (TOLs) and Business Access & Transit (BAT) lanes, pedestrian and bicycle improvements, and signal and utility upgrades along the corridor. The Madison BRT Project would replace portions of the King County Metro Route 12 where they would otherwise overlap. Metro anticipates they will revise Route 12 to compliment the BRT and continue to serve the east Capitol Hill areas as it currently does.

The Madison BRT Project would use nine new buses, seven of which would be on the road at any one time. The buses would be 60-foot articulated low-floor vehicles with three doors on the right side and two on the left. The BRT would operate Monday through Saturday from 5 a.m. to 1 a.m. and on Sundays

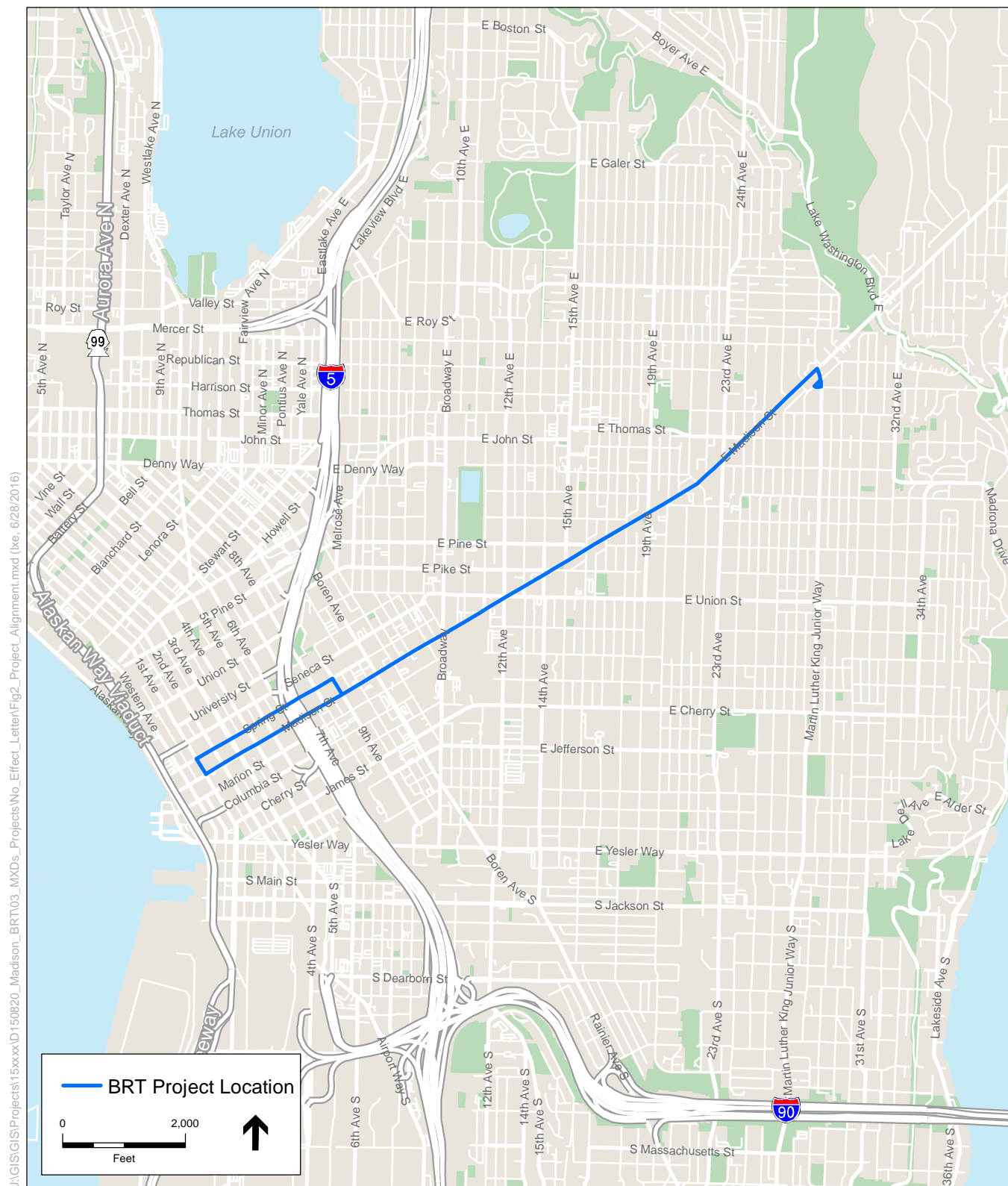




SOURCE:  
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

**Figure 1**  
Project Vicinity



SOURCE:  
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

**Figure 2**  
Project Alignment

and holidays from 6 a.m. to 11 p.m. They would run every six minutes between 6 a.m. and 7 p.m. on weekdays and every 15 minutes during all other hours of operation.

Construction would start in 2018 and conclude in the fall of 2019.

## Stations

Each stop would typically have a shelter (except the 1<sup>st</sup> Avenue stop), off-board fare payment machines, and real-time arrival information. The level-boarding platforms would be approximately 13 inches in height (1<sup>st</sup> Avenue stop would have 10-inch platform to accommodate the streetcar) and ADA-accessible to the maximum extent feasible.

### 1st Avenue

The western end would be located on 1<sup>st</sup> Avenue and would be shared with Center City Connector streetcars. It would include a northbound island station.

### Spring Street

On Spring Street, all of the BRT buses would be eastbound. Three stops would be provided on Spring Street, one at 3<sup>rd</sup> Avenue, one at 5<sup>th</sup> Street, and one on the nearside of 8<sup>th</sup> Avenue. The Route 2 bus would also utilize the stop at 5<sup>th</sup> Avenue.

### Madison Street

On Madison Street, BRT buses would be westbound only between 1st Avenue and 9th Avenue and bidirectional between 9th Avenue and MLK Jr. Way E. Ten sidewalk stops would be provided. Westbound-only sidewalk stations would be provided on the western side of 3rd Avenue and the eastern side of 5th Avenue. Sidewalk stations would be provided in both directions at the intersections with 17th Avenue, E Denny Way, 24th Avenue and the western side of MLK Jr. Way E.

There would be six island stations. One island station, on the western side of 8th Avenue would provide westbound service only. There would be two island station pairs (westbound island adjacent to eastbound island station) at Terry Avenue and the east side of Summit Avenue. One bidirectional transit island would be east of the 12th Avenue intersection.

One westbound curbside bus layover stall would be provided on Madison Street, west of the intersection with MLK Jr. Way E.

### Layover

On MLK Jr. Way E, two curbside bus layover stalls would be provided at the intersection with E Harrison Street, and a third curbside layover would be provided on westbound Madison Street, just west of MLK Jr. Way E.

## Right-of-Way Improvements

### Parking

Bus lanes must be at least 10.5 feet, and preferably 12 feet wide, according to American Public Transportation Association (APTA) standards (APTA, 2010). Many of the existing rights-of-way within the

#### What is a Sidewalk Station?

A sidewalk station is a station that would be located at the curb. They are typically 60 feet long.

#### What is an Island Station?

An island station is a platform in the center median of the street. Island stations are at least 60 feet long and approximately 9 feet wide.

corridor would not allow for the addition of a new 10.5-foot-wide bus lane without the removal of on-street parking. The Madison BRT Project would remove 227 on-street parking spaces (currently allowing parking during non-peak hours only) within the corridor, 12 of which would be passenger or delivery loading spaces, 120 would be street parking spaces, and 5 would be spaces that are restricted.

### *Alterations to Existing Street Corridor*

According to APTA standards, bus lanes must be at least 10.5 feet wide (APTA, 2010). Many of the existing rights-of-way within the corridor would not allow for the addition of a new 10.5-foot-wide bus lane without the narrowing of other existing lanes. In certain sections of the roadway, existing general purpose lanes may need to be converted for BRT use. A list of the changes to the existing street corridor is provided below:

- Roadway curb widening on seven blocks of Madison Street;
- Full depth PCCP roadway restoration under proposed BRT travel lanes corridor wide;
- Sidewalk restoration and repairs impacting approximately 75 block faces;
- Storm water detention system construction underneath Madison Street (up to 72" detention pipe diameter);
- Corridor wide roadway restriping;
- Two new signals would be provided on Spring Street at 8<sup>th</sup> Avenue and at 9<sup>th</sup> Avenue;
- Remove north/south crossing of Madison Street via Terry Avenue; and
- Remove left turn lanes on Madison Street to Minor Avenue, Summit Avenue, and Boylston Avenue.

In addition, a new traction-powered substation (TPSS) would be needed somewhere near the eastern end of the project, where the existing overhead catenary system would need to be extended.

### **Pedestrian and Bicycle Improvements**

The Project would include a number of improvements for pedestrians and bicyclists.

Where the project is impacting the existing sidewalks along the corridor, repairs or replacements would be completed to restore them to ADA standards. Corner bulb-out sidewalk extensions would be provided at a number of locations, which reduce street crossing distance and increase visibility of pedestrians. At Boren Avenue, Broadway Avenue, and Union Street sidewalks would be narrowed slightly to accommodate left turn lanes.

Protected Bicycle Lanes (PBLs) would remain on Spring Street between 2<sup>nd</sup> Avenue and 4<sup>th</sup> Avenue and added on Union Street between 12<sup>th</sup> Avenue and 14<sup>th</sup> Avenue. A sharrows situation would be created in the left lane on Spring Street from 1<sup>st</sup> Avenue to 2<sup>nd</sup> Avenue.

Additional crosswalk and bicycle crossings would be provided at the intersection of 12<sup>th</sup> Avenue and Union Street, in accordance with the Seattle Bicycle Master Plan. As part of the project, a wide crosswalk



would be constructed on Madison Street on the east side of the intersection, enabling transitions between the bike facilities on Union Street, to the east across Madison Street, and 12<sup>th</sup> Avenue.

A short segment of bicycle lane would be striped through the intersection of 24<sup>th</sup> Avenue and John Street and improvements to the sidewalk on Madison Street west of the intersection would be included in the project in order to facilitate through movements on the 24<sup>th</sup> Avenue greenway.

### **Landscaping Improvements**

In order to complete construction of the stations, lane widening, utility relocations, and sidewalk and other frontage improvements, some existing street trees would be removed. The project may remove approximately 70; however, this number would be refined during final design. All trees removed would be replaced in accordance with the City of Seattle's Tree Replacement Standards (SMC 15.43) and in coordination with SDOT Urban Forestry.

As part of the project, SDOT would be installing a new 2,600 square-foot Pocket Plaza with sidewalk and landscaping at the intersection of Madison Street, E Pike Street and 14<sup>th</sup> Avenue. Additional landscape opportunities will be sought throughout the corridor, including narrow landscape buffers between the street and the sidewalk.

### **Art**

The City has committed to contributing 1% of City funds to add public art (1% for Art Program); federal and state funds do not apply to this program. These funds are combined with other project art contributions to fund larger art installations which may or may not be located on the Madison Street corridor; this decision is made by the City's Art Council.

## **3 Methodology**

### **3.1 Assessing Impacts on Visual Resources**

The description of the existing visual conditions and the approach used to assess changes associated with the Madison BRT Project are based on the visual assessment system found in the Visual Impact Assessment for Highway Projects (FHWA, 1981).

FHWA defines visual quality as a combination of the following three elements of a view:

- **Vividness** is the degree of drama, memorability, or distinctiveness of the landscape components. The degree of vividness is composed of landform, vegetation, water-features, and manmade elements.
- **Intactness** is a measure of the visual integrity of the natural and manmade landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes as well as in natural settings. High intactness means that the landscape is free of eyesores and is not broken up by features that appear to be out of place.
- **Unity** is the degree of visual coherence and compositional harmony of the landscape, considered as a whole. High unity frequently attests to the careful design of individual components and their relationship in the landscape.

A visual quality assessment determines if the vividness, intactness, and unity of the environment would change with the development of the proposed project and whether the changes would be perceived by sensitive viewers. The assessment also considers whether the proposed project would be consistent with the existing visual character of areas where the proposed project would be located. Per FHWA

methodology, the primary portion of the study area was divided into landscape units—identifiable and distinct geographic areas within a linear project corridor from which there are views (the viewshed) of a proposed action. A series of representative views, referred to as key observation points (KOPs), were selected within each landscape unit. The KOPs were used to represent areas along the BRT route so that landscape character and visual quality could be described and changes associated with the BRT could be determined. Figure 3 shows the locations of the KOPs. Within each of the landscape units and at each KOP, photographs of the existing condition and a description of the BRT are provided to convey the degree of change.

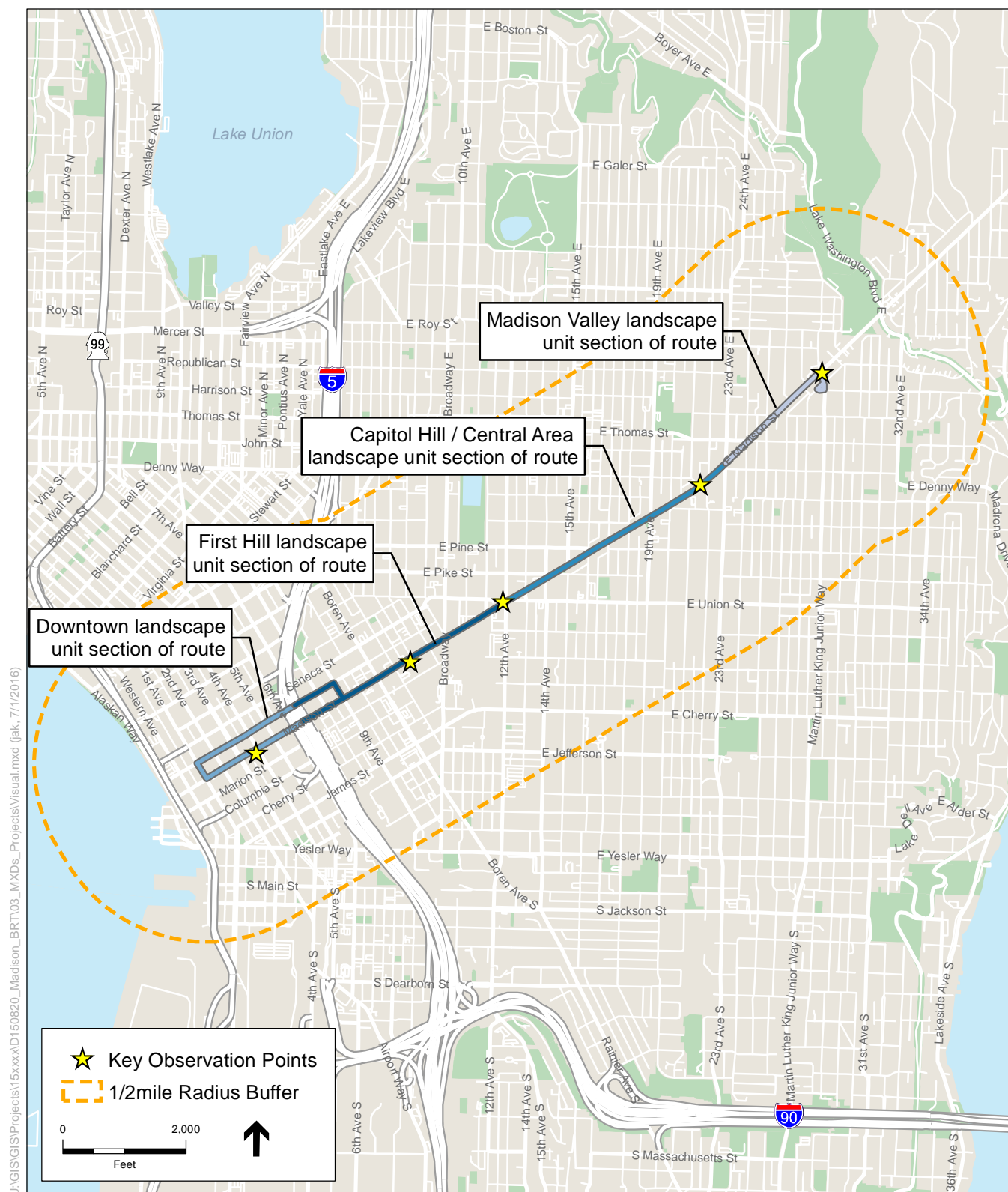
## **3.2 Sensitive Viewers**

Although the Madison BRT Project will have physical effects on the environment, visual resource quality is perceived by the viewer. In general, viewers are expected to have higher sensitivity to aesthetic value if they are engaged in an activity that is enhanced by high visual quality (for example sightseeing or looking out a window for aesthetic benefit), and if they have more frequent or extended viewing of the resource. To evaluate the overall effects to visual resources, viewer sensitivity is considered as a factor together with the prominence of changes to visual resources that would be part of the Project.

While there are different types of potential viewers for the Madison BRT Project, the primary sensitive viewers considered in this analysis include:

- Transit passengers – when arriving at stations and while waiting for buses;
- Pedestrians – walking through the corridor; and
- Residents and workers – through windows from inside buildings.





SOURCE:  
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

**Figure 3**  
Key Observation Units  
and Landscape Units

## 4 Affected Environment

### 4.1 Existing Visual Character

Madison Street extends northeast/southwest in a nearly straight line. Madison is on the street grid west of Broadway and cuts across the street grid at a 45 degree angle east of Broadway. The multiple changes in topography are what primarily define the overall landscape character of Madison Street. The combination of hills and valleys along the Madison corridor generally mean more expansive views are available from the First Hill and Capitol Hill neighborhoods and more confined viewsheds are available in the lower lying Madison Valley and the Central Area neighborhoods. Scenic views from Downtown include Elliot Bay to the west. The character of the roadway itself is consistently wide with 4-5 lanes including on-street parking in places, sidewalks, street trees, bus stations and other amenities. Much of the corridor contains recently constructed buildings that front directly on the right-of-way and include retail uses on the street level.

Five landscape units were identified for the Madison BRT corridor. They were selected based on the visual characteristics and coincide with generally recognizable neighborhood boundaries (see Table 1).

**Table 1 Landscape Unit Descriptions**

Landscape Unit Number	Name	Existing Visual Characteristics
1	Downtown	Highly urbanized with mix of very tall new buildings and older mid-rise buildings with historic character. Views to the north and south are blocked by buildings except at side streets. Protected view of Elliot Bay looking west of downtown. Some mature street trees but not a consistent canopy through the downtown on Madison and Spring Streets.
2	First Hill	Dense urban mix of office and large institutional buildings with multi-story residential buildings. Some preserved buildings with historic character. Some blocks have mature tree canopy although overall the canopy is sporadic through the landscape unit.
3	Capitol Hill	Dense urban mix of older brick mid-rise and newer mixed retail/residential buildings. Some blocks with dense street tree canopies, many blocks without tree canopy.
4	Central Area	Mix of new and older buildings. Mixed retail and residential use. Some street tree canopy but sporadic.
5	Madison Valley	Primarily smaller scale mixed retail/residential buildings. Many mature large canopy street trees.

#### Landscape Unit Character

The following images depict the overall character for each of the landscape units described above. The character of individual street blocks within each landscape unit may change depending on the amount and type of development and the presence or lack of large canopy street trees.





*Landscape Unit 1 - Downtown Looking West on Madison St. from 3<sup>rd</sup> Ave*



*Landscape Unit 2 - First Hill Looking East on Madison St. from Summit Ave*





*Landscape Unit 3- Capitol Hill Looking East on Madison St. from Union St.*



*Landscape Unit 4- Central Area Looking West on Madison St. from E Denny Way*





*Landscape Unit 5 - Madison Valley Looking West on Madison St. from MLK Jr. Way*

**Table 2 Landscape Unit Descriptions and Corresponding KOP Locations**

Landscape Unit Description:	KOP #	KOP Location:
Landscape Unit 1 – Downtown	KOP 1	Madison Street at 3 <sup>rd</sup> Ave
Landscape Unit 2 – First Hill	KOP 2	Madison Street at Summit Ave
Landscape Unit 3 – Capitol Hill	KOP 3	Madison Street at E Union Street
Landscape Unit 4 – Central Area	KOP 4	Madison Street at E Denny Way
Landscape Unit 5 – Madison Valley	KOP 5	Madison Street at MLK Jr. Way

## 5 Project Effects

### 4.1 Visual Quality Evaluation

The following panoramic images help demonstrate the overall character and level of visual complexity of the five landscape units along the project corridor.

### **Landscape Unit 1 – Downtown**



The downtown portion of the corridor can accommodate the BRT stations and overhead wires with essentially no change in the long range visual quality.

### **Landscape Unit 2 – First Hill**



The First Hill section presently has overhead wires and bus shelters. The new stations and overhead wires should have little to no negative effect on visual quality.

### **Landscape Unit 3 – Capitol Hill**



Like First Hill and Downtown, the Capitol Hill section of the project appears urban, busy and fairly complex visually. The BRT stations can be absorbed into the street viewshed with little potential negative visual effect.



### **Landscape Unit 4 – Central Area**



The Central Area is rapidly changing from older residential to newer multi-family / mixed use buildings. The trend is now more urban in character than residential. The BRT project elements would not be incongruous with the evolving character of this landscape unit.

### **Landscape Unit 5 – Madison Valley**



Madison Valley, the landscape unit with the most green and most residential character is likely to change into a slightly more urbanized corridor with the addition of the BRT.

## **5.1 Visual Attributes of the Proposed Project**

The Madison BRT consists primarily of new and relocated stations, additional overhead wires and station amenities like trash receptacles and rider information. The stations design is consistent with the BRT station design city-wide to build identity so that riders can easily recognize the stations by the architectural style, color and unique signage. Example renderings of what the stations would look like in several locations are shown in Appendix A. Overall, the station design is highly transparent which reduces the potential visual impact as viewed by people in vehicles, bikes and pedestrians whether the station is curbside or a center running station. For people living along Madison with a view down toward the roadway, the station roofs will be visible. Madison Street in Capitol Hill, First Hill and Downtown currently has overhead wires for buses so there should be only minimal visual impacts from new and reconfigured wires. Overhead wires will be added to Madison Street in the Central Area and Madison Valley which currently has overhead wire utilities only.

## **5.2 Seattle Protected Views**

Under SMC 25.05.675.P, it is the City's policy to protect public views of significant natural and human-made features from viewpoints identified in SMC 25.05.675, Attachment 1. The project is not expected to impact protected public views because none of the landscape units contain viewpoints listed in Attachment 1; therefore, neither the stations nor BRT vehicles would block protected views.

## **5.3 Construction Impacts**

The primary construction impacts on visual resources would be temporary and related to closing portions of streets, staging equipment and materials, utility relocation, and station installation. Barriers would be required around some work sites, which would have a temporary negative visual impact. Mechanized equipment, lights for evening work, material storage and delivery, and removal of demolition debris would be seen by viewers near the construction area to varying degrees. In locations adjacent to residences, there would be a greater likelihood that residential viewers would find construction activities visually disruptive. These impacts would be temporary and short-term and therefore would not result in a substantial impact.

## **5.4 Operational Impacts**

There are only minor expected long-term negative visual impacts to visual quality along the Madison corridor with the construction of the BRT. The BRT stations structures, platforms and overhead wires will blend into the urban character of the corridor.

The Madison BRT Project would remove approximately 70 street trees along Madison Street for widening of the right-of-way. Although street tree replanting will be part of the construction project scope, new trees will require years of growth to diminish the effect of street tree loss in some areas along the corridor. In addition, because of limited right-of-way width, not all blocks along Madison that currently have street trees will have trees replanted. At specific buildings and places along the route, viewers may be sensitive to the loss of street trees. Overall however, throughout the entire Madison corridor, the street tree canopy tends to be intermittent – not contiguous or symmetrical. Some blocks that are currently lacking healthy street trees may be planted as part of the tree replacement. As a general policy, wherever there is sufficient space for street trees, the trees will be preserved or new replacement trees installed.

Long term positive effects will include improvement of sidewalks, curb extensions, curb ramps and roadway paving. The improvements would contribute to a more user-friendly, accessible neighborhood corridor.

## **6 Mitigation Measures**

Temporary visual impacts during construction will be mitigated by screening construction zones and stage areas. Nighttime lighting will be directed downward to reduce the impacts of light on adjacent residences. Replacement of trees removed as part of construction is required by code and therefore not a mitigation measure.

The City of Seattle regulates the removal of street trees (Seattle Municipal Code (SMC) 25.11). The Madison BRT project will replace all trees at a minimum of a 1:1 ratio in accordance with SDOT street tree planting procedures. In addition, vegetation (sidewalk, median, and curb planting strips; station planters; pocket park) will be added throughout the corridor, resulting in a net increase in vegetation post-construction.





# **Appendix A**

## **Example Station Renderings**





## Sample location: Madison and Terry



*View: Corner of Terry Ave and Madison St, looking north towards Virginia Mason hospital*



*View: Intersection of Terry Ave and Madison St looking north, including new right-turn only configuration from Terry Ave*



## Sample location: Madison/12th/Union



*View: Intersection of Madison St, 12th Ave and Union St, looking east down Union St*



*View: 12th Avenue station and access improvements, including new bicycle lanes on Union St*



## Sample location: Madison/24th/John



*View: Corner of  
E Madison St and  
E John St, looking  
northeast*



*View: Intersection of  
E Madison St and  
E John St, including  
likely location for a  
small building that  
converts electricity  
to traction current  
for powering electric  
trolley buses*