



# West Broadway Transit Study

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## Environmental and Community Impact Assessment

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Prepared by the  
SRF Consulting Group Team  
for





## Table of Contents

<b>Purpose</b> .....	<b>1</b>
<b>Alternatives</b> .....	<b>1</b>
<b>Definitions</b> .....	<b>1</b>
<b>Report Format</b> .....	<b>5</b>
<i>Noise and Vibration</i> .....	5
<i>Cultural and Historic Resources</i> .....	10
<i>Parks, Trails, and Recreational Areas</i> .....	16
<i>Threatened and Endangered Species</i> .....	19
<i>Wetlands</i> .....	21
<i>Floodplains</i> .....	24
<i>Hazardous Materials and Existing Contamination</i> .....	25
<i>Environmental Justice</i> .....	28
<i>Land Use</i> .....	37
<i>Business Impacts</i> .....	45
<i>Property Acquisition</i> .....	46
<b>Environmental and Community Impacts Assessment Summary</b> .....	<b>48</b>



## Purpose

The purpose of this report is to study the potential environmental and community impacts of the West Broadway Transit alternatives and compare the potential impacts among alternatives. A preliminary evaluation of environmental and community impacts is being undertaken at this time to inform decision makers about the potential impacts and benefits that may result from the construction and implementation of transit service in the West Broadway Corridor. The assessment is based on available information at this time.

The potential impacts and preliminary mitigation measures identified in this assessment serve as the foundation during potential future consultation with the Federal Transit Administration (FTA) in determining the appropriate level of environmental review under the National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA).

## Alternatives

Based on the work completed for the *Concept Development of Alternatives Memo* and *Initial Screening of Alternatives Memo*, the alternatives being carried forward for study, shown in Figure 1 are:

- **BRT Alternative** - Arterial Bus Rapid Transit (BRT) from downtown Minneapolis to downtown Robbinsdale (see Figure 1)
- **Streetcar Alternative** - Streetcar from downtown Minneapolis to North Memorial Hospital (see Figure 1)

Each alternative will undergo a high-level review to help determine if any environmental and/or community issues exist within the study area. This review will inventory environmental and community resources, and provide a high-level assessment of the impacts of each build alternative on sensitive resources. The analysis will focus on “differentiating” impact issues in the corridor; hence, not all of the issue areas specifically addressed within a NEPA/MEPA environmental document will be covered in this report.

## Definitions

The “study area” consists of the area that encompasses all of the identified alternatives and includes areas of Minneapolis and Robbinsdale. The study area is bounded by 45th Avenue North on the north, the Mississippi River on the east, roughly Hennepin Avenue to the south, and TH 100 on the west. Some of the issues studied in the report may only be discussed at the study area level and may not be able to be differentiated between alternatives.

The “potential impact areas” studied in this screening level analysis will be limited to the overall alignments, station area footprints, and potential vehicle operations and maintenance facility site(s) identified for each alternative.



While the Streetcar Alternative extends from the intersection of Washington and Hennepin Avenues along Nicollet Mall to Alice Rainville Place, the potential impacts of streetcar in this segment are not included in this impacts analysis. The Nicollet-Central Streetcar project is in the process of completing an Environmental Assessment that will fully disclose the potential impacts of operating a streetcar on Nicollet Mall. Therefore, this analysis of the potential impacts of the Streetcar Alternative extends only to the intersection of Washington and Hennepin Avenues.

From the intersection of Washington and Hennepin Avenues, the Arterial BRT Alternative will use Hennepin Avenue and then the 7<sup>th</sup>/8<sup>th</sup> Street one-way pair downtown. It is assumed that the West Broadway Arterial BRT Alternative would use infrastructure constructed for C Line arterial BRT on 7<sup>th</sup> and 8<sup>th</sup> Streets. Metro Transit is currently in the process of completing a documented categorical exclusion environmental review for the C Line that will fully disclose the potential impacts of constructing and operating arterial BRT on these streets. Therefore, this analysis of the potential impacts of the Arterial BRT Alternative extends to Hennepin Avenue and 8<sup>th</sup> Street. See Figure 2 for a map of the extent of each build alternative discussed in this report.



Figure 1: Alternatives Studied in the West Broadway Transit Study

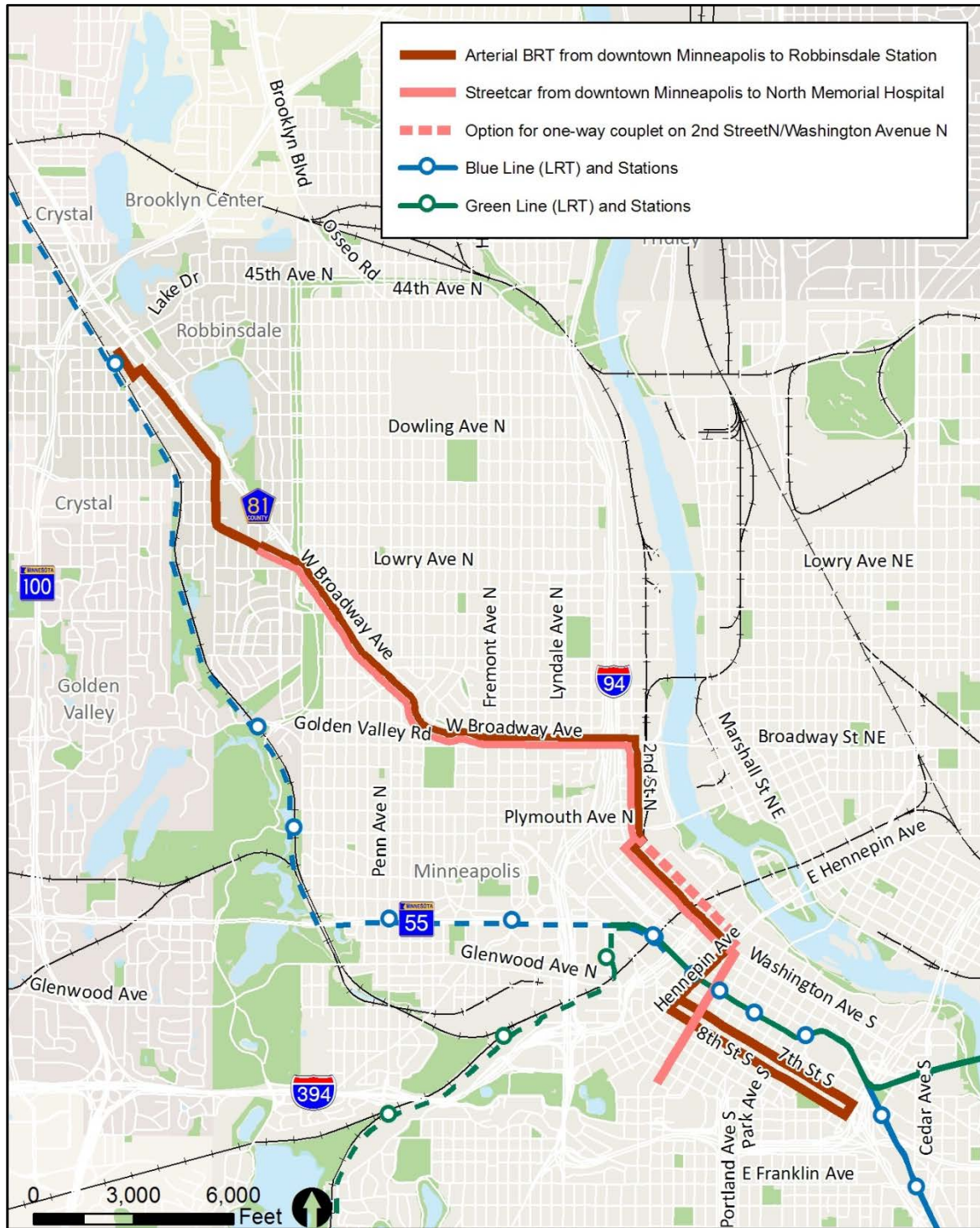
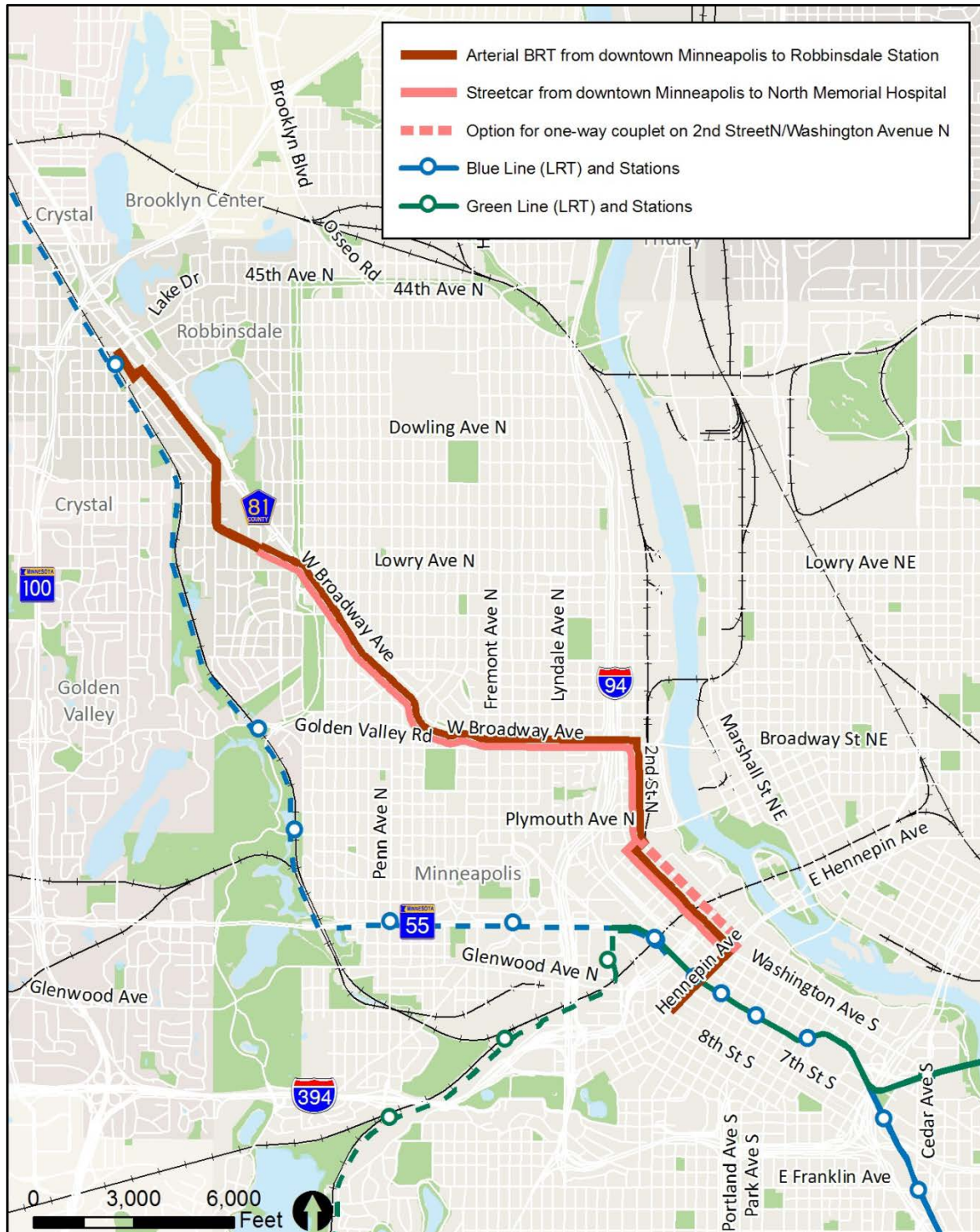




Figure 2: Extent of Build Alternatives Evaluated in Environmental and Community Impacts Analysis





## Report Format

The comparative analysis being completed for this report is primarily qualitative in nature. Where appropriate, quantitative analysis was completed at a high level to emphasize an order of magnitude type impact differential. Each issue section within this report includes the following areas:

- Environmental issue overview stating why each topic is important
- Regulatory framework referencing specific federal, state, regional, and local requirements associated with each issue area, if applicable
- Comparative analysis of alternative similarities and differences
- General conclusions on what the assessment means to decision makers, and what would be studied in greater detail in a potential subsequent phase of the project
- Summary matrix of issue areas, by alternative

This report will focus on the following critical decision making areas during the alternatives analysis process:

- Noise and Vibration
- Cultural and Historic Resources
- Parks, Trails, and Recreational Areas
- Threatened and Endangered Species
- Wetlands
- Floodplains
- Hazardous Materials and Existing Contamination
- Environmental Justice
- Land Use
- Business Impacts

## Noise and Vibration

### Overview

Noise and vibration assessments are key elements of the environmental impact assessment process for transit projects. Considering that transit projects are commonly located amid or very close to concentrations of people, noise and vibration impacts can be a concern throughout the planning and project development phases, and can create quality of life issues and negative public opinion if not properly addressed.

Noise is defined as unwanted sound. Ambient noise, which includes the pre-project background noise level, must also be taken into consideration for transit projects. The Source-Path-Receiver framework is used to describe the relationship between noise source, topography, and proximity to land uses, which are all important factors in determining noise levels for a project. Each transit **source** (e.g., bus or streetcar) generates close-by noise levels which depend upon the type of source and its operating characteristics. Then, along the propagation **path** between all sources and receivers, noise levels are reduced (attenuated) by distance, intervening obstacles, and other factors. And finally at each **receiver**



(e.g., residence or building), noise combines from all sources to interfere, perhaps, with receiver activities. Noise impacts (as defined by the FTA) related to transit projects should be avoided or mitigated, as feasible and reasonable. Avoiding areas most sensitive to noise will help avoid expensive noise mitigation. Noise barriers and other mitigation measures can help shield sensitive land uses from excessive noise, but are expensive and require space.

Ground-borne vibrations can be caused by trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment. Vibrations follow a similar Source-Path-Receiver framework for propagation. For example, train wheels rolling on rails (**source**) create vibration energy that is transmitted through the track support system into the transit structure. The vibration of the transit structure excites the adjacent ground, creating vibration waves that propagate through the various soil and rock strata (**path**) to the foundations of nearby buildings and throughout the building structure (**receiver**). Vibrations rarely cause human annoyance or damage to buildings, but can cause problems for vibration-sensitive activities. These types of uses include high-tech manufacturing and research facilities where vibrations can interfere with equipment such as microscopes.

### Regulatory Framework

NEPA and the Minnesota Environmental Policy Act (MEPA) require analysis of noise impacts and appropriate mitigation of impacts. FTA requires the examination of noise and vibration impacts during project development. Additional noise and vibration analysis will be completed once the West Broadway Transit Project moves into more advanced project development stages.

### Data Sources and Methodology

#### Noise

The FTA Noise and Vibration manual (*Transit Noise and Vibration Impact Assessment*, May 2006) describes appropriate levels of analysis for noise impacts for FTA projects. The FTA screening procedure for noise was followed to identify noise-sensitive land uses and areas of potential impact. Land uses sensitive to noise are grouped according to sensitivity. Land uses in Category 1 include tracts of land where quiet is an essential element in their intended purpose, such as outdoor amphitheaters, National historic landmarks with significant outdoor use, recording studios, and concert halls. Land uses in Category 2 include residences and buildings where people normally sleep, including homes, hospitals, and hotels. Land uses in Category 3 include institutional land uses with primarily daytime and evening use, including schools, churches, theatres, libraries, cemeteries, monuments, museums, campgrounds, and certain historical sites and parks. The screening examined existing aerial photography and comprehensive plans to identify noise sensitive uses. The screening distance for noise-sensitive land uses is 50 feet for LRT/streetcar and 40 feet for BRT (considered intermediate capacity transit). However, for purposes of this high level analysis, the potential impact area was defined as approximately 500 feet on either side of the center line of all alternatives, in order not to exclude any noise sensitive land uses in proximity to the project.





## Vibration

The screening procedure for vibration identified in the FTA Noise and Vibration manual was followed to identify vibration-sensitive land uses. Land uses in Category 1 (most sensitive) include vibration-sensitive research and manufacturing, hospitals with vibration-sensitive equipment, and university research operations. Examples include use of microscopes and manufacturing of computer chips. Category 1 land uses were identified through an examination of comprehensive plans and aerial photography.

The screening distance for vibration-sensitive land uses is 200 feet for streetcar (considered intermediate capacity transit) and 100 feet for BRT. However, for purposes of this high level analysis, the potential impact area was defined as approximately 500 feet on either side of the center line of all alternatives, in order not to exclude any vibration-sensitive land uses in proximity to the project. Once Category 1 uses were identified, approximate distances to the alternatives were estimated using aerial photography. This analysis concludes with an inventory of vibration-sensitive facilities within the screening distance for each alternative.

## Comparative Analysis

The following noise and vibration sensitive land uses were identified within 500 feet of the West Broadway Transit alternatives (see site locations of Category 1 and Category 2 land uses in Figure 3):

- Category 1 - Recording studios
- Category 2 - Hospitals/clinics
- Category 3 - Theatres/concert halls, churches, schools

Additionally, areas of residential land use (Category 2) are identified in Figure 3.

## Noise

A summary of the noise sensitive resources that would potentially be affected by each alternative is shown in Table 1. For purposes of the noise screening procedure, the impact area was defined as approximately 500 feet on either side of the center line of all alternatives. Especially given the large 500-foot potential impact area used at this early phase in the project, potential impacts do not necessarily mean an impact is inevitable; a potential impact simply indicates that further study will be necessary in future phases of the project.

**Table 1: Noise Sensitive Land Uses Located Within 500 feet of Centerline**

Alternative	Category 1 Land Use	Category 2 Land Use	Category 3 Land Use
<b>BRT Alternative</b>	9 recording studios	1,188 residential parcels 2 hospitals	8 theatres 11 churches 8 schools
<b>Streetcar Alternative</b>	5 recording studios	772 residential parcels 2 hospitals	1 theatre 11 churches 8 schools

Additionally, for the Streetcar Alternative, wheel squeal can be a potential noise concern. Light rail transit (LRT) tracks, such as those used for streetcars, with a turn radii of 1,000 feet or less can produce loud squeal noises, or wheel squeal. Curve squeal does not apply to the BRT Alternative. Areas of limited



turning radii (less than 1,000 feet) are located at 19 discrete locations along the Streetcar Alternative corridor. These locations are generally located at the northern terminus near North Memorial Hospital, near where the corridor heads southeast on West Broadway Avenue at CSAH 81, near where the corridor heads east on West Broadway Avenue near Golden Valley Road, near where the corridor turns south at 2nd Street North, and on Washington Avenue near the southern terminus. Noise sensitive sites and residential land uses located near these locations may experience noise impacts due to wheel squeal.

Since the streetcar alternative would operate in mixed traffic, there are no special noise-inducing warning devices in the corridor. Operators would not usually ring bells and do so only if they see a potential conflict.

### **Vibration**

Because of the low operating speeds of intermediate capacity transit, such as the Streetcar Alternative, significant vibration problems are not common. However, steel-wheel transit systems that operate close to vibration-sensitive buildings have the potential of causing intrusive vibration. While two vibration-sensitive resources (hospitals) were identified within 500 feet of the Streetcar Alternative, it is unlikely that these resources will experience vibration-related impacts due to their distance from the proposed corridor. However, there may be additional vibration-sensitive land uses along the corridor that were not identified as part of this high-level screening. Additional outreach may need to be done as part of future environmental documentation.

Most BRT projects (buses with rubber tires), such as the BRT Alternative, do not cause significant vibration impacts. Therefore, vibration-related impacts are not anticipated under the BRT Alternative.

### **Conclusions**

While the BRT Alternative encompasses more Category 2 land uses (residential parcels) than the Streetcar Alternative due to its additional length, the Streetcar Alternative has more potential for noise impacts due to noise from wheel squeal. Noise sensitive resources and residences located at areas of limited turning radii (less than 1,000 feet) may experience noise-related impacts due to wheel squeal. Vibration-related impacts are not anticipated under any of the project alternatives; however, more analysis may need to be done in the future if additional vibration-sensitive resources are identified as part of future environmental documentation.

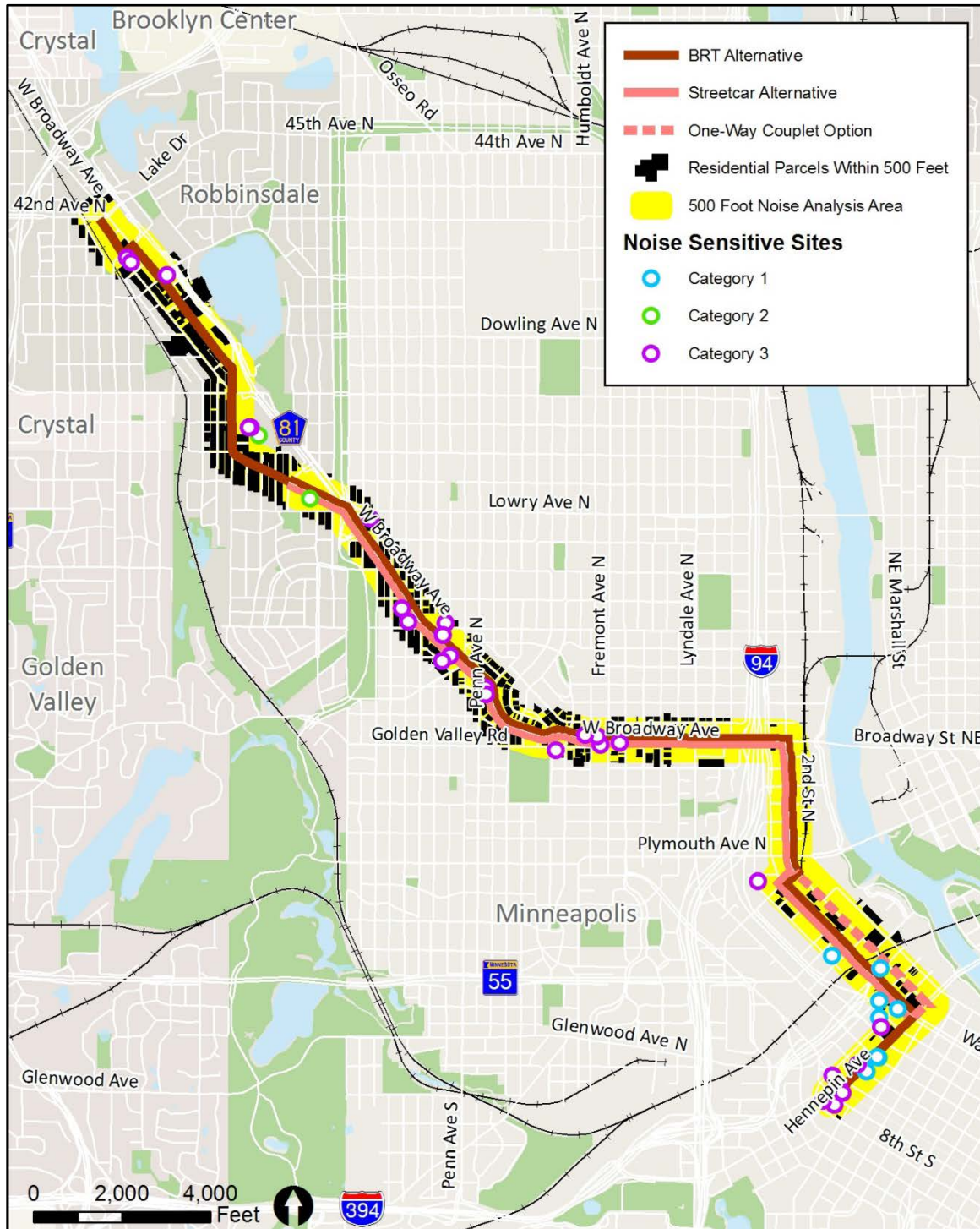
It is anticipated that a more detailed noise and vibration study will be undertaken as part of a future NEPA process, including a General Assessment<sup>1</sup>.

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<sup>1</sup> A General Assessment identifies location and estimated severity of noise and vibration impacts in the noise and vibration study areas identified in the screening procedure. A full General Assessment as described by the FTA Transit Noise and Vibration Impact Assessment manual would include a comparison of Average Daily Traffic (ADT) with the likely noise increase from each alternative.



Figure 3: Noise- and Vibration-Sensitive Sites





## Cultural and Historic Resources

### Overview

Portions of the West Broadway Transit corridor have been previously studied to identify historic resources that are located along the corridor. The *Bottineau Transitway Draft Environmental Impact Statement (EIS)* documents the presence of historic resources for some segments of West Broadway Corridor. However, the analysis needs to be expanded, as the Bottineau Transitway study area overlaps West Broadway Avenue for just a short segment and does not coincide with several of the corridors that will be considered as part of the West Broadway Transit Study. There are several known historic resources that are listed on the National Register of Historic Places (NHRP) located within and along the alternative corridors.

### Regulatory Framework

#### Section 4(f)

The Section 4(f) legislation, as established under the Department of Transportation Act of 1966 (40 USC 303, 23 USC 138), provides protection for historic sites (publically or privately owned) from conversion to transportation use. Conversion to transportation use is not allowed unless all prudent and feasible alternatives to the Section 4(f) use and all possible planning activities to minimize harm have been considered.

A “use” of a Section 4(f) property occurs when: (1) land is permanently incorporated into a transportation facility (i.e., direct use); (2) there is temporary occupancy of land that is adverse in terms of the Section 4(f) statute’s preservation purposes; or (3) there is a constructive use of a Section 4(f) property (i.e., indirect use). Constructive use occurs when the proximity impacts of a project on an adjacent or nearby Section 4(f) property, after incorporation of impact mitigation, are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

#### Section 106

Like Section 4(f), Section 106 of the National Historic Preservation Act of 1966 (Section 106) also mandates consideration of a project’s effect on historic sites. Projects that apply to receive federal funds must comply with Section 106 and with other applicable federal mandates. To comply with Section 106, potential impacts to historic properties (those listed in or eligible for listing in the NRHP) must be taken into account during project planning and design. Section 106 requires federal agencies to consider the effects of their actions on historic properties before undertaking a project.

During future project phases, Section 106 analysis provides a determination of effects caused by the project alternatives. Possible determinations are: (1) no historic properties affected; (2) no adverse effects to historic properties; or (3) adverse effect to historic properties. A determination of “adverse effect” is made if a project has the potential to alter characteristics that make a property historically significant. Adverse effects can be direct or indirect, and include all immediate and reasonably foreseeable effects to the property.



The Section 106 determinations are a critical part of determining the applicability of Section 4(f) and the outcome of Section 4(f) evaluation. However, at the alternatives analysis level both the Section 4(f) and Section 106 analysis of historic resources only focuses on identifying known historic resources in the West Broadway Transit Corridor and discussing potential effects to those resources. Lastly, determining any adverse effects of historic resources under Section 106 and determining any use of historic resources under Section 4(f) will take place during the official NEPA process in further study phases.

### Data Sources and Methodology

Previous cultural resources surveys conducted within the study area, such as the study completed for the *Bottineau Transitway Draft Environmental Impact Statement (EIS)*, were consulted to determine if any known NRHP-listed properties are within the study area. A scan of NRHP information from the National Park Service was also be conducted to determine if any additional NRHP-listed properties are located along the alternative corridors.

Additionally, data from the City of Minneapolis was consulted to determine if there are any designated existing and potential historic landmarks and historic districts within the study area. These sites are identified and overseen by the Minneapolis Heritage Preservation Commission (HPC).

A baseline assessment was conducted to determine the potential impacts to cultural and historic resources and impacts associated with each proposed alternative. The assessment identifies the number of historic properties that could be potentially impacted by each of the proposed alternatives. Then, the likelihood for adverse effects under Section 106 and use under Section 4(f) use was assessed by reviewing the proposed concept plans for each alternative. It should be noted that this analysis focused on known historic sites within the corridor to aid in evaluating the alternatives, but does not include a systematic survey to identify or evaluate any unknown sites along the corridor. Further investigation to determine potential adverse effects to historic properties that may be affected by the proposed project would be part of future stages of the project to support the NEPA and Section 106/Section 4(f) processes.

### Comparative Analysis

Cultural and historic resources in proximity to the West Broadway Transit Study corridor are identified in Figure 4. Again, it is important to note that this analysis focused on known historic sites along the corridor, but does not include a systematic survey to identify or evaluate any unknown (i.e., non-listed) cultural or historic resources along the corridor.

According to the *Bottineau Transitway Draft EIS* and published data from the National Park Service for historic properties listed on the National Register of Historic Places (NRHP), the following historic properties and districts are in proximity to the corridor. These resources are listed on the NRHP or are NRHP-eligible and are shown in Figure 4:

Historic Properties:

- Sacred Heart Catholic Church (4087 W Broadway Avenue) (Eligible)
- Terrace Theatre (3508 France Avenue N.) (Eligible)
- Pilgrim Heights Community Church (3120 Washburn Avenue N.) (Eligible)



- St. Anne's Catholic Church (2627 Queen Avenue N.) (Eligible)
- Minneapolis Public Library, North Branch (1834 Emerson Avenue N.) (Listed)
- Cameron Transfer and Storage Company Building (756 N. 4th Street) (Listed)
- Lumber Exchange Building (425 Hennepin Avenue) (Listed)
- Masonic Temple (528 Hennepin Avenue) (Listed)
- Pence Automobile Company Building (800 Hennepin Avenue) (Listed)
- Plymouth Building (12 S. 6<sup>th</sup> Street) (Listed)

Shubert Theatre (Now part of Cowles Center - 528 Hennepin Avenue) (Listed) Historic Districts:

- Osseo Branch, Saint Paul Minneapolis & Manitoba/GN Railway Historic District (Jackson Street and Pennsylvania Avenue) (Eligible)
- Minneapolis Warehouse Historic District (Listed)
- St. Anthony Falls Historic District (Listed)
- West Broadway Residential Historic District (Eligible)
- Grand Rounds Historic District – Theodore Wirth Segment (Eligible)
- Grand Rounds Historic District – Victory Memorial Segment (Eligible)



Figure 4: Parks, Trails, and Historic Properties





In addition to its listing on the NRHP, the City of Minneapolis has designated the Warehouse District as a local historic district and has developed the *Minneapolis Historic Warehouse District Design Guidelines* to protect the integrity and character of the district and ensure that new development is integrated in a manner that is sensitive to the historic character of the district. The *Design Guidelines* are a regulatory tool for use by city officials to make legal findings regarding alternations within the district. The *Design Guidelines* also list individual structures that are considered contributing to the historic district. Along with dozens of individual buildings, the following transportation structures with direct relationship to the West Broadway Transit Study were identified:

- Washington Avenue North Bridge
- 2nd Street North between 1st and 3rd Avenues North
- Washington Avenue North between 1st and 3rd Avenues North
- Washington Avenue North between 5th and 10th Avenues North

Changes to locally designated historic districts are reviewed by City staff and the Minneapolis Heritage Preservation Commission (HPC) to ensure that alterations to properties within the district are made in an appropriate manner. As transitway concepts are developed, the West Broadway Transit Study will consider the Warehouse District Guideline Requirements, as well as other resources that may be locally designated by the City as historic.

Additionally, the Minneapolis HPC has designated the following locations along the corridor as landmarks for preservation:

- Green & DeLaitre Wholesale Grocery Company (landmark - 500 North 3rd Street)
- Gluek Building (landmark – 14 6<sup>th</sup> Street N)
- Pantages Theatre (landmark – 708 Hennepin Avenue)
- State Theatre (landmark – 805 Hennepin Avenue)

The City of Robbinsdale sets forth architectural guidelines for buildings within the downtown overlay district that are intended to preserve and protect the existing pedestrian character of downtown, and promote further development of compact, mixed use buildings with a continuous building façade. The City of Robbinsdale does not currently allow buses to operate on West Broadway between 41st and 42nd Avenues.

To inform a comparison of the West Broadway Transit Study alternatives, the resources identified above were reviewed for their likelihood to be affected by the project. Cultural resources within 500-feet of the center line of each alternative are listed in Table 2 below. Then, the likelihood of an adverse effect on the identified cultural resources under Section 106 was categorized as low, medium, or high for each alternative in Table 2, and the likelihood of use under Section 4(f) was categorized as low, medium, or high for each cultural resource in Table 2. This analysis considered how elements of the alternatives, such as overhead catenary systems, station locations, and bridge modifications, might affect cultural resources. The analysis assessed the potential need for property acquisition or permanent easements. The analysis also considered potential changes to indirect effects such as visual quality, development/redevelopment, and noise levels resulting from the alternatives to determine if any rose to a level of





significance that would impair the activities, features, and attributes that quality these resources for protection under Section 106/Section 4(f).

Impacts that were rated “high” were those that may result in acquisition or are more likely to experience a direct impact from the alternative. Impacts rated “medium” are those that are less likely to be acquired, or may experience an indirect impact from the alternative. Finally, impacts rated “low” are those that have a low likelihood of acquisition for implementation of the alternative, and are unlikely to experience any direct or indirect impacts resulting from its implementation. A rating of “none” indicates that the cultural resource is not within 500 feet from the centerline of the listed alternative.

**Table 2: Cultural Resources**

Alternative  Cultural Resource	BRT Alternative		Streetcar Alternative	
	Likelihood of Section 106 Adverse Effect	Likelihood of Section 4(f) Use	Likelihood of Section 106 Adverse Effect	Likelihood of Section 4(f) Use
Sacred Heart Catholic Church	Low	Low	None	None
Osseo Branch, Saint Paul Minneapolis & Manitoba/GN Railway Historic District	Low	Low	None	None
Terrace Theatre	Low	Low	Low	Low
Pilgrim Heights Community Church	Low	Low	Low	Low
St. Anne’s Catholic Church	Low	Low	Low	Low
Minneapolis Public Library, North Branch	Low	Low	Low	Low
Cameron Transfer and Storage Company Building	Low	Low	Low	Low
<b>Green &amp; DeLaitre Wholesale Grocery Company</b>	Low	Low	Low	Low
<b>Lumber Exchange Building</b>	Low	Low	None	None
<b>Masonic Temple</b>	Low	Low	None	None
<b>Pence Automobile Company Building</b>	Low	Low	None	None
<b>Plymouth Building</b>	Low	Low	None	None
<b>Shubert Theatre (Now part of Cowles Center)</b>	Low	Low	None	None
<b>Gluek Building</b>	Low	Low	Low	Low
<b>Pantages Theatre</b>	Low	Low	Low	Low
<b>State Theatre</b>	Low	Low	Low	Low
Minneapolis Warehouse Historic District	Medium	Medium	High	Medium
St. Anthony Falls Historic District	None	None	High	Medium
West Broadway Residential Historic District	Low	Low	None	None
Grand Rounds Historic District – Theodore Wirth Segment	Low	Low	Low	Low
Grand Rounds Historic District – Victory Memorial Segment	Low	Low	High	Medium



## Conclusions

Overall, the Streetcar Alternative has the greatest potential for Section 106 adverse effects and Section 4(f) use of historic properties that are listed, or eligible for listing in, the NRHP.

The Streetcar Alternative will most likely not have a direct impact to the Grand Rounds Historic District – Victory Memorial Segment because streetcar tracks will run in the median of West Broadway Avenue to transition to Oakdale Avenue. It is anticipated that public transportation rights-of-way would be used in this location. However, the Streetcar Alternative would cause direct changes to the visual environment and indirect impacts such as noise to the Grand Rounds Historic District –Victory Memorial Segment; therefore, likelihood of Section 106 adverse effects was rated as high. **Note that as of September 4, 2015, the ownership and use of the median of West Broadway was still under investigation by Hennepin County. The statement above assumes that the median is not park land and is a transportation use.**

Both alternatives run through the Minneapolis Warehouse District along Washington Avenue. Both direct and indirect impacts to portions of the historic district are anticipated under each alternative, particularly related to contributing structures such as Washington Avenue and the Washington Avenue North Bridge, and 2<sup>nd</sup> Street North, as listed above. Direct impacts include bridge impacts and construction of station locations and streetcar guideways; indirect impacts include potential visual effects, noise, and development/redevelopment impacts. Based on these potential impacts, likelihood of Section 106 adverse effects was rated as high for both alternatives. However, it is not anticipated that any buildings or right of way outside of the existing roadway/pedestrian right of way will need to be acquired from within the Minneapolis Warehouse District; therefore, likelihood for Section 4(f) impacts were rated as medium.

The Streetcar Alternative (in the Washington Avenue/2<sup>nd</sup> Street couplet) would run along 2<sup>nd</sup> Street North, which makes up the western edge of the St. Anthony Falls Historic District. Based on potential direct and indirect impacts related to the Streetcar Alternative (as discussed previously), likelihood of Section 106 adverse effects was rated as high for the Streetcar Alternative. However, it is not anticipated that any buildings or right of way outside of the existing roadway/pedestrian right of way will need to be acquired from within the St. Anthony Falls Historic District; therefore, likelihood for Section 4(f) impacts were rated as medium for the Streetcar Alternative.

Potential impacts to the historic resources discussed above do not necessarily mean Section 106 involvement or Section 4(f) use is inevitable. Further investigation to determine potential adverse effects to historic properties that may be affected by the proposed project would be part of future stages of the project to support the NEPA and Section 106/Section 4(f) processes.

## Parks, Trails, and Recreational Areas

### Overview

This section discusses the existing Section 4(f) and Section 6(f) parks, trails, and recreation areas located near the West Broadway Transit Corridor. Because of their high level of protection, Section 4(f) and 6(f) resources are important assets to consider when developing a transitway.



## Regulatory Framework

Section 4(f) legislation as established under the Department of Transportation Act of 1966 (40 USC 303, 23 USC 138) provides protection for publicly owned parks, recreation areas, historic sites, wildlife, and/or waterfowl refuges from conversion to transportation use. Conversion to transportation uses is not allowed unless all prudent and feasible alternatives to the Section 4(f) use and all possible planning activities to minimize harm have been considered.

A “use” of a Section 4(f) property occurs when: (1) Land is permanently incorporated into a transportation facility (i.e., direct use); (2) There is temporary occupancy of land that is adverse in terms of the Section 4(f) statute’s preservation purposes; or (3) there is a constructive use of a Section 4(f) property (i.e., indirect use). Constructive use occurs when the proximity impacts of a project on an adjacent or nearby Section 4(f) property, after incorporation of impact mitigation, are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

Note that parks, recreation areas, and wildlife refuges are discussed in this section of the report, and historic sites protected under Section 4(f) are discussed in the previous section titled “Cultural and Historic Resources.”

Section 6(f) of the Land and Water Conservation Act covers outdoor recreation properties planned, developed, or improved with funds from the Land and Water Conservation Fund (LAWCON). These properties cannot be converted to other uses unless replacement land of equal fair market value and equivalent usefulness is provided.

## Data Sources and Methodology

DNR maps and databases, along with U.S. Fish and Wildlife Service maps, were reviewed to confirm that no state or federal wildlife and waterfowl refuges are present within the study area.

Regional parks and trails were mapped using Metropolitan Council data. Aerial photography was examined and compared to city comprehensive plans and park maps to identify local parks and trails. Identified parks and trails were then checked against a current list of LAWCON-funded properties.

An inventory of parks and trails located near the West Broadway Transit study area was identified through this analysis. For purposes of the park and trail analysis, the potential impact area was defined as approximately 100 feet on either side of the center line of both alternatives. The identified parks and trails were then analyzed for the likelihood of Section 4(f) use by reviewing the proposed concept plans for each alternative.

## Comparative Analysis

*The Minneapolis Plan for Sustainable Growth*, the *Robbinsdale Comprehensive Plan*, and the *Golden Valley Comprehensive Plan* identify several park, trail, and recreational resources in the study area. These resources are identified in Figure 4.

Parks/Recreation Areas:

- James I. Rice Parkway and Mississippi River bluff (Minneapolis)



- Hall Park (Minneapolis)
- North Commons Park (Minneapolis)
- Willard Park (Minneapolis)
- Theodore Wirth Park (Minneapolis and Golden Valley)
- Victory Memorial Park (Minneapolis)
- Oliver Triangle (Minneapolis)
- Cottage Park (Minneapolis)
- Manor Park (Robbinsdale)
- Lakeview Terrace Park (Robbinsdale)
- Triangle Park (Robbinsdale)
- Glenview Terrace Park (Golden Valley)
- Mary Hills Nature Area (Golden Valley)

Trails:

- West River Parkway
- Cedar Lake Trail
- Theodore Wirth Trail
- Victory Memorial Parkway/Grand Rounds Trail
- Crystal Lake Regional Trail
- Hennepin Avenue On-Street Bicycle Trail

To inform a comparison of the West Broadway Transit Study alternatives, the resources identified above were reviewed for their likelihood to be impacted by construction and operation of each alternative. Park and recreational properties within approximately 100 feet on either side of the center line of both alternatives are listed in Table 3. The likelihood of Section 4(f) use was categorized as low, medium, or high for each park or recreational property for each alternative. The analysis assessed the potential need for property acquisition or permanent easements. The analysis also considered potential changes in visual quality and noise levels resulting from the alternatives to determine if any rose to a level of significance that would impair the activities, features, and attributes that qualify these resources for protection under Section 4(f).

**Table 3: Likelihood of Potential Section 4(f) Use of Park and Recreational Properties**

Park or Recreational Properties	BRT Alternative	Streetcar Alternative
<b>Parks</b>		
Victory Memorial Park	Low	Medium
<b>Trails</b>		
Victory Memorial Parkway/Grand Rounds Trail	Low	Medium
Hennepin Avenue On-Street Trail	Low	Low

According to data from the Minnesota DNR, Victory Memorial Parkway was funded through the LAWCON program as identified in Figure 4 and listed in Table 3. This property is subject to Section 6(f) considerations.



## Conclusions

The BRT Alternative was rated as having a low likelihood of impacting Section 4(f) resources that were identified within 100 feet of the alternative's centerline. There are currently no planned station locations for the BRT Alternative at Victory Memorial Parkway or in proximity to Victory Memorial Trail or the Hennepin Avenue On-Street Trail. It is unlikely that the BRT Alternative will have right of way impacts outside of planned station locations; therefore, likelihood of impacts was rated as low.

The Streetcar Alternative was rated as having a medium likelihood of impacting Victory Memorial Park, because streetcar tracks would create a change in the visual landscape of Victory Memorial Park as the Streetcar Alternative transitions from West Broadway Avenue to Oakdale Avenue in transportation right-of-way. The Streetcar Alternative was rated as having a medium likelihood of impacting the Victory Memorial Parkway Trail. This trail crosses the planned Streetcar Alternative alignment at Oakdale Avenue; however, it is anticipated that impacts would be temporary and therefore a rating of medium was assigned. No station locations or major construction for the Streetcar Alternative is planned at Hennepin Avenue; therefore, likelihood for impacting the Hennepin Avenue On-Street Trail was rated as low.

Potential impacts to Section 4(f) properties would need to be further evaluated during future environmental documentation depending upon the type of work and construction limits of any future projects. The use of any Section 4(f) resource would require further evaluation. The extent of the use will determine the appropriate Section 4(f) evaluation process

## Threatened and Endangered Species

### Overview

The West Broadway Transit Project is subject to both federal and state laws protecting threatened and endangered species. The Endangered Species Act of 1973 defines "endangered" as "any species which is in danger of extinction throughout all or a significant portion of its range." "Threatened" is defined as "any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range." Both federal- and state-listed threatened and endangered species are typically listed by county.

### Regulatory Framework

Section 7 of the Endangered Species Act (ESA) of 1973 (16 USC 1531-1544) requires that all federal agencies consider and avoid, if possible, adverse impacts to federally listed threatened or endangered species or their critical habitats, which may result from their direct, regulatory, or funding actions.

State-listed (endangered, threatened) species are subject to Minnesota's Endangered and Threatened Species Statutes, which protects species at risk of extinction. Special concern species are either extremely uncommon or unique to Minnesota, and require special attention, but are not governed by the regulations encompassing endangered and threatened species.



## Data Sources and Methodology

The U.S. Fish and Wildlife Service's Environmental Conservation Online System was accessed to identify federally-listed threatened and endangered species for Hennepin County.

A one-mile search area surrounding the West Broadway Transit Study alternatives was evaluated for the presence of rare plants, animals, native plant communities, and other rare features using Geographical Information Systems (GIS) in conjunction with the DNR Natural Heritage Information System (NHIS). A one-mile search area is the standard search area for the NHIS to account for locational uncertainty and travel ranges of some species. The Natural Heritage data is provided by the DNR Division of Ecological Resources. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present.

A summary of any potential impacts to any federal- or state-listed (endangered, threatened or special concern) species, rare plant communities, or other sensitive ecological resources associated with the West Broadway Transit Study alternatives was then inventoried.

## Comparative Analysis

The following federally-listed species were identified in Hennepin County:

- Northern long-eared bat (Threatened)
- Snuffbox (Endangered)
- Higgins eye pearlymussel (Endangered)

The habitat area for the Snuffbox and the Higgins eye pearlymussel is the Mississippi River which is located approximately ¼ mile to the east of the east of the study area. Therefore, it is unlikely that the project will impact these mussels.

The northern long-eared bat roosts and forages in upland forests during the spring and summer and hibernates in caves and mines during the winter. Due to the urban nature of this project, is unlikely that there will be impacts to any large tree stands where bats may roost. Therefore, it is unlikely that the project will impact the northern long-eared bat.

Based on an NHIS review of state-listed species, one vascular plant, one invertebrate animal, two vertebrate animals, and an animal assemblage were found within a mile of the West Broadway Transit Study alternatives. The species are:

- White Baneberry (*Actaea pachypode*) (Special Concern)
- Black sandshell (*Ligumia Recta*) (Special Concern)
- Peregrine Falcon (*Falco peregrinus*) (Special Concern)
- Least darter (*Etheostoma microperca*) (Special Concern)
- Colonial waterbird nesting

Based on the urban nature of the project, neither of the alternatives are anticipated to impact any of the species listed in the review.



No known calcareous fens, railroad right-of-way prairies, Minnesota County Biological Survey sites, native plant communities, Central Region Regionally Significant Ecological Areas, trout streams, or other rare species are located within one-mile of the project area.

## Conclusions

Based on the urban nature of the project, it is unlikely that either of the alternatives would adversely affect any federally-listed or state-listed threatened and endangered species. Future project review will re-evaluate data from the U.S. Fish and Wildlife Service and Minnesota DNR NHIS database to verify that the information on wildlife, fisheries, and ecological areas is up to date when an official environmental document is prepared.

## Wetlands

### Overview

During the alternatives evaluation portion of a project it is important to identify known wetland areas and evaluate potential opportunities to avoid and minimize adverse impacts to wetlands. Federal and state regulations require that wetlands be protected under no net loss principles. Therefore, the most efficient way to prevent loss of wetland functions and the high cost associated with mitigation (either through restoration or purchase from a wetland bank) is to avoid and minimize wetland impacts.

### Regulatory Framework

Wetlands are federally protected through Section 404 and 401 of the Clean Water Act, with the exception of those that are isolated hydrologically<sup>2</sup> on the landscape. Section 404 of the Clean Water Act requires a permit to be issued by the United States Army Corps of Engineers (USACE) prior to the placement of any dredged or fill material into any waters of the United States, including wetlands. In Minnesota, wetland protection is augmented through the Minnesota Wetland Conservation Act (WCA), except where specific exemptions apply.

The Minnesota DNR regulates all public waters wetlands through its Public Waters Inventory (PWI). Impacts to any wetlands/water bodies listed on the PWI require a DNR Public Waters Work Permit for proposed impacts below the Ordinary High Water Level (OHWL).

### Data Sources and Methodology

Wetlands in the study area were inventoried using published data sources, including high resolution aerial photography, National Wetland Inventory (NWI) mapping, Public Waters Inventory (PWI) mapping, topographic maps, and hydric soils mapping. For purposes of the wetland survey, the potential impact area was defined as approximately 100 feet on either side of the center line of both alternatives.

### Comparative Analysis

Areas of NWI-mapped wetlands within the study area are identified in Figure 5. These areas are mainly located to the east of the project limits in Theodore Wirth Park and to the north of the project limits in

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<sup>2</sup> The United States Army Corps of Engineers considers isolated wetlands to be those of any size that are not adjacent to or do not have a sufficient hydrologic connection to navigable waters.



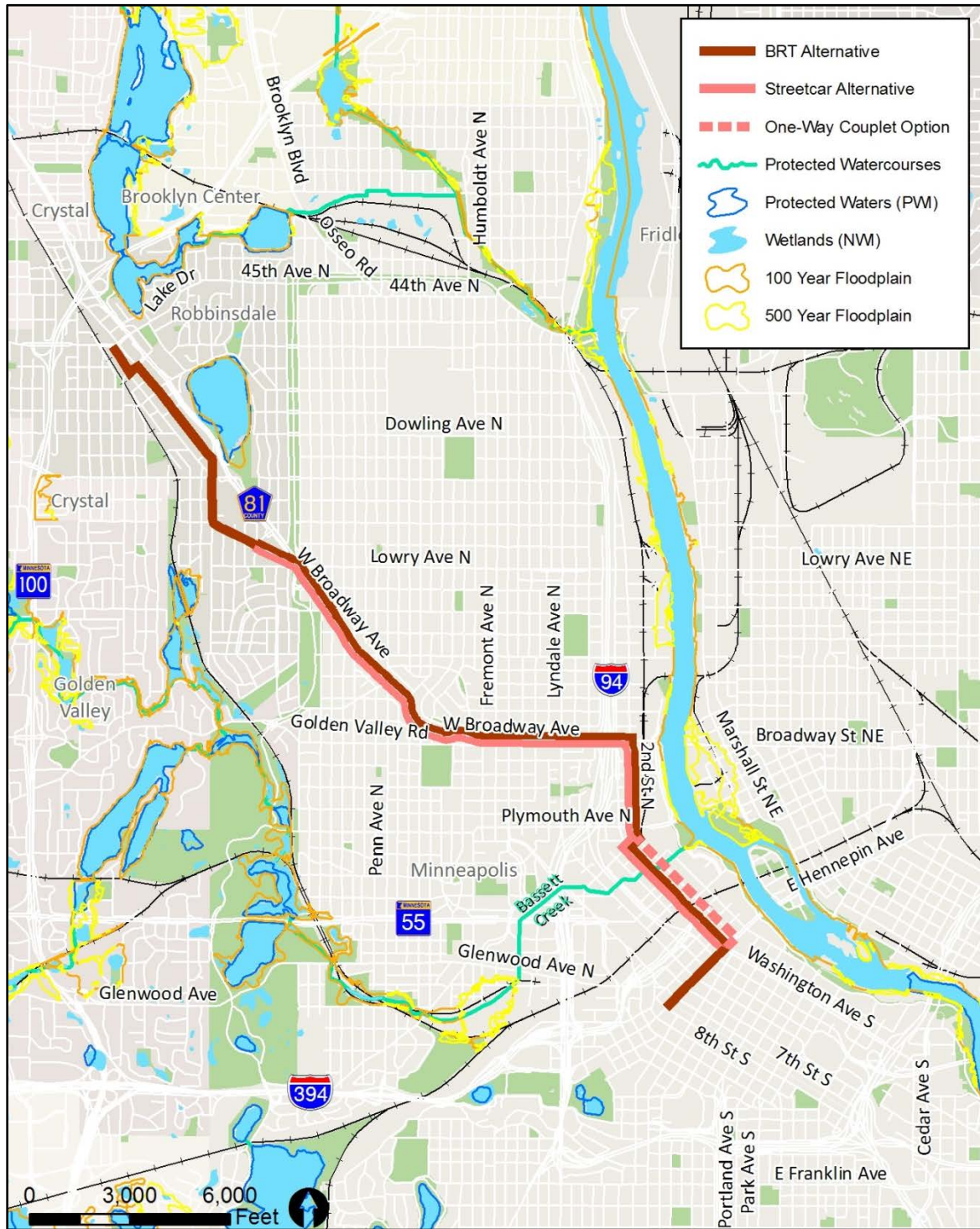
Brooklyn Center. Based on the NWI data, there are no known wetlands located within the potential impact area (i.e., within 100 feet of the centerline) of both alternatives.

There is one protected watercourse (Bassett Creek) that crosses the project impact area at 8th Avenue North.





Figure 5: Wetlands and Floodplains





## Conclusions

Based on published data sources for wetlands and protected waters, neither of the alternatives has a greater potential for wetland impacts. Both alternatives cross Bassett Creek at 8th Avenue North and may impact this watercourse if project excavation, fill, or drainage is required in this area.

It is important to note that there still may be wetland areas located within the potential impact area that are not currently mapped by the NWI or the PWI, and the project may still have wetland impacts. A full delineation of wetlands in the project corridor will be needed for an official environmental document, based on the construction limits of the project at that time. At the time of project design, efforts will be made to avoid, minimize, and/or mitigate potential wetland impacts.

## Floodplains

### Overview

A floodplain is the area adjacent to streams or lakes that is inundated from time to time and is the area required to store and/or allow passage of flood waters. Communities must regulate development in floodplains/floodways to ensure that there are no increases in upstream flood elevations. The floodplain also contains the floodway fringe, which may be inundated during larger flood events such as the "100-year flood" or "500-year flood." A 100-year flood zone is defined as the area inundated during a one-percent annual chance flood. A 500-year flood zone is the area inundated during a 0.2 percent annual chance flood.

### Regulatory Framework

Floodplains for the various water bodies and water courses in the study area are regulated under a number of agencies. The 100-year and 500-year floodplain boundaries for many water bodies are established via the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) program. Municipalities and watershed management organizations use these maps to establish rules and/or ordinances that regulate the use of and fill encroachment into floodplains. The Minnesota DNR assists the communities in establishing ordinances, interpreting, and reviewing proposed floodplain boundary changes. The DNR also has regulations regarding the maximum allowable increase in flood stage that can occur due to a floodplain encroachment within DNR-protected streams and lakes.

Floodplain encroachments are regulated by the Mississippi Watershed Management Organization (WMO) (eastern portion of the study area) and the Bassett Creek WMO (western portion of the study area). Generally, floodplain fill is not allowed unless compensating storage is provided within the affected area and hydraulically connected to the impacted resource.

### Data Sources and Methodology

Flood Insurance Rate Maps (FIRM) for Hennepin County (all jurisdictions) were examined for determination of potential floodplain and floodway impacts for alternatives in the West Broadway Transit Study.



## Comparative Analysis

The project's potential impact area is located outside of the floodplain for the Mississippi River and any other proximate watercourses (see Figure 5).

## Conclusions

The project is not anticipated to have floodplain impacts. If necessary, further floodplain assessment would be completed as part of future environmental documentation, including coordination with the Minnesota DNR and local WMOs (Mississippi WMO and Bassett Creek WMO).

## Hazardous Materials and Existing Contamination

### Overview

Properties with potential to contain contaminated materials should be identified in the early stages of a project to avoid impacts caused by disturbing hazardous soils. The property owner or operator is liable for cleanup for contaminated areas within the project area, so it is critical to identify these areas before agency acquisition to prevent unexpected costs and delays.

### Regulatory Framework

The cleanup of contaminated materials is regulated by the Petroleum Tank Release Cleanup Act, the Minnesota Environmental Response Liability Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Resource Conservation and Recovery Act. In Minnesota, contaminated materials are regulated by the Minnesota Pollution Control Agency (MPCA). At the federal level, the U.S. Environmental Protection Agency manages Superfund cleanup sites regulated by the Comprehensive Environmental Response, Compensation, and Liability Act.

### Data Sources and Methodology

Potentially contaminated properties are often found in industrial and commercial areas. Buildings may contain materials such as asbestos, lead paint, fluorescent lights, and chemicals. Properties may contain buried or above ground storage tanks which may or may not be leaking. Contaminated materials or soils may also have been abandoned at the ground surface or buried.

A search of the MPCA "What's in my Neighborhood?" database was conducted to inventory previously investigated properties, properties suspected of contamination, and currently enrolled cleanup sites, including those managed under the Superfund program. These sites will include the following WIMN categories: Feedlots, Voluntary Investigation and Cleanup (VIC), Tanks and Leaks, and Multi-Use sites. The analysis concludes with a summary of sites found within the West Broadway Transit study area and a comparison of the number of potentially contaminated sites found within approximately 500 feet of the impact area of each alternative.

## Comparative Analysis

Potentially contaminated sites identified within 500 feet of the center line of each alternative are identified in Figure 6. Potentially contaminated sites are concentrated at the southern end of the project near commercial and industrial areas along Washington Avenue. An inventory of the number of potentially contaminated sites that may potentially be affected by each alternative is shown in Table 4.



However, contaminated soil or groundwater is only likely to be encountered in areas that require soil excavation or grading. Table 4 also provides a ranking of each alternative for its likelihood to require these types of activities.

**Table 4: Potentially Contaminated Sites**

Alternative	Number of Potentially Contaminated Sites within 500 feet of Center Line	Likelihood for Alternative to Require Soil Excavation or Grading
<b>BRT Alternative</b>	235	Somewhat Likely
<b>Streetcar Alternative</b>	172	Likely

Since limited information is available at this time regarding specific right-of-way needs, scoring on this criteria was done by mode. The BRT Alternative has the greatest number of potentially contaminated sites located within 500 feet of the center line because it impacts a greater geographic area than the Streetcar Alternative. However, the BRT Alternative would require less soil excavation for infrastructure construction compared to the Streetcar Alternative. The BRT Alternative is likely to only require soil excavation at station locations. The Streetcar Alternative may need a single site of approximately three acres for an operations and maintenance facility, small sites for traction power substations, as well as soil excavation at station locations and for construction of streetcar tracks.

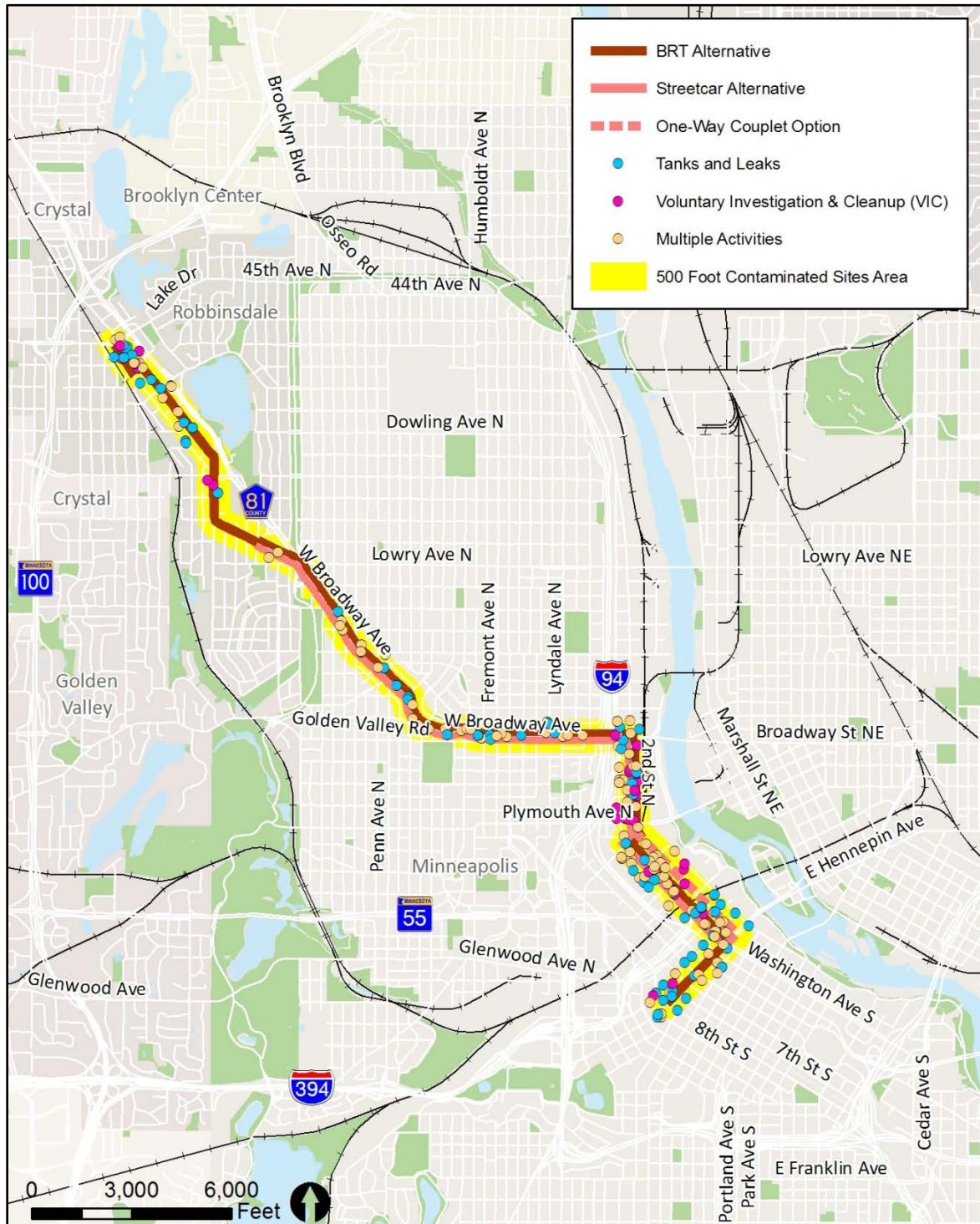
## Conclusions

Both of the West Broadway Transit Study alternatives run through areas of past and present industrial and commercial land uses. The potential for encountering contaminated soils or groundwater is high along both of these alignments; however, soil and groundwater contamination are most likely to be encountered in areas where the project requires soil excavation. For the BRT Alternative, soil excavation may be required at station sites. For Streetcar Alternative, soil excavation may be required at the operations and maintenance facility, station sites, and for construction of streetcar tracks. Therefore, it is most likely that contaminated sites would be encountered along the Streetcar Alternative.

More detailed analysis is necessary to determine if construction of any of the project alternatives is likely to encounter contaminated soils or groundwater. A Phase I Environmental Site Assessment (ESA) will likely be completed for the corridor as part of a future environmental document. The Phase I ESA will further assess impacts to potentially contaminated sites located within the project's construction limits.



Figure 6: Potentially Contaminated Sites





## Environmental Justice

### Overview

Though detailed information on the potential effects of the West Broadway Transit Project on minority and low-income populations is not available at this early stage of planning, consideration of the public transportation needs of EJ populations is critical information for selection of a locally preferred alternative (LPA) in the West Broadway Transit Corridor. Consistent with the framework outlined in FTA Circular 4703.1 (August 2012), this transit study identified low-income and minority populations in the corridor and will document the Project's engagement with EJ populations throughout the Transit Study. This will allow for consideration of EJ populations in the LPA selection, and set the stage for a full analysis of the project's impacts to EJ populations as part of its NEPA process.

### Regulatory Framework

Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994), requires the U.S. Department of Transportation (DOT) and the FTA to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and/or low-income populations (collectively "EJ populations"). Environmental justice at FTA includes incorporation of environmental justice and non-discrimination principles into transportation planning and decision-making processes and project-specific environmental reviews. Furthermore, U.S. DOT order 5610.2(a) sets forth steps to prevent disproportionately high and adverse effects to minority or low-income populations through Title VI analyses and environmental justice analyses conducted as part of Federal transportation planning and NEPA provisions.

### Data Sources and Methodology

Decennial census data was used as a primary source for mapping and locating minority populations in the West Broadway Transit study area. The U.S. Census, mandated by Article I, Section 2 of the Constitution, takes place every 10 years and counts every resident in the United States. Year 2010 U.S. Census data was used to quantify minority populations at the block level, which is the smallest geographic unit for which race and ethnicity data are available.

American Community Survey (ACS) data was used as a primary source for mapping low-income populations in the West Broadway Transit study area. The ACS is an ongoing survey that provides data on age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, where people work and how they get there, and where people live and how much people pay for some essentials. The purpose of the ACS is to provide an annual data set that enables communities, state governments, and federal programs to plan investments and services. In general, ACS estimates are period estimates that describe the average characteristics of population and housing over a period of data collection. The ACS is administered continually and, unlike the census, is a random sampling of people from all counties and county-equivalents in the United States. ACS 2007-2011 5-Year estimates were used to quantify low-income populations at the block group level, which is the smallest geographic unit for which low-income population data are available.



A GIS platform was used to draw a half-mile buffer<sup>3</sup> around each West Broadway Transit Study alternative. For the analysis of minority populations, each census block that intersects with the half-mile buffer or is completely within the half-mile buffer will be included in the study area. For the analysis of low-income populations, each census block-group that intersects with the half-mile buffer or is completely within the half-mile buffer will be included in the study area.

### Comparative Analysis

As defined in FTA Circular 4703.1, a **low-income person** is one whose median household income is at or below the Department of Health and Human Services poverty guidelines. Low income populations are identified by the Census Bureau using a set of dollar value thresholds that vary by family size and composition. A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and if circumstances warrant, geographically dispersed or transient persons such as migrant workers or Native Americans who will be similarly affected by the proposed project. Figure 7 shows the percentage of low-income residents living within a half mile of each of the West Broadway Transit Study alternatives. In general, the West Broadway corridor has a higher percentage of low-income populations than the state of Minnesota, the seven-county Twin Cities Metropolitan Area, and Hennepin County, as shown in Table 5.

**Table 5: Low-Income Population by State, Region, County, and Corridor**

	Total Population for whom Poverty is Determined	Population Living Above the Poverty Line	Population Living Below the Poverty Line	Percent in Poverty
<b>State of Minnesota</b>	5,155,949	4,590,795	565,154	10.9%
<b>Seven-County Twin Cities Metropolitan Area</b>	3,084,447	2,775,636	308,811	10.0%
<b>Hennepin County</b>	1,124,293	986,035	138,258	12.3%
<b>BRT Alternative</b>	60,215	45,202	15,013	24.9%
<b>Streetcar Alternative</b>	53,305	38,989	14,316	26.9%

Source: 2007-2011 American Community Survey 5-Year Estimates, block group-level data

As defined in FTA Circular 4703.1, minority populations are any readily identifiable group or groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed or transient persons such as migrant workers or Native Americans who will be similarly affected by the proposed project. Minority includes persons who are American Indian and Alaska Native, Asian, Black, or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander. Figure 8 shows the percentage of minority populations living within a half mile of each of the West Broadway Transit Study alternatives, and Figures 9, 10, and 11, show the percentages of the largest groups of minorities in the corridor: African-American, Asian, and Hispanic. For broader context and reference, the West Broadway Transit Study alternatives were compared with Hennepin County, the

<sup>3</sup> A half-mile radius is commonly used by transit planners to represent the distance transit users are willing to walk to access an LRT or BRT station



seven-county Twin Cities Metropolitan Area, and the state of Minnesota. In general, the West Broadway corridor has a higher percentage of minority populations than the state of Minnesota, the seven-county Twin Cities Metropolitan Area, and Hennepin County, as shown in Table 6 below.

**Table 6: Minority Population by State, Region, County, and Corridor**

	Total Population	Non-Minority Population	Minority Population	Percent Minority
State of Minnesota	5,303,925	4,405,142	898,783	16.9%
Seven-County Twin Cities Metropolitan Area	2,846,567	2,173,221	673,346	23.7%
Hennepin County	1,152,425	826,670	325,755	28.3%
BRT Alternative	41,068	19,109	21,959	53.5%
Streetcar Alternative	33,093	13,200	19,893	60.1%

Source: 2010 U.S. Census, block-level data

**Table 7: Minority Population in the Corridor by Race**

	Total Population	Minority Population	Percent Minority	African-American	Asian	Hispanic
BRT Alternative	41,068	21,959	53.5%	13,563	4,534	2,739
Streetcar Alternative	33,093	19,893	60.1%	11,981	3,785	2,184

In *Thrive MSP 2040*, the region’s development framework, the Metropolitan Council commits to “using equity as a lens to evaluate its operations, planning, and investments, and exploring its authority to use its resources and roles to mitigate the place-based dimension of disparities by race, ethnicity, income, and ability”. The Council also commits to working to mitigate Areas of Concentrated Poverty (ACP) by better connecting residents to opportunity and catalyzing neighborhood revitalization. Areas of Concentrated Poverty are census tracts where at least 40 percent of the residents live below 185 percent of the federal poverty line.<sup>4</sup> By 2010, nearly one person in ten in the region lived in an ACP. Because Areas of Concentrated Poverty can both limit the economic mobility of their residents and discourage private investment, the region cannot afford to allow these areas to either persist or grow.

All of the census tracts surrounding West Broadway Avenue in Minneapolis are ACPs where more than 50 percent of residents are people of color. Mitigating Areas of Concentrated Poverty is especially relevant to the West Broadway Transit Study because the corridor is home to a disproportionate number of people of color living in poverty.

## Conclusions

The two analyzed alternatives are located within one city blocks of each other for their entire length, (except at the northern project area where the BRT Alternative extends north into Robbinsdale) and thus minority and low-income populations residing along the alternatives are very similar in number and composition. The West Broadway corridor is home to both minority and low-income EJ populations that are higher than the average populations of the state of Minnesota, the seven-county Twin Cities Metropolitan Area, and Hennepin County. When the West Broadway Transit project completes the

<sup>4</sup> Defined as \$42,589 in annual income for a four-person household in 2011.





NEPA process, the potential for high and disproportionate impacts to these EJ populations will be thoroughly investigated.



Figure 7: Low-Income Population in the Corridor

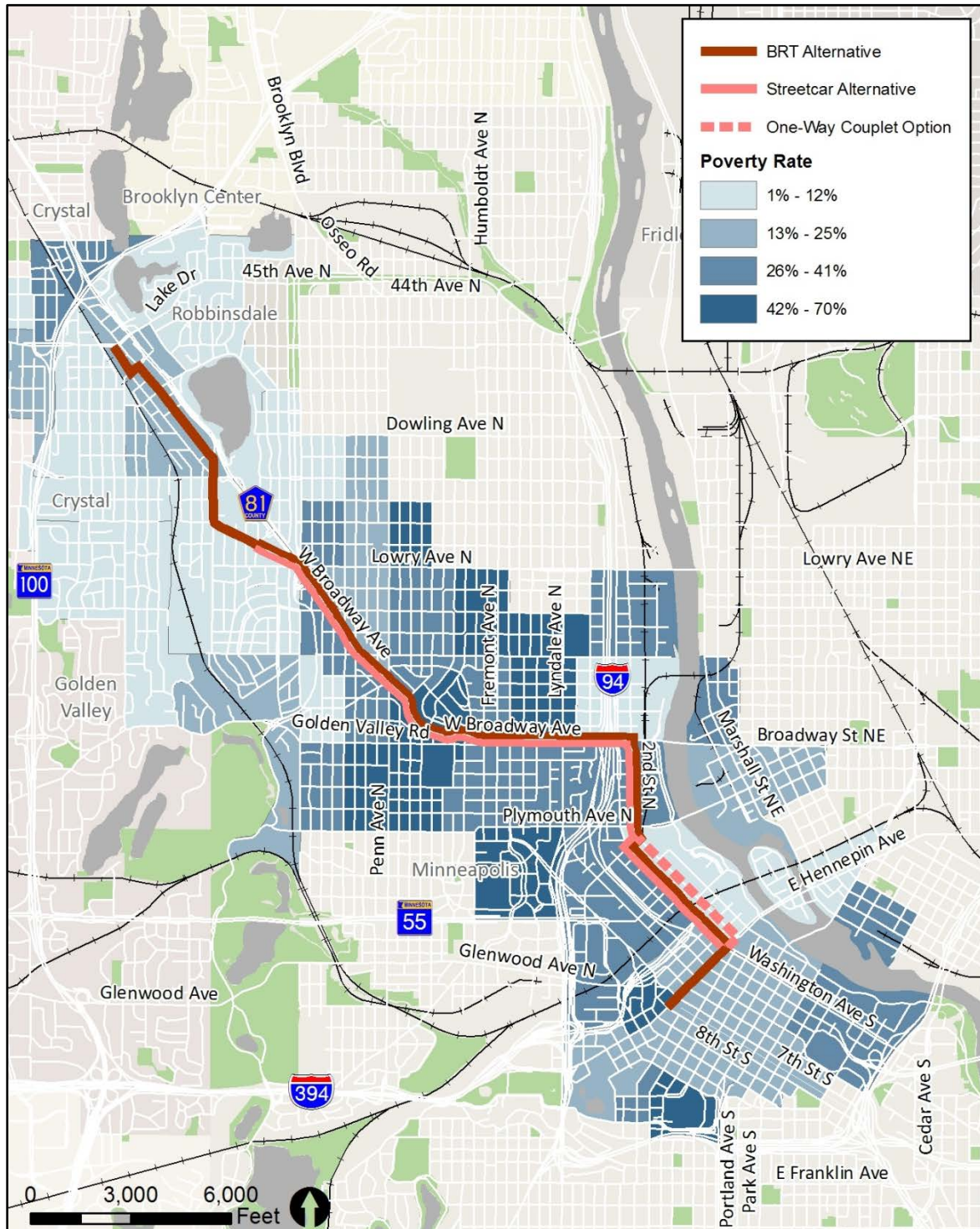




Figure 8: Minority Population in the Corridor

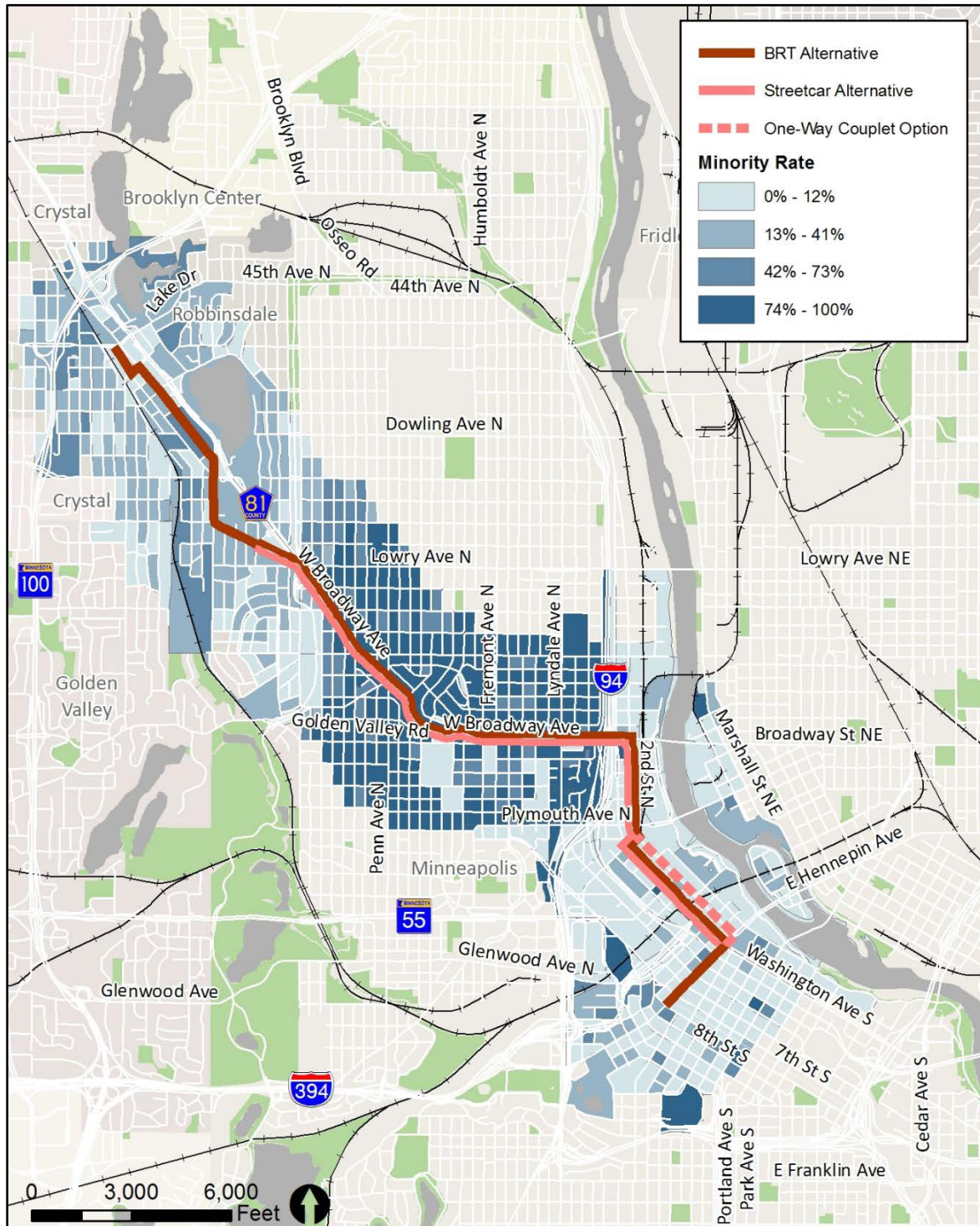




Figure 9: African-American Population in the Corridor

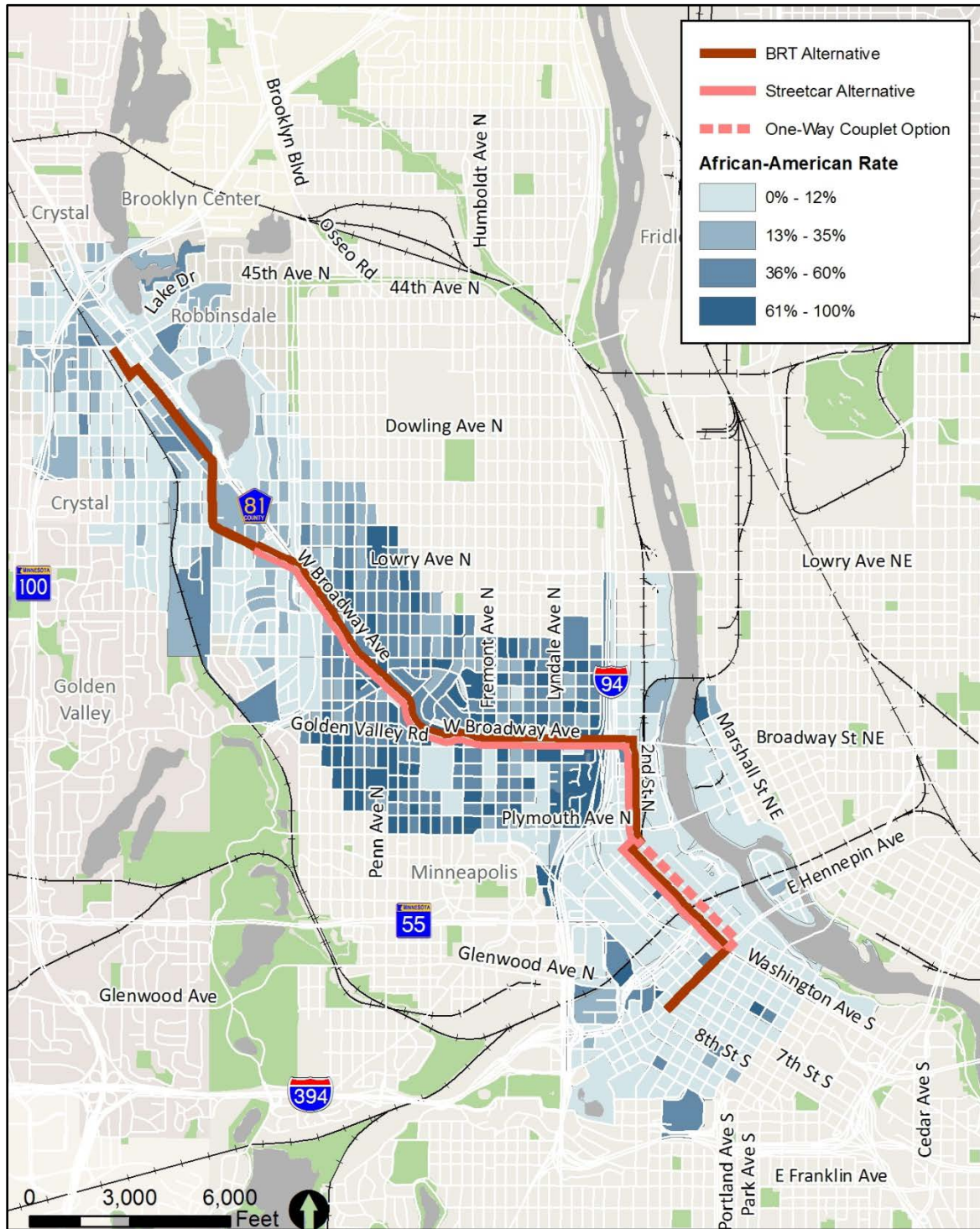




Figure 10: Asian Population in the Corridor

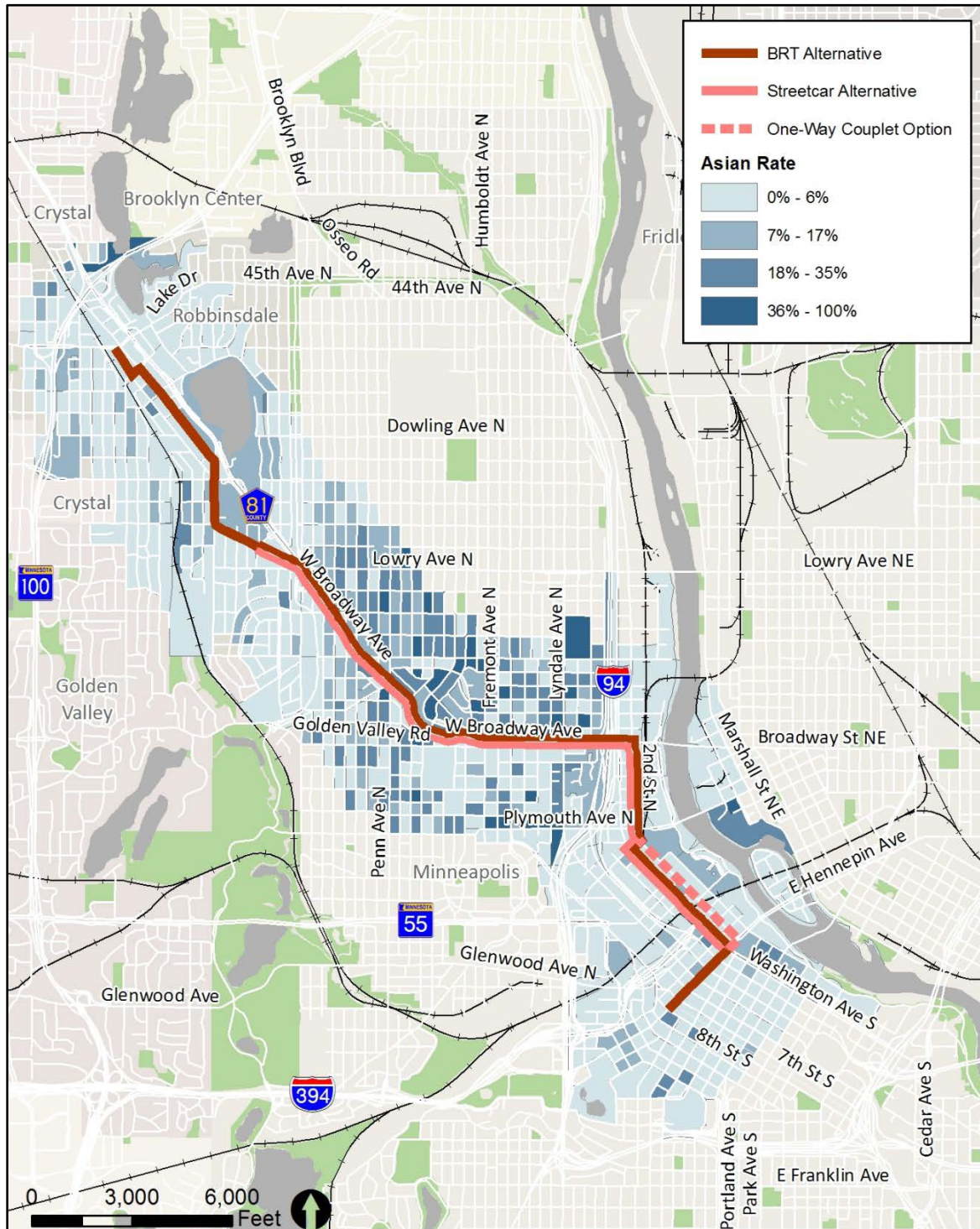
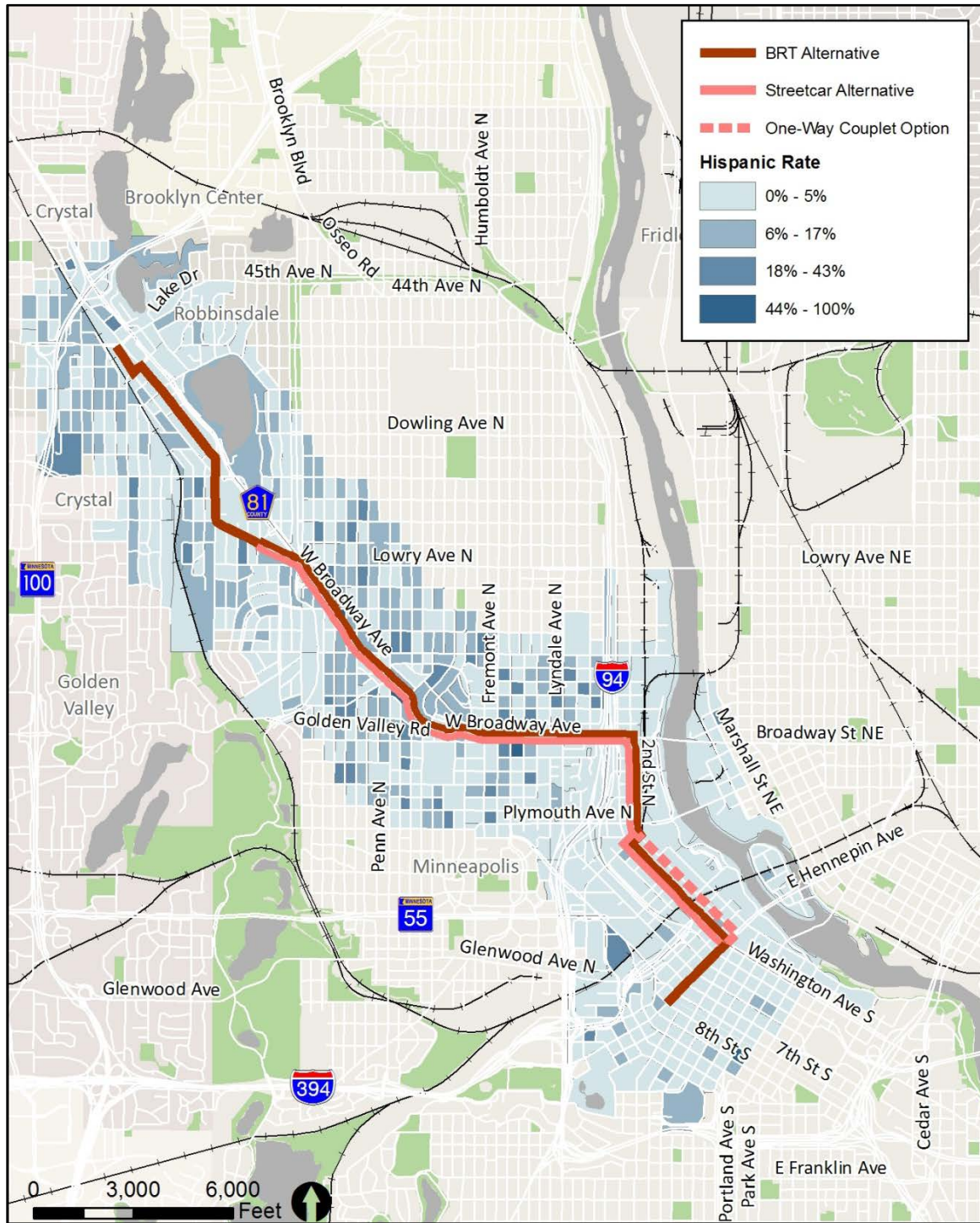




Figure 11: Hispanic Population in the Corridor





## Land Use

### Overview

Land use plays a key role in determining the success of a transitway investment. Denser, high-activity land uses are considered more conducive to transit use than low-density uses. Future development plans for areas surrounding proposed transit stations in the various alternatives are examined for consistency with a large-scale transitway investment.

### Regulatory Framework

No specific laws or executive orders regulate the topic of land use. The National Environmental Policy Act (NEPA, 41 USC 4321) and Minnesota Environmental Policy Act (MEPA 2007 c 116D) form the general basis of consideration for land use within environmental documents.

### Data Sources and Methodology

A general description of the relationship of the proposed transit improvements to existing and planned land uses (as adopted in community comprehensive plans) immediately adjacent the proposed project corridor was completed. A quantitative approach was used to measure consistency of future land use plans. Using GIS, ½-mile buffer distances were overlaid on a map of 2030 land use designations for Minneapolis and Robbinsdale. A half-mile radius is commonly used by transit planners to represent the distance transit users are willing to walk to access an LRT or BRT station; as such, this distance defines the area around the station with potential for transit-oriented development (TOD). Acreage of each land use present within the buffered areas was determined. Land uses were then converted from acres to percent of coverage for the total buffered area within each segment. Each land use was scored based on its desirability and consistency with transitway development.

### Comparative Analysis

#### *Minneapolis*

Land use and community designations in *The Minneapolis Plan for Sustainable Growth* vary by segment of the corridor. Washington Avenue south of 10th Avenue and West Broadway between 26th Avenue and the Mississippi River are designated as commercial corridors and can accommodate intensive commercial uses and high-density residential uses. Washington Avenue between 10th Avenue and West Broadway is an industrial employment district, a lower density area with few residents, primed for industrial growth in the city. Existing and planned land uses in Minneapolis are shown in Figures 12-15.

#### *Robbinsdale*

The *Robbinsdale Comprehensive Plan* calls for retention of the pedestrian scale of downtown, and continued downtown growth in a compact pattern. Land use in the majority of downtown and on the Terrace Mall site is mixed use, which allows for both vertical and horizontal mixed use and is intended to encourage higher density development (12-60+ units per acre of residential development). Development interest is currently trending toward additional higher-density residential uses.

North Memorial Hospital employs approximately 3,500 people and occupies a large site at the intersection of Oakdale and West Broadway Avenues. The hospital reports that its campus has capacity

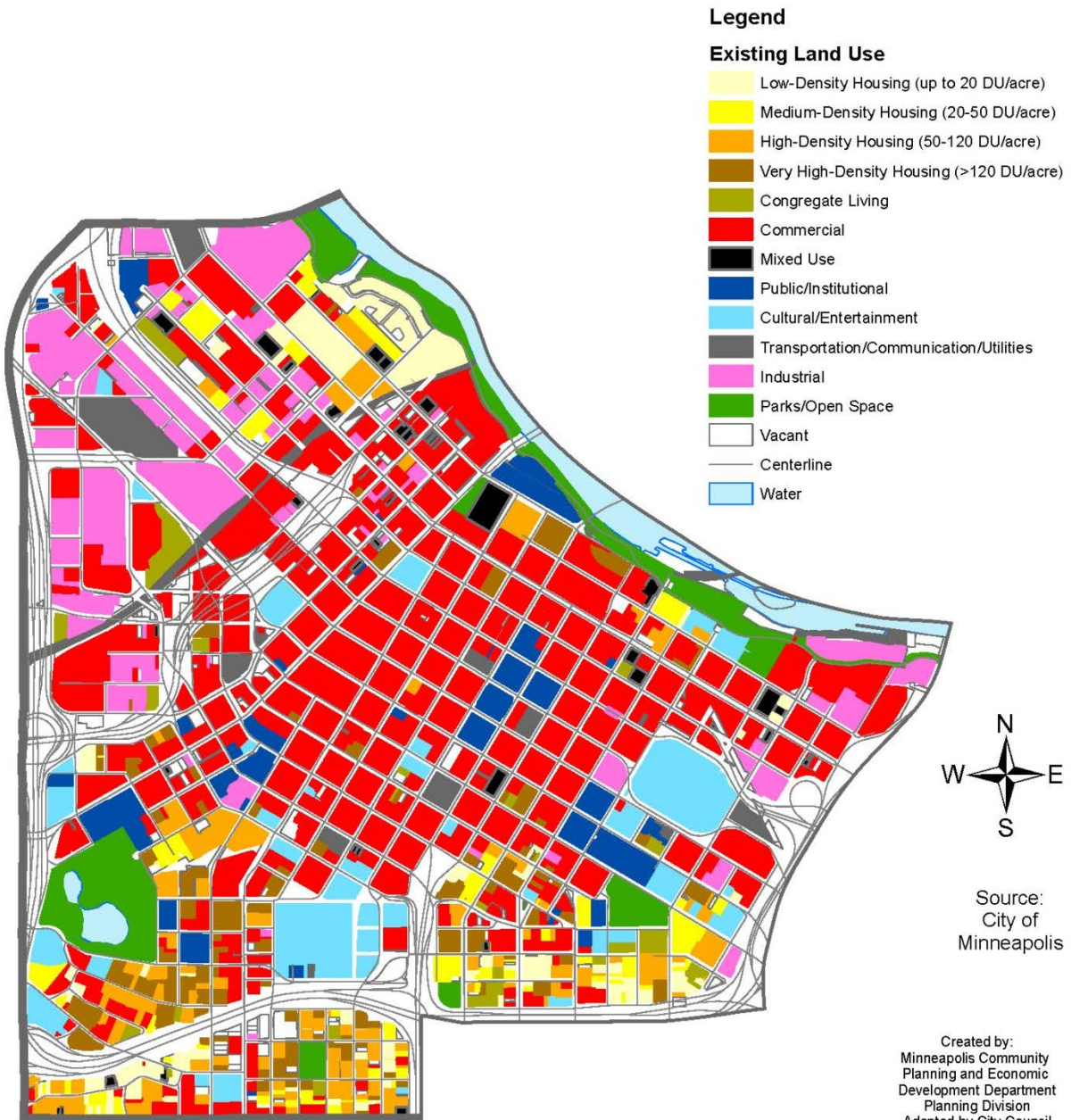


to accommodate its near-term growth needs. The low-density (approximately 5.5 units per acre) residential neighborhoods along Oakdale and France Avenues are not planned for change. Existing and planned land uses in Robbinsdale are shown in Figures 16 and 17.





Figure 12: Minneapolis Existing Land Use – Downtown Sector



0 2,500 5,000 Feet

Figure 13: Minneapolis Future Land Use - Downtown Sector

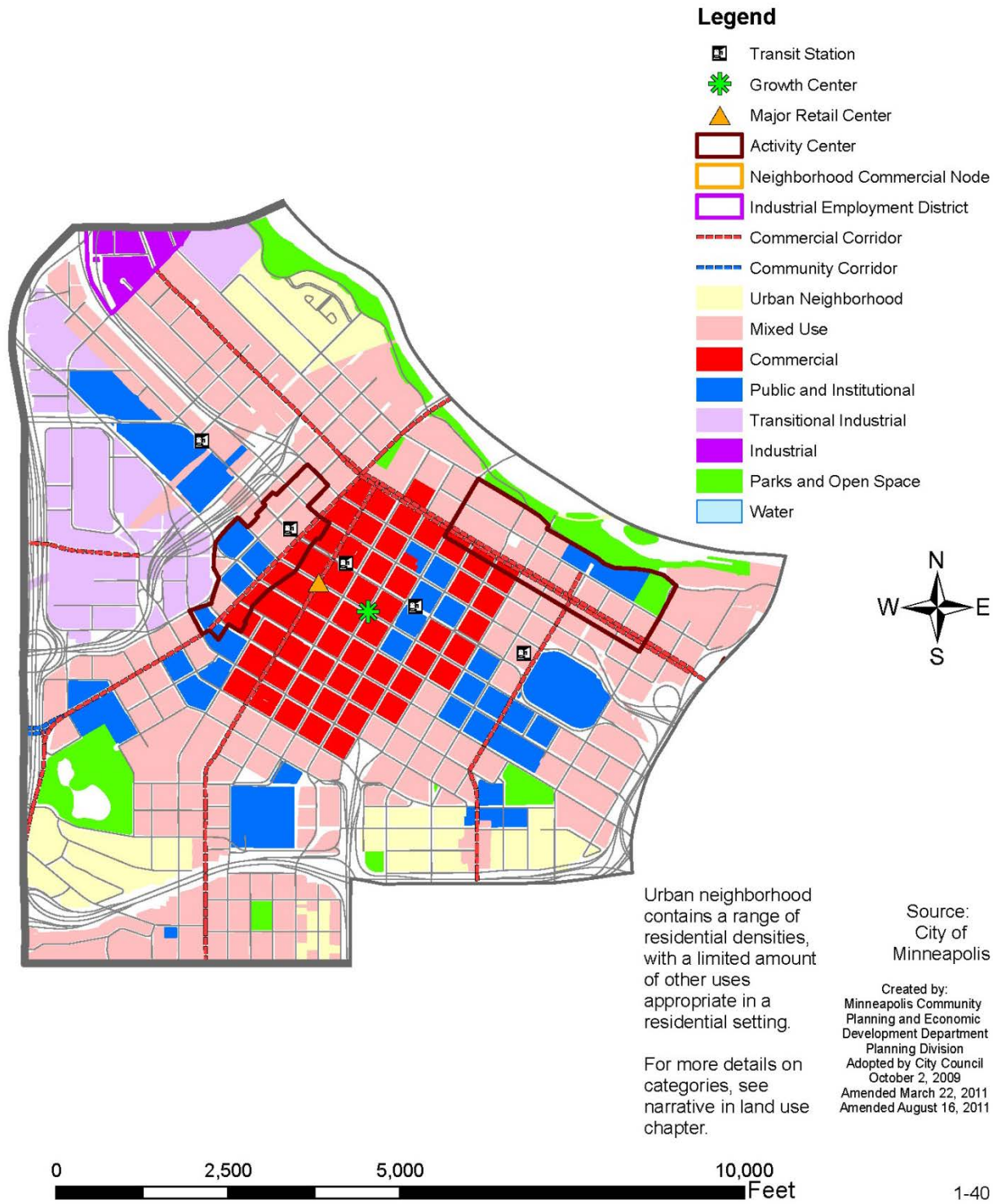




Figure 14: Minneapolis Existing Land Use – North Sector

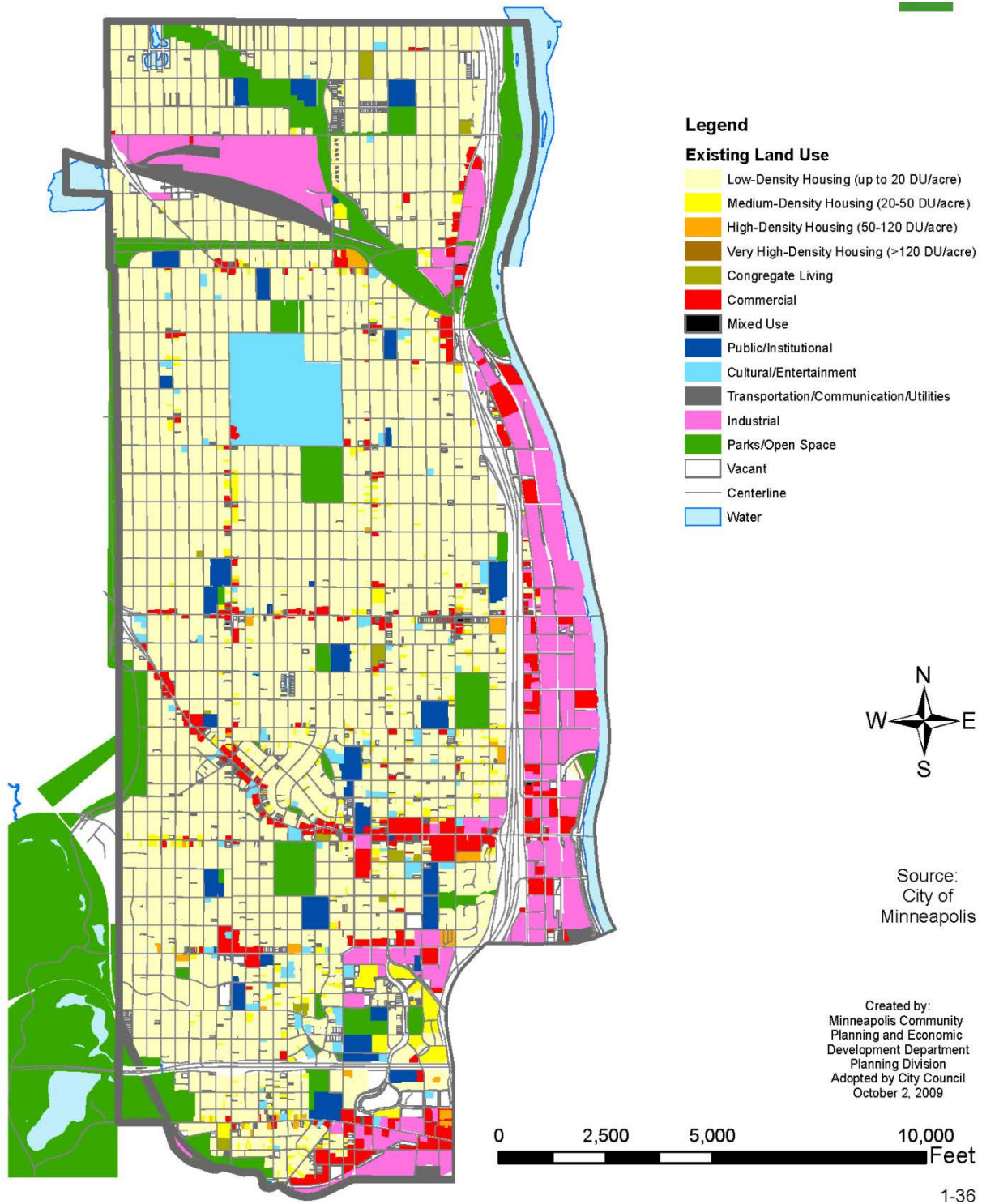




Figure 15: Minneapolis Future Land Use – North Sector

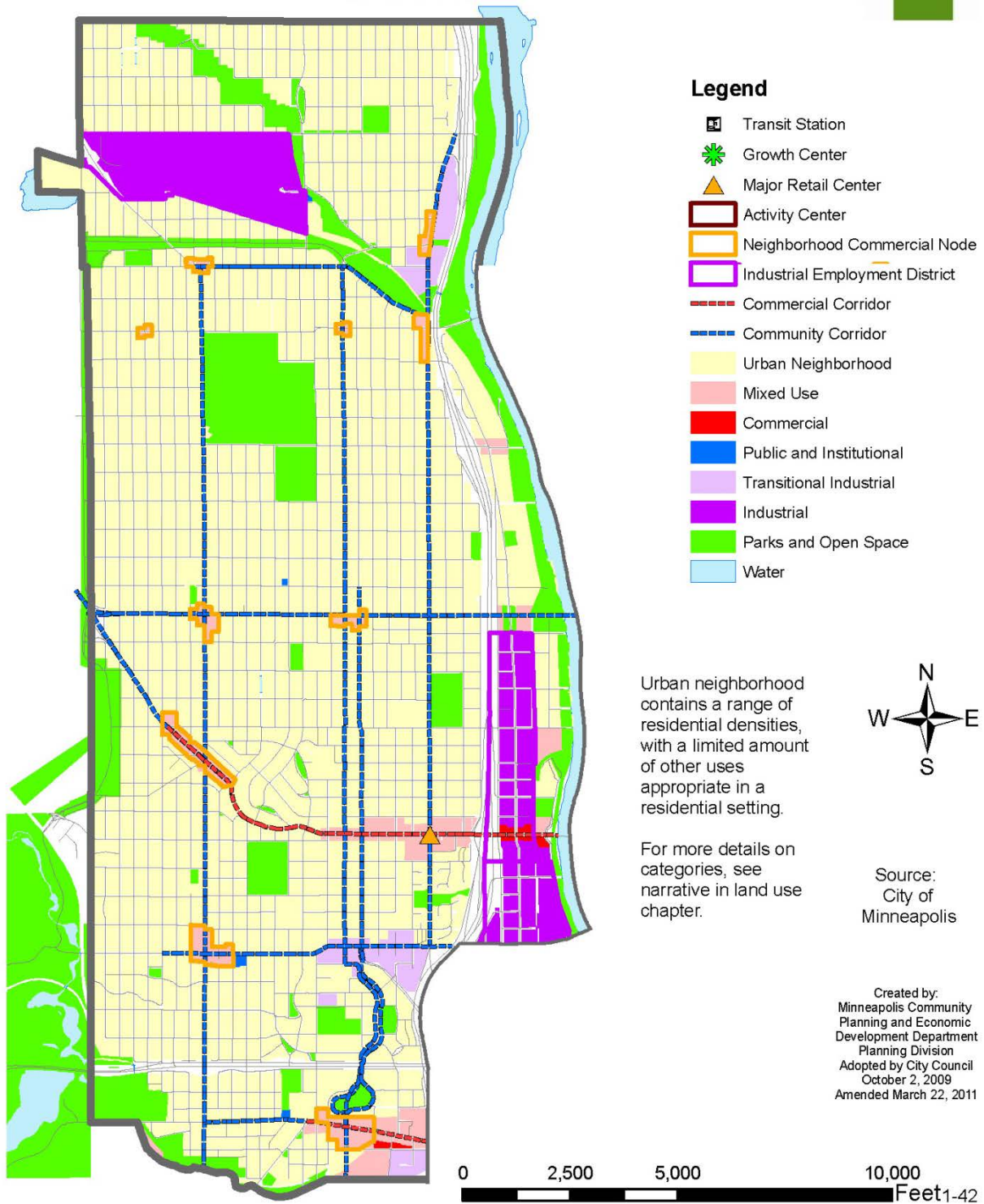


Figure 16: Robbinsdale Existing Land Use

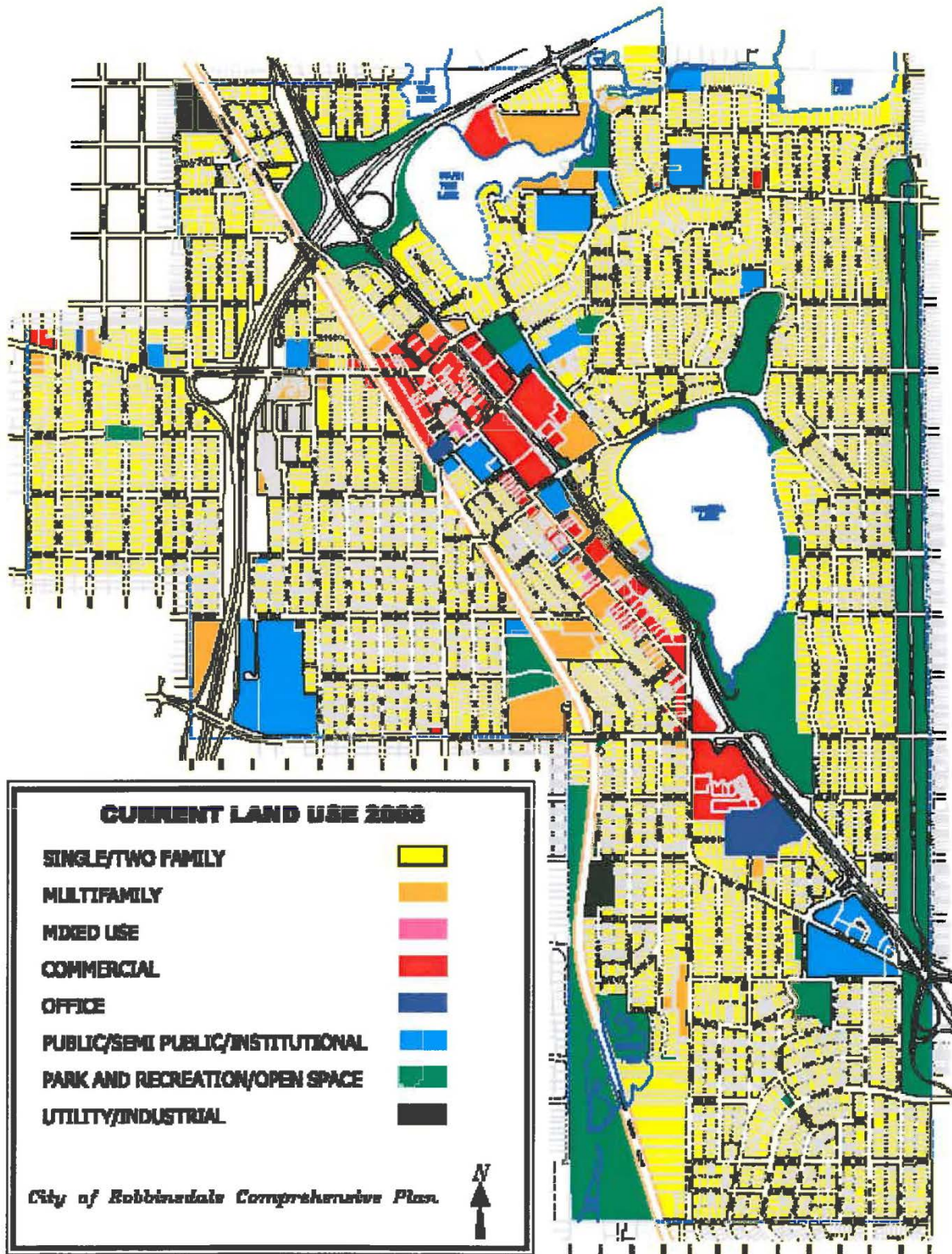
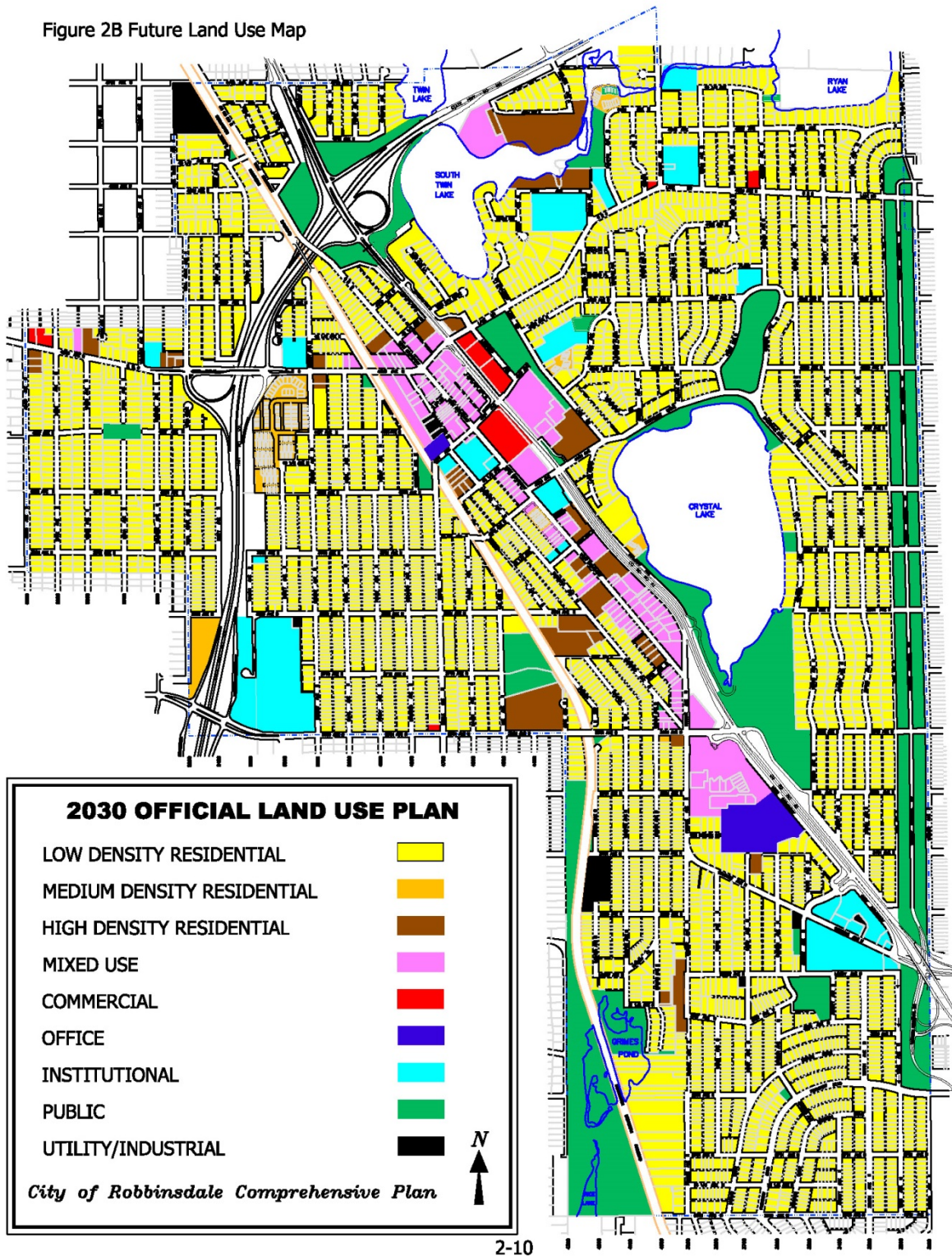




Figure 17: Robbinsdale Future Land Use





## Conclusions

Generally, planned land use and local plans in the West Broadway Transit corridor are conducive to transit use and transit oriented development, as well as increased density. Overall, because the two alternatives overlap along the majority of the corridor, the analysis of nearby land uses reveals few differences between the land use qualities of each alternative.

## Business Impacts

### Overview

The study of business impacts is generally categorized under temporary impacts (e.g., temporary sidewalk, lane, or driveway closures, noise and vibration during construction) and permanent impacts (e.g., removal of parking, removal of access, operating impacts). Because impacts tend to be fairly localized, the study area for the arterial BRT alternative was limited to those businesses that face or have access from Hennepin Avenue, Washington Avenue, 2<sup>nd</sup> Street North, and West Broadway Avenue in Minneapolis, and Oakdale, France, and West Broadway Avenues in Robbinsdale. The study area for the streetcar alternative was limited to businesses that face Washington Avenue, 2<sup>nd</sup> Street North, West Broadway Avenue, and Oakdale Avenue. Please refer to Figures 9, 11, and 13 for the location of businesses in the corridor, indicated by their commercial land use in red on the map.

### Regulatory Framework

No specific laws or executive orders regulate the topic of economic impacts. The National Environmental Policy Act (NEPA, 41 USC 4321) and Minnesota Environmental Policy Act (MEPA 2007 c 116D) form the general basis of consideration for economic/business issues.

### Data Sources and Methodology

The alternatives were evaluated for their potential to have temporary and permanent impacts to businesses along the West Broadway Transit corridor. Since limited information is available at this time regarding specific construction-related impacts and permanent right-of-way impacts, assessment of this criterion was done by mode.

### Comparative Analysis

In general, the Streetcar Alternative would have a greater amount of temporary and permanent impacts to businesses along the corridor due to the need for permanent infrastructure such as guideway/overhead catenary wire systems, traction power substations, and an operations and maintenance facility. The Streetcar Alternative would require acquisition of two commercial/institutional properties for station locations, and an additional 2.5-3.5 acre property for an operations and maintenance facility, while the BRT Alternative requires acquisition of one commercial property for a station location. Both the Streetcar and BRT Alternatives would have temporary and permanent impacts related to construction of station locations along the corridor, and both alternatives would have limited permanent impacts to roadways and traffic in the study area since they would both operate in mixed traffic. Permanent changes in access to businesses would be minimized as much as possible, and alternative access would be provided if permanent closure is required.



## Conclusions

Since limited information is available at this time regarding specific right-of-way needs and construction-related impacts, scoring on this criterion was done by mode. In general, the Streetcar Alternative is likely to have greater business impacts than the BRT Alternative due to temporary and permanent impacts required for guideway/ overhead catenary wire systems, on-street track system, traction power substations, and an operations and maintenance facility.

## Property Acquisition

### Overview

Each of the alternatives being considered for West Broadway will likely require a certain amount of additional land beyond that already dedicated to transportation purposes.

### Regulatory Framework

Public agencies are required by law to compensate land owners for property acquired for public uses. Any potential acquisition of property due for the West Broadway project would be conducted in accordance with the Uniform Relocation and Real Property Acquisition Act of 1970, as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987 and 49 Code of Federal Regulations, Part 24, and effective 1989 (revised January 2005).

### Data Sources and Methodology

Right-of-way acquisitions can be divided into two categories: partial takes and full takes. A partial take occurs when a public agency acquires part of a property but the original use of the property remains intact. For example, a partial take may occur when a strip of land is acquired from the front of a residential lot for a transitway project, but the residence remains intact and undisturbed. A full take, on the other hand, occurs when the entire property is taken for public use.

Aerial photography, parcel data, and concept drawings will be used to estimate the magnitude of full and partial takes required by each alternative. Right-of-way acquisitions will be counted and summed for each alternative.

### Comparative Analysis

Stations for both alternatives would be located mostly within the existing public roadway right-of-way. The Arterial BRT Alternative would require some right-of-way acquisition at the following locations:

- At Ilion Avenue for a station platform (two partial acquisitions)
- At 29<sup>th</sup> Avenue for a station platform (partial acquisition)

The streetcar alternative would require some right-of-way acquisition at the following locations:

- At Irving Avenue for a station platform (full acquisition)
- At Ilion Avenue for a station platform (two partial acquisitions)
- At 29<sup>th</sup> Avenue for a station platform (two full acquisitions)
- At North Memorial Medical Center to accommodate the station platform as well as two sets of tracks at end of line (partial acquisition)





- At a site to be determined in the North Washington Jobs Park for an operations and maintenance facility (full acquisition)

Details regarding property acquisition locations are available in the Detailed Definition of Alternatives Memo.



## Environmental and Community Impacts Assessment Summary

Table 8 summarizes the environmental and community impacts of each alternative based on the analysis provided above.

**Table 8: Environmental and Community Impacts Assessment Summary**

Issue Area	BRT Alternative	Streetcar Alternative
<b>Noise and Vibration</b> (number of noise/vibration sensitive sites located within 500 feet of alignment)	9 Category 1 1,190 Category 2 27 Category 3	5 Category 1 774 Category 2 20 Category 3 *Greater potential for noise impacts due to wheel squeal
<b>Cultural and Historic Resources</b> (likelihood for Section 106 adverse effects/Section 4(f) use of cultural and historic resources; cultural resources)	Section 106 – Medium Section 4(f) – Medium (Minneapolis Warehouse Historic District)	Section 106 – High Section 4(f) – Medium (Grand Rounds Historic District – Victory Memorial Segment, St. Anthony Falls Historic District, and Minneapolis Warehouse Historic District)
<b>Parks, Trails, and Recreation Areas</b> (likelihood of potential Section 4(f) use of park and recreational properties)	Low	Medium (Victory Memorial Park) Medium (Victory Memorial Trail)
<b>Threatened and Endangered Species</b> (likelihood for impacts to threatened and endangered species)	Unlikely	Unlikely
<b>Wetlands</b> (acres of potential impacts to NWI and PWI-mapped wetlands)	None identified based on existing data Crosses Bassett Creek	None identified based on existing data Crosses Bassett Creek
<b>Floodplains</b> (acres of floodplain encroachment)	0 acres No floodplain impacts anticipated	0 acres No floodplain impacts anticipated
<b>Hazardous Materials and Existing Contamination</b> (likelihood for alternative to require soil excavation or grading)	Somewhat Likely	Likely



**Table 8: Environmental and Community Impacts Assessment Summary, *continued***

<b>Issue Area</b>	<b>BRT Alternative</b>	<b>Streetcar Alternative</b>
<b>Environmental Justice</b>	EJ Populations Present	EJ Populations Present
<b>Land Use</b>	Conducive to transit use and transit oriented development	Conducive to transit use and transit oriented development
<b>Business Impacts (likelihood for temporary and permanent business impacts)</b>	Less Likely	More Likely
<b>Property Acquisition</b>	Less Likely	More Likely