I-515/Charleston Boulevard Interchange Environmental Assessment

FHWA-NV-EA 19.01 CM-0159(013)
State TIP ID: CL20130030
NDOT Project ID: 74030

May 2019
ENVIRONMENTAL ASSESSMENT
for I-515/Charleston Boulevard Interchange Improvements
FHWA-NV-EA 19.01
CM-0159(013)
State TIP ID: CL20130030
NDOT Project ID: 74030
May 2019

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This Environmental Assessment has been prepared in accordance with the provisions and requirements of Chapter 1, Title 23, 23 CFR Part 771, relating to implementation of the National Environmental Policy Act of 1969.
ABSTRACT

The Nevada Department of Transportation (NDOT), in cooperation with the Federal Highway Administration (FHWA), has prepared this Environmental Assessment, which examines the potential socioeconomic and environmental impacts of improvements being considered for the proposed Interstate 515 (I-515)/Charleston Boulevard Interchange project located in Clark County, Nevada. The document describes why the project is needed, alternatives considered (including the No-Build Alternative), existing environment that could be affected by the project, potential impacts from the No-Build Alternative and Preferred Alternative, and proposed mitigation measures.

This project is the continuation of previous efforts undertaken by the City of Las Vegas to study improvements to Charleston Boulevard at the I-515 interchange, combined with ongoing efforts by NDOT to identify and prioritize improvements along the I-515 corridor. The purpose of the proposed I-515/Charleston Boulevard Interchange project is to reduce crashes, congestion, and travel delays by improving the movement of traffic on both Charleston Boulevard and I-515. Improving pedestrian safety along Charleston Boulevard is also a desirable outcome of the project.

NDOT, with FHWA, is proposing to improve I-515 from the I-515/Eastern Avenue interchange to Wyoming Avenue, the I-515/Charleston Boulevard interchange, and Charleston Boulevard from Pecos Street to Lamb Boulevard. Improvements along I-515 include adding one auxiliary lane in each direction from Charleston Boulevard to Eastern Avenue, widening the I-515/Charleston Boulevard interchange ramps, widening the I-515/Eastern Avenue westbound exit ramp. Improvements along Charleston Boulevard include reconstructing and widening Charleston Boulevard, increasing the number and length of turn lanes to/from Charleston Boulevard and the I-515 ramps, and reconstructing both sidewalks to include Americans with Disabilities Act improvements.
## Mitigation Measures

The following list describes measures that will be implemented by NDOT as part of the project to avoid, reduce, or otherwise mitigate potential impacts associated with the project. Mitigation measures and compliance with federal, state, and local laws and will be specified in the construction contractor’s contract with NDOT. The following list of mitigation measures and commitments are not subject to change or modification without prior written approval of the Federal Highway Administration.

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>Section</th>
<th>Mitigation Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors</td>
<td>3.2.1</td>
<td>Air Quality</td>
<td>NDOT will require equipment and vehicles used during construction to comply with U.S. Environmental Protection Agency emissions standards for on-road vehicles and off-road construction equipment. Construction contractors will be required by NDOT to comply with applicable dust-control requirements of the Clark County Department of Air Quality and NDEP, as necessary, and NDOT will implement best management practices to minimize emissions from construction. NDOT’s contractor will submit a dust mitigation plan to the Clark County Department of Air Quality to obtain a dust control permit. Impacts associated with fugitive dust generated by construction will be mitigated by standard dust and emission control measures such as watering disturbed soil as required, reducing nonessential earth-moving activity when it is windy, and limiting vehicle and equipment idling to the extent practicable. Additional measures to reduce construction fugitive dust emissions will be incorporated into the plans and specifications for construction in accordance with NDOT’s <em>Standard Specifications for Road and Bridge Construction</em> (NDOT, 2014).</td>
</tr>
<tr>
<td>NDOT and Contractors</td>
<td>3.2.5</td>
<td>Biological Resources</td>
<td>NDOT requires a pre-construction presence/absence survey for breeding migratory birds and raptors will be performed no earlier than 7 days prior to the initiation of construction (ground disturbance). If active nests are identified, NDOT will protect them in place with a buffer and limit construction until the young leave the nest.</td>
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<tr>
<td>Responsible Party</td>
<td>Section</td>
<td>Mitigation Category</td>
<td>Description</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>NDOT and Contractors</td>
<td>3.3</td>
<td>Traffic Noise</td>
<td>The widening of I-515 to the north will remove the existing northbound traffic noise wall. A new traffic noise wall will replace it from the northbound Charleston Boulevard on-ramp to just past North Pecos Road and again from just west of North Mojave Road to the northbound Eastern Avenue off-ramp. A new small overlapping traffic noise wall will be needed at the southbound Eastern Avenue on-ramp. The gap on the northbound side of the freeway adjacent to the Desert Pines Golf Course located between North Pecos and North Mojave roads will remain. The homes on the north side of Charleston Boulevard between Del Amo Drive and I-515 will receive a new traffic noise wall. Mitigation measures for stationary and mobile equipment will be addressed in the construction contractor’s contract with NDOT as needed and address institutional and engineering controls to reduce or minimize exposure to excessive noise.</td>
</tr>
<tr>
<td>NDOT and Contractors</td>
<td>3.5</td>
<td>Socioeconomic – Right-of-Way Acquisitions</td>
<td>An estimated 1.19 acres of right-of-way acquisition is required, including four residential displacements. NDOT Right-of-Way Division, under the guidance of the Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act), will negotiate with the property owners directly affected, ensuring that fair market value is received for the required right-of-way. Property owners will receive compensation of not less than the approved appraisal value, and equivalent, safe, and sanitary replacement housing will be made available before anyone is displaced. Expenses for moving and other relocation costs will also be available. Renters will also be compensated and equivalent housing provided. A survey of available housing will be conducted and inventory identified by the NDOT Right-of-Way Division at the time of final appraisal and acquisition of right-of-way. Per the Uniform Act, this inventory will assist the displaced residents in finding similar</td>
</tr>
<tr>
<td>Responsible Party</td>
<td>Section</td>
<td>Mitigation Category</td>
<td>Description</td>
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</tbody>
</table>
| NDOT and Contractors | 3.6 | Environmental Justice | **Traffic Noise.** The existing traffic noise walls on the north/east side of I-515 will be reconstructed to adequately mitigate traffic noise impacts along I-515. The homes on the north side of Charleston Boulevard between Del Amo Drive and I-515 will receive a new traffic noise wall.  
**Land Use/Property Acquisition.** NDOT will provide compensation and relocation assistance for those residents affected by acquisition and displacement, in compliance with the Uniform Act. Property owners will receive compensation of not less than the approved appraisal value, and equivalent, safe, and sanitary replacement housing will be made available before anyone is displaced. Expenses for moving and other relocation costs will also be available. Renters will also be compensated and equivalent housing provided.  
**Socioeconomic/Public Use Lands.** To maintain connectivity within the community, NDOT will reconstruct and resurface the shared-use path between Stewart Avenue and Charleston Boulevard on the east side of I-515. Reconstruction will take place in the area of direct impact (just south of Stewart Avenue).  
**Visual Quality.** Traffic noise walls will include aesthetic treatments sensitive to the surrounding population to minimize potential visual impacts, consistent with the existing aesthetic treatment on traffic noise walls. The traffic noise walls will be |
<table>
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<tr>
<th>Responsible Party</th>
<th>Section</th>
<th>Mitigation Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDOT</td>
<td>3.7</td>
<td>Visual Resources</td>
<td>The Preferred Alternative will include new traffic noise walls using the same patterning and color as current traffic noise walls for corridor consistency. The traffic noise walls will be painted and have patterns on both sides. In addition, decorative rock will be placed along all bare ground and slopes from the back of structures to the NDOT right-of-way along I-515. Decorative rock will also be placed along the bare ground between the on- and off-ramps and I-515. This will result in higher aesthetic value while also providing slope protection. Additional decorative elements could be placed at the I-515/Charleston Boulevard interchange. The type of ornamentation in the walls and at the I-515/Charleston Boulevard interchange will be selected in consultation with residents as part of a stakeholder group presentation. In addition, in areas where trees will be removed during construction, NDOT will plant more trees than were removed. Trees will be replaced using a ratio of 2:1 or greater. In addition, new lighting for the Preferred Alternative will be focused away from the residential areas to minimize nighttime visibility of the lights.</td>
</tr>
</tbody>
</table>

Painted and have patterns on both sides. In addition, decorative rock is proposed to be placed along all bare ground and slopes from the back of structures to the NDOT right-of-way along I-515. Decorative rock will also be placed along the bare ground between the on- and off-ramps and I-515. This will result in higher aesthetic value while also providing slope protection.

Additional decorative elements could be placed at the I-515/Charleston Boulevard interchange (see Section 3.7.4). The type of ornamentation in the walls and at the I-515/Charleston Boulevard interchange will be selected in consultation with residents as part of a stakeholder group presentation. In addition, in areas where trees will be removed during construction, NDOT will plant more trees than were removed. Trees will be replaced using a ratio of 2:1 or greater. In addition, new lighting for the Preferred Alternative will be focused away from the residential areas to minimize nighttime visibility of the lights.
<table>
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<tr>
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<th>Section</th>
<th>Mitigation Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDOT and Contractors</td>
<td>3.8</td>
<td>Stormwater Management</td>
<td><strong>I-515: Mojave Road to Pecos Road.</strong> Modify the existing infiltration basin around the perforated corrugated metal pipe by raising the existing berm approximately 0.5 foot to accommodate the increased stormwater flows.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>I-515: Stewart Avenue to Charleston Boulevard (includes I-515/Charleston Boulevard interchange).</strong> Expand the existing detention ponds at the northeast quadrant of the I-515/Charleston Boulevard interchange by excavating approximately 2 feet in depth below the existing surface of the detention ponds. Interchange ramps will drain to drainage ponds and not add additional stormwater volume to the Charleston Boulevard stormwater system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As part of the development of best management practices for the project, NDOT’s construction contractor must file a Notice of Intent with NDEP’s Bureau of Water Pollution Control to comply with the General Permit for Stormwater Discharges Associated with Construction Activity (NVR100000). The contractor will develop a Stormwater Pollution Prevention Plan before construction to identify potential stormwater pollution sources and appropriate best management practices to prevent or reduce, to the maximum extent possible, pollutant discharges associated with construction.</td>
</tr>
</tbody>
</table>

Notes:

I-515 = Interstate 515

LED = light emitting diode

NDEP = Nevada Division of Environmental Protection

NDOT = Nevada Department of Transportation
### Impact Summary Table

<table>
<thead>
<tr>
<th>Resource</th>
<th>No-Build Alternative</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project length (miles)</td>
<td>2.0 (I-515) 0.4 (Charleston Blvd.)</td>
<td>2.0 (I-515) 0.4 (Charleston Blvd.)</td>
</tr>
<tr>
<td>Cost</td>
<td>$0</td>
<td>$44.75 million</td>
</tr>
<tr>
<td>New right-of-way required (acres)</td>
<td>0</td>
<td>1.19</td>
</tr>
<tr>
<td>Residential Displacements</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Commercial Displacements</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Public Building Displacements</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Air quality permit required?</td>
<td>No</td>
<td>No(^a)</td>
</tr>
<tr>
<td>Wetlands affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cultural Resource properties/sites affected</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100-year floodplain affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Endangered species affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Upland Habitat/Wildlife Impact?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Rangeland and farmland affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Recognized Environmental Conditions</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Energy Sources and Minerals affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Geology and Soils affected?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Traffic Noise Impacts</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Disproportionately High and Adverse Effects on Environmental Justice Populations?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Visual Impact?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Additional Impervious Surface?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Section 4(f) evaluation required?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Indirect effects?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cumulative effects?</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

\(^a\) Any air quality permitting required for construction activities will be addressed in contract documents and obtained by the contractor.
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# Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACS</td>
<td>American Community Survey</td>
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<tr>
<td>ADA</td>
<td>Americans with Disabilities Act</td>
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<tr>
<td>APE</td>
<td>Area of potential effects</td>
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<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
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<tr>
<td>CCRFD</td>
<td>Clark County Regional Flood Control District</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>CO</td>
<td>Carbon monoxide</td>
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<tr>
<td>DOT</td>
<td>U.S. Department of Transportation</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>FHWA</td>
<td>Federal Highway Administration</td>
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<td>HDX</td>
<td>Henderson and Downtown Express Route</td>
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<td>HHS</td>
<td>U.S. Department of Health and Human Services</td>
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<td>I-515</td>
<td>Interstate 515</td>
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<tr>
<td>LED</td>
<td>Light emitting diode</td>
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<tr>
<td>mph</td>
<td>Mile(s) per hour</td>
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<tr>
<td>mvm</td>
<td>Million vehicle miles</td>
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<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
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<tr>
<td>NDEP</td>
<td>Nevada Division of Environmental Protection</td>
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<td>NDOT</td>
<td>Nevada Department of Transportation</td>
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<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<td>NRHP</td>
<td>National Register of Historic Places</td>
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<tr>
<td>Project</td>
<td>I-515/Charleston Boulevard Interchange Project</td>
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<tr>
<td>RTC</td>
<td>Regional Transportation Commission of Southern Nevada</td>
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<tr>
<td>SHPO</td>
<td>Nevada State Historic Preservation Office</td>
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<tr>
<td>SNRHA</td>
<td>Southern Nevada Regional Housing Authority</td>
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<tr>
<td>TNM</td>
<td>Traffic Noise Model</td>
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<tr>
<td>Uniform Act</td>
<td>Relocation Assistance and Real Property Acquisition Policy Act of 1970</td>
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<tr>
<td>U.S.C</td>
<td>United States Code</td>
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<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Woodbury</td>
<td>Woodbury Corporation</td>
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Introduction

This Environmental Assessment (EA) has been prepared to comply with the National Environmental Policy Act of 1969 and the environmental regulations and policies of the Federal Highway Administration (FHWA) as the lead federal agency.

The EA evaluates the potential social, economic, and environmental impacts of the proposed action for decision makers, while providing an opportunity for local, state, and other agencies and the general public to provide input or comment through scoping, a public information meeting, and a public hearing. The magnitude of impacts is evaluated based on the context and intensity of proposed improvements, as defined in the Council on Environmental Quality regulations.

The EA was prepared in the spirit of American Association of State and Transportation Officials Handbook No. 15, Preparing High-Quality NEPA Documents for Transportation Projects (AASHTO, 2014), and FHWA’s Implementing Quality Environmental Documentation initiative (FHWA, 2017a).

This project is the continuation of previous efforts by the City of Las Vegas to study improvements to Charleston Boulevard at the Interstate 515 (I-515) interchange, combined with ongoing efforts by the Nevada Department of Transportation (NDOT) to identify and prioritize improvements along the I-515 corridor. The purpose of the proposed I-515/Charleston Boulevard Interchange project is to reduce crashes, reduce congestion, and reduce travel delays by improving the movement of traffic on both Charleston Boulevard and I-515. Improving pedestrian safety along Charleston Boulevard is also a desirable outcome of the project.
1. Why is the Project Needed?

The Nevada Department of Transportation (NDOT) and the Federal Highway Administration (FHWA) are studying alternatives to improve safety and reduce congestion and traffic delays at the I-515/Charleston Boulevard interchange. The National Environmental Policy Act (NEPA) directs transportation officials to consider balancing engineering and transportation needs with social, economic, and natural environmental factors in making project decisions. This EA documents the NEPA process for the project in accordance with applicable federal and state regulations.

This section describes why the project is needed and includes:

- Background information about the project and the project location
- The transportation problems (needs) the project would address
- The transportation reasons (purpose) the project is being proposed

1.1 Project Background

The I-515/Charleston Boulevard interchange is the key gateway to many residents and businesses located in the northeast section of the Las Vegas Valley. Reducing congestion and traffic delays while increasing safety is important to those who live, work, or visit the area.

The study area is located near the center of the Las Vegas metropolitan area within the City of Las Vegas and the unincorporated town of Sunrise Manor in Clark County, Nevada. Charleston Boulevard is the municipal boundary between the City of Las Vegas to the north and Sunrise Manor to the south. The project limits along Charleston Boulevard are Pecos Street on the west and Lamb Boulevard on the east. The project limits on I-515 extend from the I-515/Eastern Avenue interchange to Wyoming Avenue (Figure 1-1).

The study area for this I-515/Charleston Boulevard Interchange Project (project) is within the larger planning study area of the I-515 Alternatives Development Study (NDOT, 2019a) (Figure 1-2). This separate planning study is one of several along I-515 between I-15 in downtown Las Vegas and Charleston Boulevard to identify potential improvements to the I-515 corridor. Proposed improvements on I-515 and the I-515/Charleston Boulevard interchange ramps evaluated in this EA were identified as potential improvements in the I-515 Alternatives Development Study.

In 2015, the City of Las Vegas completed the City of Las Vegas I-515 and Charleston Boulevard Interchange Alternatives Feasibility Study (City of Las Vegas, 2015a). This study focused only on Charleston Boulevard from Honolulu Street/Sandhill Road to Lamb Boulevard. This study provided recommendations to improve traffic operations and safety along Charleston Boulevard.
1. WHY IS THIS PROJECT NEEDED?

Figure 1-1. I-515/Charleston Boulevard Interchange Project - Project Location Map
1. WHY IS THIS PROJECT NEEDED?

Figure 1-2. I-515 Alternatives Development Study - Project Limits

Legend
- I-515/Charleston Boulevard Interchange
- Environmental Assessment Project Limits
- I-515 Alternatives Development Study Project Limits
- Park or Recreation Area

Data Source: Clark County GIS, Nevada DOT, ESW, NAIP

All information presented is preliminary and subject to revision

Eastern project limit is Charleston Blvd and Lamb Blvd intersection
1. Why is this Project Needed?

The need for transportation improvements on I-515, the I-515/Charleston Boulevard interchange, and Charleston Boulevard is based on a combination of the following factors:

- Improve safety
- Reduce travel delay (traffic operations)
- Improve transit, pedestrian, and bicycle connectivity
- Ensure conformity with state, regional, and local plans

The need for improvements sets the stage for developing and evaluating project alternatives. Technical memorandums developed for the project regarding crash analysis, traffic operations, and traffic forecasts provide detailed information on these subjects and are available in Appendix C.

1.2.1 Improve Safety

Roadway safety is measured by the frequency and severity of crashes over a 5-year period and the annual rate of crashes compared to other similar roadways statewide. An important objective of any transportation improvement is to minimize overall crash potential, and Nevada has a Zero Fatality goal focused on eliminating all fatalities and serious injuries on public roadways. Reducing the overall crash potential of a roadway also reduces congestion, leading to improved travel times. Increasing safety on both I-515 and Charleston Boulevard would improve traffic flow, reducing the travel time for all trips. It would also lower overall transportation costs for commuters by reducing auto repair costs, injury-recovery costs, and costs related to time spent in traffic.

To understand the crash history in the study area, NDOT conducted a study of crashes on I-515 and Charleston Boulevard, the Crash Analysis Technical Memorandum (NDOT, 2017c) (Appendix C.1). The crash analysis for this EA used NDOT Traffic and Safety Division crash data for the 5-year period of May 2011 to May 2016:

- I-515 and its Charleston Boulevard entrance and exit ramps: 593 crashes
  - 272 crashes on I-515 mainline between north/south on-off ramps
  - 321 crashes on ramps
- Charleston Boulevard: 920 crashes
  - 338 crashes at I-515 intersections
  - 582 crashes occurred east and west of the interchange, including local road intersections

NDOT's mission is to continually improve the safety of Nevada's Highways and Freeways for the users of these systems. Traffic Safety Engineering goals are to implement safety features and enhancements that will produce a decrease in the frequency, rate, and severity of, and potential for, crashes involving motor vehicles, pedestrians, bicycles and wildlife on state maintained roadways in Nevada.
The safety analysis, described below, examines: (1) crash type, (2) crash severity, and (3) crash rate.

1.2.1.1 Crash Type
Of the five types of crashes that occurred in the study area from 2011 to 2016 (Figures 1-3 and 1-4), the three most common are listed below.

1. **Rear-end crashes** were most numerous, comprising over 50 percent of all crashes on I-515 and its entrance/exit ramps and nearly 60 percent of all crashes on Charleston Boulevard. Rear-end crashes are often indicators of congestion. The high percentage of rear-end crashes on I-515 is indicative of stop-and-go traffic, where vehicles may come to an abrupt stop. The high number of rear-end crashes may also be due to higher-speed, free-flow traffic in the I-515 through lanes adjacent to slow and stopped traffic near the Charleston Boulevard interchange.

2. **Non-collision crashes** comprised 30 percent of all crashes on I-515 and its entrance/exit ramps and 2 percent of all crashes on Charleston Boulevard. Non-collision crashes involve only one vehicle going off the road, where the vehicle may strike a fixed object. These crashes may be caused by loss of control because of wet pavement, avoiding stopped traffic, or leaving the travel lane without enough time to recover.

3. **Angle crashes** comprised nearly 10 percent of all crashes on I-515 and its entrance/exit ramps and 30 percent of all crashes on Charleston Boulevard. On I-515, angle crashes often occur where on-ramp traffic merges onto I-515. Along Charleston Boulevard, angle crashes often occur at intersections where one vehicle crosses an opposing lane of traffic while turning.

In addition to vehicle crashes, there were 13 crashes involving vehicles and bicyclists or pedestrians on Charleston Boulevard. Of those 13 crashes:

- Six crashes involved bicyclists
- Seven crashes involved pedestrians

For detailed crash type information, please refer to the *Crash Analysis Technical Memorandum* (NDOT, 2017c) (Appendix C.1).

1.2.1.2 Crash Severity
Crash severity is categorized as fatal, injury, and property damage only (FHWA, 2016).\(^1\)

*Figures 1-5 and 1-6* show crashes by severity on I-515, including its entrance/exit ramps, and Charleston Boulevard. There were no fatal crashes in the study area between May 2011 and May 2016.

---

\(^1\) **Fatal Crash:** Results in death within thirty 30 days of the crash. **Injury Crash:** *Incapacitating:* Any injury that prevents the injured party from walking, driving, or normally continuing the activities that he/she was capable of performing prior to the accident. **Non-incapacitating:** Any injury that is evident to any person other than the injured at the scene of the accident. Includes lumps on head, abrasion, and minor lacerations. **Possible/claimed:** Any injury reported or claimed that is not a fatal, incapacitating, or non-incapacitating evident injury. Possible injuries are those that are claimed or reported, or indicated by behavior, but not by wounds. **Property Damage Only:** No injury to any person, but only damage to a motor vehicle, or other vehicle, or to other property.
1. WHY IS THIS PROJECT NEEDED?

Nearly 60 percent of the total crashes in the study area caused property damage only and involved no injuries. During congested conditions, such as morning and evening rush hours, crashes are more likely to be property-damage-only because traffic moves more slowly in the congested areas.

The 208 injury crashes on I-515 and ramps resulted in 289 injuries and the 425 injury crashes on Charleston Boulevard resulted in 687 injuries. During the 5-year period from May 2011 through May 2016, there was one injury crash every 3 days on average in the study area. For detailed

![Figure 1-3. I-515 and Ramps: Number of Crashes by Type](source: NDOT, 2017c)

![Figure 1-4. Charleston Boulevard: Number of Crashes by Type](source: NDOT, 2017c)

![Figure 1-5. I-515 and Ramps: Number of Crashes by Severity](Note: There were 289 people injured as a result of these crashes.)

![Figure 1-6. Charleston Boulevard: Number of Crashes by Severity](Note: There were 687 people injured as a result of the crashes.)
1. WHY IS THIS PROJECT NEEDED?

1.2.1.3 Crash Rates

Crash rate is calculated based on the length of the highway segment, the number of crashes, and the average daily traffic along the segment. Crash rates are expressed as crashes per million vehicle miles (mvm) traveled and include all reported crashes that caused a fatality, injury, or property damage. The study area crash rate is compared to the statewide average crash rate (Figures 1-7 and 1-8).

NDOT uses the information from the statewide crash database to develop statewide average crash rates for roadways. The Nevada statewide average for roads similar to I-515 and Charleston Boulevard, respectively, were used for comparison purposes.

**Figure 1-7. I-515: Project vs. Statewide Average Crash Rate (mvm)**

Note: For fatal crashes, the crash rate on I-515 within the project limits is 0.00 and the statewide crash rate on principal arterial interstate roadways is 0.000 (2010 Statewide Functional Classification crash rates).

Source: NDOT, 2016c
The higher crash rates on I-515 and Charleston Boulevard in the study area as compared to the crash rates for similar roads in Nevada imply that I-515 and Charleston Boulevard are less safe than similar roads in the state.

The study-area crash rates are also compared to the statewide critical crash rate (Figures 1-9 and 1-10). The critical crash rate is based on a statistical analysis that accounts for the random variability of crashes over time and is typically higher than the average crash rate. Crash rates that exceed the critical crash rate are more likely to indicate a safety problem than a randomly higher-than-average rate.

The analysis indicates that injury, property damage only, and total crash rates on both I-515 and Charleston Boulevard exceed the expected critical crash rates. This implies an issue with these roadways that is causing a greater number of crashes than expected. The higher crash experience along I-515 and Charleston Boulevard in the study area than on similar roadways in Nevada makes safety a key need factor for this project.

Detailed crash rate information is provided in the Critical Crash Rate Analysis Technical Memorandum (NDOT, 2016c) (Appendix C.2).
1. WHY IS THIS PROJECT NEEDED?

**Figure 1-9. I-515: Project vs. Critical Crash Rate (mvm)**

Note: The project fatal crash rate on I-515 within the project limits is 0.000 and the critical crash rate is 0.002 for fatal crashes.

Source: NDOT, 2016c

**Figure 1-10. Charleston Boulevard: Project vs. Critical Crash Rate (mvm)**

Note: The project fatal crash rate on Charleston Boulevard within the project limits is 0.000 and the critical crash rate is 0.050 for fatal crashes.

Source: NDOT, 2016c
1.2.2 Reduce Travel Delay (Traffic Operations)

Reducing congestion and traffic delays and improving reliability on I-515 and Charleston Boulevard would reduce transportation costs for all trips while improving traffic flow. To assess traffic operation problems in the study area, NDOT evaluated traffic operations on I-515 and its ramps and signalized intersections on Charleston Boulevard for the current year (2016) and design year (2040)\textsuperscript{2} without the project. Traffic operation analyses were performed for the morning and afternoon rush hours for 2016 and 2040. Detailed traffic analysis and forecasting information is provided in the Traffic Analysis Report Technical Memorandum (NDOT, 2017h) (Appendix C.3).

1.2.2.1 Traffic Volumes

Historic traffic volume data were obtained from NDOT count stations on I-515, the I-515/Charleston Boulevard interchange, and Charleston Boulevard within the project limits. These data are summarized in the I-515/Charleston Boulevard Interchange Historic Annual Average Daily Traffic Technical Report (FHWA and NDOT, 2017) (Appendix C.4). Between 2000 and 2015, traffic volumes:

- Increased approximately 13 percent (0.8 percent annually) on I-515 between Eastern Avenue and Charleston Boulevard

\textit{The traffic analysis completed for this study used 2016 traffic data to determine current and future traffic operations on I-515, the I-515/Charleston Boulevard interchange, and along Charleston Boulevard. After the traffic analysis for the project was completed, 2017 traffic data was made available as part of the Southern Nevada Traffic Study. In February 2019, to determine the validity of the 2016 traffic data, NDOT qualitatively compared it to the 2017 traffic data. This sensitivity analysis found that while the actual traffic volumes changed slightly, the annual growth rate percent remained almost the same, meaning there was not a major shift in the traffic volumes in the study area and the traffic analysis completed using the 2016 traffic data remains valid. For example, on I-515 between Charleston Boulevard and Eastern Avenue interchange, the annual growth rate from 2016 to 2040 traffic data was 1.2% while the annual growth rate from 2017 to 2040 traffic data was 1.1%. Likewise, traffic patterns in the study area remained the same between the two data set years (2016 and 2017).}

\textsuperscript{2} Roadways typically are designed to accommodate projected traffic volumes 20 years in the future. For this study, 2040 is the “design year” or “horizon year,” approximately 20 years after the anticipated start of construction.
1. WHY IS THIS PROJECT NEEDED?

- Increased approximately 6 to 8.5 percent (0.4 to 0.5 percent annually) on I-515/Eastern Avenue interchange ramps (individual ramp increases vary)
- Increased approximately 11.5 to 22 percent (0.7 to 1.3 percent annually) on I-515/Charleston Boulevard interchange ramps (individual ramp increases vary)
- Increased approximately 3 percent (0.2 percent annually) on Charleston Boulevard east of I-515 ramps
- Decreased 8 percent (0.5 percent annually) on Charleston Boulevard west of the I-515 ramps

The 2040 traffic forecasts if this project was not built were determined using historical NDOT traffic count data (1995 to 2014) to calculate a growth rate. An NDOT-approved growth rate of 0.7 percent per year beginning with 2016 traffic volumes was used to forecast traffic through 2040. The growth rate is consistent with the growth rate used in the I-515 Alternatives Development Study (NDOT, 2019a).

1.2.2.2 Congestion

Level of service is the measure of a roadway’s ability to handle traffic demand and is defined from “A” to “F” in order of decreasing operation quality by the Transportation Research Board’s Highway Capacity Manual 2010 (TRB, 2010).

Freeway level of service (on I-515) is based on the number of vehicles per hour per lane, with level of service A exhibiting free-flow traffic and level of service F exhibiting gridlock conditions. Figure 1-11 illustrates examples of what freeway conditions look like under level of service ratings A to F. Intersection level of service (along Charleston Boulevard) is defined in terms of average total vehicle delay of all movements through an intersection.

In addition to the traffic operations modeling, NDOT also observed conditions in the field and reviewed other traffic analyses conducted in the study area to enhance the understanding of traffic operation deficiencies in the study corridor.

Traffic operations on I-515 were analyzed for 2016 and 2040 between Eastern Avenue and Charleston Boulevard. For freeways, NDOT’s desired level of service range is D or better along with vehicle speeds averaging greater than 50 miles per hour (mph), per NDOT traffic

As stated in the I-515/Charleston EA Improvements Alternatives Report, HCS/Synchro traffic analyses were initially used to develop existing and future (year 2040) level of service estimates for comparing alternatives (NDOT, 2017g). Future (2040) level of service estimates were one of several factors used to evaluate and compare the relative performance of each alternative. After the high-level HCS/Synchro analyses were used to compare the alternatives, separate VISSIM analyses were performed to better evaluate the tight diamond interchange and diverging diamond interchange alternatives at the I-515/Charleston Boulevard interchange under existing and future traffic volumes in a microsimulation environment. How level of service is reported from VISSIM analysis is discussed in the accepted I-515/Charleston Boulevard EA Traffic Modeling/Operational Analysis and VISSIM Methodology Memorandum (NDOT 2016b) (Appendix C.7). The results of the VISSIM analyses are provided in the Traffic Analysis Report Technical Memorandum (NDOT, 2017h) (Appendix C.3).
1. WHY IS THIS PROJECT NEEDED?

modeling guidelines (NDOT, 2012). For freeway ramps, NDOT’s goal is to provide for ramp operations that do not generate queues that back up on the freeway or into intersections.

Delay and level of service are the measures used to characterize traffic operations at Charleston Boulevard’s signalized intersections. The Charleston Boulevard intersections analyzed for this study are (Figure 1-12):

- Charleston Boulevard and Sandhill Road/Honolulu Street
- Charleston Boulevard and I-515 southbound ramps
- Charleston Boulevard and I-515 northbound ramps
- Charleston Boulevard and Sacramento Drive
- Charleston Boulevard and Lamb Boulevard

For arterial intersections, such as along Charleston Boulevard, an overall intersection level of service D or better is desired, with no individual movement or approach having a level of service lower than E.
1. WHY IS THIS PROJECT NEEDED?

Figure 1-11. Freeway Levels of Service Examples
1. WHY IS THIS PROJECT NEEDED?

Existing (2016) Traffic Operations

I-515 mainline and ramps: Based on existing (2016) data, no segments of I-515 have speeds below 50 mph. Existing level of service on I-515 and ramps are generally at an acceptable level of service C or D during both morning and afternoon heaviest traffic period (rush hours)\(^3\) (Figure 1-12), with some segments operating at level of service E (severe congestion).

Northbound/westbound I-515 operates at level of service E in the morning rush hours due to high volumes from the northbound on-ramp from Charleston Boulevard merging with I-515 mainline traffic (Figure 1-13). There is a ramp meter located on the northbound on-ramp from Charleston Boulevard, but even with this meter, congestion along I-515 makes it difficult for heavy volume of northbound on-ramp traffic to merge with I-515 traffic. Traffic entering from Charleston Boulevard causes traffic to slow on I-515 as merging vehicles look for gaps (Figure 1-14).

For the afternoon rush hours, traffic on southbound/eastbound I-515 operates at level of service E leading up to the Charleston Boulevard off-ramp because traffic backs up on the off-ramp due to the intersection with Charleston Boulevard. Field observations have recorded vehicles backing up to mainline I-515 during the rush hours, creating operational and safety issues. Figure 1-15 illustrates traffic backing up on the I-515 southbound off-ramp at Charleston Boulevard. As the line of vehicles on the southbound off-ramp continues to lengthen, vehicles on I-515 must reduce speeds to account for this, thereby obstructing through-traffic on I-515.

Additionally, based on traffic model data and confirmed with field observations, the number of vehicles on the I-515 northbound off-ramp at Charleston Boulevard is greater than the space available during the rush hours, often resulting in vehicles backing up to I-515, creating operational and safety issues (Figure 1-16). As the line of vehicles on the northbound off-ramp continues to lengthen, vehicles on I-515 must reduce speeds to account for this, thereby obstructing through-traffic on I-515.

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\(^3\) The morning rush hours used in the traffic operations analysis was 6:00 to 9:00 a.m. The afternoon rush hours used in the traffic operations analysis was 3:00 to 6:00 p.m. The rush hours were selected based on NDOT traffic volumes.
1. WHY IS THIS PROJECT NEEDED?

Figure 1-12. 2015/2016 Traffic Operations – Morning and Afternoon Rush Hours
1. WHY IS THIS PROJECT NEEDED?

Figure 1-13. Northbound On-Ramp to I-515 from Charleston Boulevard Operating at Capacity to Store Traffic During Peak Hour

Figure 1-14. Existing Traffic Operation Issues Causing Congestion on I-515 and the Charleston Boulevard Ramps During Rush Hours
1. WHY IS THIS PROJECT NEEDED?

Figure 1-15. Traffic on Southbound I-515 Off-Ramp to Charleston Boulevard backing up to I-515

Figure 1-16. Traffic Congestion on Northbound I-515 Off-Ramp to Charleston Boulevard
1. WHY IS THIS PROJECT NEEDED?

**Charleston Boulevard:** Based upon traffic model data and field observations, there are traffic operation issues causing delay and congestion along Charleston Boulevard. Existing (2016) data shows that during rush hours the Charleston Boulevard/Lamb Boulevard intersection operates at an unacceptable level of service F, while some individual movements (left-turn, right-turn, through-traffic) at three of the four other intersections analyzed along Charleston Boulevard also operate at an unacceptable level of service F (Figure 1-12).

The vehicles backing up from the ramp meter at the northbound I-515 on-ramp extend to the Charleston Boulevard intersection. The northbound on-ramp consists of three lanes up to a ramp meter that merge into one lane prior to merging onto I-515. The lack of adequate space for vehicles waiting at the ramp meter, combined with the high number of right turns from Charleston Boulevard to the on-ramp, effectively reduces the capacity on Charleston Boulevard because the curbside lane acts as storage for the right-turning vehicles. Additionally, high left-turn volumes from westbound Charleston Boulevard to the southbound I-515 on-ramp cause gridlock at the northbound ramp’s intersection because the number of left-turning vehicles extends beyond the turn lane and onto Charleston Boulevard (Figure 1-17). Figure 1-18 shows the existing condition as westbound traffic backs up in the curbside (right) lane due to the high number of vehicles turning onto the northbound I-515 on-ramp. Figure 1-18 also shows the backup resulting from the high volume of westbound Charleston Boulevard to southbound I-515 on-ramp turns extending past the available left turn pocket, blocking the left-most lane. As a result, the center lane is underutilized or serves vehicles trying to jump into the line of waiting traffic, resulting in additional delays.

East of the Charleston Boulevard/I-515 on- and off-ramp intersections, the Sacramento Drive and Lamb Boulevard intersections with Charleston Boulevard experience delay and congestion due to what is happening at the Charleston Boulevard/I-515 on- and off-ramp intersections. Traffic volumes between the signals at Lamb Boulevard, Sacramento Drive, and the I-515 ramps create long lines that result in groupings of vehicles that can’t be accommodated fully by interchange signal timing and ramp meters. Eastbound vehicles back up from the Sacramento Drive and Lamb Boulevard intersections, making lane changes difficult. The resulting low speed weaving maneuvers between I-515 and Lamb Boulevard contributes to a decreased level of service, resulting in a level of service F at the Lamb Boulevard intersection.

In 2016 rush hours, many of the westbound movements at the Sacramento Drive intersection operate as level of service F. These movements operate at level of service F due to congestion at adjacent intersections not allowing traffic to flow freely through the Sacramento Drive intersection.
1. WHY IS THIS PROJECT NEEDED?

Figure 1-17. Reasons for Traffic Backups on Westbound Charleston Boulevard
1. WHY IS THIS PROJECT NEEDED?

In 2016, the Lamb Boulevard intersection operates at level of service F during both the morning and afternoon peak hours. Most turning and through movements operate at level of service E or F as well. Most of the lines for turning lanes extend beyond the available storage length which affects the operation of the through-traffic. Additionally, congestion at adjacent intersections to the west result in delays for traffic traveling west from the Lamb Boulevard intersection.

Future (2040) Traffic Operations

With no improvements, traffic operations on I-515 and Charleston Boulevard would continue to worsen (Figure 1-19), creating increased congestion and delay throughout the project corridor.

I-515 and on-/off-ramps: The reason the level of service degrades between the existing condition and 2040 can be attributed to increased traffic volumes on I-515 and ramps that exceed capacity. Traffic exiting I-515 to Charleston Boulevard would back up on the exit ramps on to I-515, causing delay on I-515. Additionally, the increased number of vehicles entering I-515 from Charleston Boulevard combining with the increased traffic on I-515 in 2040 would result in additional congestion on I-515 if the project is not constructed. It should also be noted that some of the segments would have speeds below NDOT’s standard of 50 mph in 2040.

Based on 2040 traffic model data, it is anticipated that the line of traffic for the I-515 southbound off-ramp would be greater than the available storage length during the rush hours, creating operational and safety issues on the ramp and I-515.

The same issues that plague the northbound ramps today would be worse by 2040 due to additional traffic. The queue of traffic for the I-515 northbound off-ramp would continue to be greater than the existing storage length during the rush hours, backing up to I-515. As the line of vehicles on the northbound off-ramp lengthens, vehicles on I-515 must reduce speeds to account for this, obstructing through-traffic on I-515.

Charleston Boulevard: The 2040 traffic analysis indicates that with no improvement made to Charleston Boulevard, two of the five intersections along Charleston Boulevard would operate...
Figure 1-19. 2040 Traffic Operations without the Project – Morning and Afternoon Rush Hours
at an unacceptable level of service F during the rush hours (Figure 1-19). These intersections are:

- I-515 southbound ramps (afternoon rush hour)
- I-515 northbound ramps (afternoon rush hour)

The increased traffic forecasted for 2040 causes the intersections which currently operate at an acceptable level of service to fail in 2040 due to increased traffic volumes.

Additionally, the lines of traffic from the ramp meter at the northbound I-515 on-ramp would continue to extend to the Charleston Boulevard intersection. The lack of adequate ramp storage capacity coupled with the high number of right turns from Charleston Boulevard to the on-ramp would continue to reduce the capacity on Charleston Boulevard because the curbside lane acts as storage for the right-turning vehicles. Continued high left-turn volumes from westbound Charleston Boulevard to the southbound on-ramp would cause gridlock at the northbound ramps intersection because the number of left-turning vehicles extends beyond the turn lane and onto Charleston Boulevard.

1.2.3 Improve Transit, Pedestrian, and Bicycle Connectivity

Charleston Boulevard is a busy transportation corridor serving automobiles, buses, bicyclists, and pedestrians.

As noted in Section 1.2.1.1, there were 13 crashes involving bicyclists or pedestrians that injured 14 people between 2011 and 2016 (7 pedestrian crashes and 6 bicycle crashes).

Figure 1-20 illustrates existing pedestrian and transit facilities on Charleston Boulevard:

- 5-foot-wide curb-side sidewalks on both sides of Charleston Boulevard, crosswalks, and medians at several intersections
- Regional Transportation Commission of Southern Nevada (RTC) Route 206 with six bus stops (three in each direction) on Charleston Boulevard in the project area (frequent service route)
- RTC Route 203 along Lamb Boulevard with stops on Lamb Boulevard immediately north and south of Charleston Boulevard (regular service route)
- RTC Henderson and Downtown Express Route (HDX) along I-515

Along Charleston Boulevard there are non-Americans with Disabilities Act (ADA) compliant curb ramps, push buttons, and utility and street light poles obstructing the minimum sidewalk width. Existing sidewalks along Charleston Boulevard generally have a maximum width of 5 feet.

Figure 1-21 illustrates the locations of nearby bicycle routes/connecting trails, bicycle/pedestrian lanes, and shared-use paths.5

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4 The Charleston Boulevard/Lamb Boulevard intersection improves to level of service D in 2040 from level of service F in 2016. This is because the City of Las Vegas is planning on reconstructing this intersection in the near future and this will improve traffic operations at the intersection.

5 A bicycle route/connecting trail is a roadway corridor with wider outside lanes and/or signage to facilitate access by bicyclists and raise awareness of the presence of bicyclists, or a county-designated connecting route between established trails. A bicycle/pedestrian lane is a portion of a roadway that has been marked and designated for use of bicyclists and/or pedestrians, and a shared-use path is a trail facility that is physically separated from vehicular traffic by an open space or barrier. These noted facilities are part of the county and regional systems.
1. WHY IS THIS PROJECT NEEDED?

Figure 1-20. Existing Pedestrian Facilities and Bus Stops on Charleston Boulevard

Legend
- 5-foot wide curb-side sidewalk
- Painted crosswalk
- Bus Stop
1. WHY IS THIS PROJECT NEEDED?

Figure 1-21. Existing Bicycle and Shared-use Facilities
1.2.4 Conform with State, Regional, and Local Plans

This project is the continuation of previous efforts undertaken by the City of Las Vegas and NDOT to study improvements to the I-515/Charleston Boulevard interchange and along I-515. The proposed project is included in the following state and local planning documents:

- **2019-2022 State Transportation Improvement Program as ID CL20130030.**
  (available at https://www.nevadadot.com/Home/ShowDocument?id=16062)

- **RTC’s Transportation Improvement Program 2015-2019 as project number 5079.**
  (available at https://www.rtcsnv.com/planning-engineering/transportation-planning/2015-2019-transportation-improvement-program/)

- **RTC’s Access 2040 Regional Transportation Plan for Southern Nevada 2017-2040** discusses the need to renovate I-515 east of downtown Las Vegas.

- **Clark County Transportation Element 2016** of the comprehensive plan mentions the planned upgrade of the I-515/Charleston Boulevard interchange
  (available at http://www.clarkcountynv.gov/comprehensive-planning/advanced-planning/Documents/10%20Trans%20Element%20Adopted%20Version%20of%20Oct%202016%20with%20cover%20date.pdf)

- **Transportation & Streets and Highways Element** of the City of Las Vegas’ comprehensive plan discusses the planned reconstruction of the I-515/Charleston Boulevard interchange.
1.3 What is the Purpose of this Project?

Potential alternatives are developed to best address the needs of the project and then they are evaluated against how they best satisfy the purpose of the project. The primary purpose of this project is to:

- Reduce crashes to be comparable to statewide averages for similar roadways
- Reduce congestion to achieve a level of service consistent with NDOT’s target conditions as identified in Section 1.2.2.2
- Reduce travel delays by improving the movement of traffic on and off I-515 and along Charleston Boulevard

While not a primary purpose of the project, improving pedestrian safety along Charleston Boulevard is a desirable outcome of the project. By itself, improving pedestrian safety will not be used to eliminate potential alternatives, but it may be used with other factors to screen alternatives and identify the Preferred Alternative.

1.4 Logical Termini and Independent Utility

FHWA regulations outline three general principles at 23 Code of Federal Regulations (CFR) 771.111(f) that are to be used to frame a highway project:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope
2. Have independent utility or independent significance (i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made)
3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements

The termini noted in Section 1.1 are of sufficient length to address environmental matters, provide a section of study that has independent utility, and would neither require nor preclude other future transportation improvements identified in the RTC’s regional transportation plan.

The termini of Pecos Street on the west and Lamb Boulevard on the east along Charleston Boulevard are logical termini for this project because traffic operations and safety issues along this portion of Charleston Boulevard are tied to the I-515/Charleston Boulevard interchange. The termini on I-515 of the I-515/Eastern Avenue interchange and Wyoming Avenue are logical because traffic operations on this portion of I-515 influence traffic movements at the I-515/Charleston Boulevard interchange.

The existing traffic operations issues (discussed in Section 1.2.1.2) along Charleston Boulevard in the study area affect traffic operations on I-515. Traffic issues along Charleston Boulevard are often the result of traffic attempting to enter I-515 at the on-ramps from Charleston Boulevard. Likewise, traffic operation issues on I-515 between Charleston Boulevard and Eastern Avenue are often the result of traffic attempting to exit I-515 to access Charleston Boulevard.

As previously noted, there is a separate planning study taking place in this corridor, the larger reaching I-515 Alternatives Development Study (NDOT, 2019a). However, this I-515/Charleston...
Boulevard Interchange Project can be considered a usable and reasonable expenditure even if no additional transportation improvements in the area are made. This project and the environmental issues addressed in this EA can be treated on a sufficiently broad scope to ensure that the project would function properly without requiring additional improvements elsewhere, and the project would not restrict consideration of alternatives for other reasonably foreseeable transportation improvements, such as those recommended as part of the larger I-515 Alternatives Development Study.
2. Alternatives

This section describes the alternatives considered to reduce crashes, congestion, and travel delays on I-515 and Charleston Boulevard. This section includes a discussion of the improvement concepts NDOT evaluated and dismissed during the alternatives development and evaluation process and provides a detailed description of NDOT’s Preferred Alternative.

2.1 Alternatives Development and Evaluation Process

NDOT initiated the I-515/Charleston Boulevard Interchange Project to reduce crashes, congestion, and traffic delays at the I-515/Charleston Boulevard interchange. The alternatives considered for this project were originally conceived as part of other studies conducted by NDOT and the City of Las Vegas and refined by NDOT’s I-515/Charleston Boulevard Interchange Project team to address the transportation problems described in Section 1.

2.1.1 Alternative Concepts from Previous Studies

The I-515 and Charleston Boulevard components of this project have been the subject of past studies:

- NDOT studied the I-515 corridor between Eastern Avenue and Charleston Boulevard as part of the I-515 Preliminary Draft Environmental Impact Statement and Section 4(f) Evaluation (NDOT, 2009). That study recommended the following improvements to I-515:
  - Widen I-515 from 6 lanes to 10 lanes (5 lanes in each direction).
  - Construct a new I-515/Pecos Road interchange.
  - Provide continuous pedestrian and bicycle facilities adjacent to I-515.

The I-515 Preliminary Draft Environmental Impact Statement and Section 4(f) Evaluation was cancelled because the intent of the study no longer met regional transportation goals.

- The City of Las Vegas conducted the I-515 and Charleston Boulevard Interchange Alternatives Feasibility Study (City of Las Vegas, 2015a) to evaluate alternatives for improvements to traffic operations along Charleston Boulevard from the I-515/Charleston Boulevard ramps to Lamb Boulevard. The study also focused on improving safety and reducing congestion at the I-515/Charleston Boulevard interchange. The following alternatives were developed as part of the I-515 and Charleston Boulevard Interchange Alternatives Feasibility Study:
  - Lengthen the eastbound Charleston Boulevard left-turn lanes to Lamb Boulevard.
  - Reconstruct the I-515/Charleston Boulevard interchange as a diverging diamond interchange.
2. ALTERNATIVES

- Construct one additional left-turn lane for a total of three left-turn lanes from westbound Charleston Boulevard to the southbound I-515 on-ramp, and one additional left-turn lane for a total of three left-turn lanes on the southbound I-515 off-ramp to eastbound Charleston Boulevard.

This City of Las Vegas study recommended three left-turn lanes at the I-515/Charleston Boulevard interchange to and from the southbound ramps. The City of Las Vegas preferred the three left-turn lane alternative over the diverging diamond interchange alternative due to significant pedestrian volumes and the pedestrian/vehicle conflicts with the free-flow ramps that are part of a diverging diamond interchange. Pedestrian crossings of the free-flow ramps with the high traffic volumes anticipated at the Charleston Boulevard interchange would pose potential risk for increased pedestrian/vehicle incidents. An actuated traffic signal for pedestrians would be required at both free-flow ramp crossings, negating some of the traffic operation benefits of the diverging diamond interchange.

- The City of Las Vegas is planning a separate project to improve the Lamb Boulevard/Charleston Boulevard intersection. For more detailed information on the alternatives developed in this study, see the I-515/Charleston EA Improvements Alternatives Report (NDOT, 2017g) (Appendix B).

- In October 2015, NDOT initiated the I-515 Alternatives Development Study (NDOT, 2019a), to identify near-term operational and safety improvements on I-515 from the Spaghetti Bowl Interchange in downtown Las Vegas to Charleston Boulevard. The I-515 Alternatives Development Study evaluated many improvements through an engineering and public involvement process, and recommended auxiliary lane and ramp improvements to improve the traffic operations on I-515 that are directly related to the I-515/Charleston Boulevard interchange. These improvements are:
  - Construct a two-lane exit at the northbound I-515 off-ramp at Charleston Boulevard.
  - Construct a northbound auxiliary lane on I-515 between Charleston Boulevard and Eastern Avenue.
  - Construct a two-lane exit at the northbound I-515 off-ramp at Eastern Avenue.
2. ALTERNATIVES

2.1.2 Alternatives Refinement

NDOT developed the preliminary range of alternatives for this study by refining alternatives and recommendations from previous studies to address the traffic safety, congestion, and traffic delay problems on I-515 and Charleston Boulevard discussed in Section 1.

For this project, NDOT included alternatives identified in the *I-515 Alternatives Development Study* (NDOT, 2019a) by adding an auxiliary lane in each direction between Eastern Avenue and Charleston Boulevard. An auxiliary lane is a lane added between interchanges to give drivers more room to speed up and slow down when getting on or off a freeway. An auxiliary lane makes it easier for drivers to merge into freeway traffic, and it can also reduce ramp congestion. Four different alternatives to accommodate the proposed auxiliary lanes were evaluated:

- Widen I-515 12 feet to the outside on both sides (24 feet total).
- Widen I-515 24 feet to one side only (either the east side or the west side).
- Reduce shoulder widths to two feet and restripe I-515 with auxiliary lanes without widening.

To improve the safety and traffic flow at the I-515/Charleston Boulevard interchange, NDOT refined alternatives from the *City of Las Vegas I-515 and Charleston Boulevard Interchange Alternatives Feasibility Study* (City of Las Vegas, 2015a). The I-515/Charleston Boulevard interchange alternatives evaluated for this project include:

- Tight Diamond Interchange
- Diverging Diamond Interchange

2.1.3 Alternatives Evaluation

NDOT evaluated each alternative described in Section 2.1.2 in terms of its ability to meet the need for the project as described in Section 1. The alternatives were also evaluated on construction cost, input from agencies and the public, and their ability to minimize overall social and environmental impacts. The alternatives development and evaluation process is discussed in more detail in the *I-515/Charleston EA Improvements Alternatives Report* (NDOT, 2017g) (Appendix B).
Table 2-1 summarizes the reasons for eliminating an alternative or carrying it forward for further consideration. Each alternative in Table 2-1 is illustrated in the *I-515/Charleston EA Improvements Alternatives Report* (NDOT, 2017g) (Appendix B).

**Table 2-1. Summary of Alternatives Evaluation**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Selection Status</th>
<th>Summary of Alternatives Evaluationa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I-515 Alternatives</strong></td>
<td></td>
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</tbody>
</table>
| Auxiliary Lanes with I-515 Widened Equally to the Outside on Both Sides | Not carried forward | • Permanent right-of-way needed: 1.93 acres  
• Removal and reconstruction of traffic noise wall on both sides of I-515; traffic noise walls moved closer to residential properties  
• Reconstruction of drainage system on south side of roadway  
• Requires NDOT to acquire 19 residential lots (15 occupied, 4 vacant) within Pecos Park Coach Club, a manufactured home community located to the south/west of I-515 south of the Stewart Road underpass  
• Need for complicated retaining wall adjacent to Pecos Park Coach Club property  
• Impacts to NV Energy transmission line west of freeway  
• Highest total impacts and cost among the I-515 alternatives |
| Auxiliary Lanes with I-515 Widened to the North/East Only | Preferred Alternative | • Permanent right-of-way needed: 0.17 acre  
• The location of the existing traffic noise wall on the south/west side of I-515 does not change. The traffic noise walls would be moved only on the north/east side  
• Does not require construction of new drainage system on south/west side of I-515  
• Avoids impact to the Pecos Park Coach Club, but does impact one unimproved lot at Bonanza Village manufactured home community  
• No utility impacts  
• Least impactful and lowest total cost of I-515 alternatives that involve widening the roadway |
| Auxiliary Lanes with I-515 Widened to the South/West Only | Not carried forward | • Permanent right-of-way needed: 2.11 acres  
• The location of the existing traffic noise wall on the north/east side of I-515 does not change. The traffic noise walls would be moved only on the south/west side  
• Requires 22 residential lots (18 occupied, 4 vacant) within Pecos Park Coach Club  
• Impacts to NV Energy transmission line west of freeway  
• Higher total cost than Preferred Alternative |
### Table 2-1. Summary of Alternatives Evaluation

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Selection Status</th>
<th>Summary of Alternatives Evaluation&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
</table>
| Auxiliary Lanes added by Restriping Existing Roadway with Reduced Lane and Shoulder Widths | Not carried forward    | • Doesn’t meet purpose and need criteria for improving safety and traffic operations; increase in projected crashes and increased delays due to accidents  
• No right-of-way impacts  
• No utility impacts  
• Lowest overall cost of I-515 alternatives                                                                 |
| I-515/Charleston Boulevard Interchange Alternatives                        |                        |                                                                                                                 |
| Tight-Diamond Interchange                                                  | Preferred Alternative  | • Provides acceptable improvement of delay and congestion  
• Permanent right-of-way needed: 1.03 acres  
• Results in four residential displacements and impacts to parking at one office building  
• Maintains existing pedestrian movements in expected and familiar locations  
• Lowest overall cost of I-515/Charleston Boulevard interchange alternatives |
| Diverging Diamond Interchange                                              | Not carried forward     | • Provides acceptable improvement of delay and congestion  
• Permanent right-of-way needed: 1.00 acre  
• Results in four residential displacements and impacts to parking at one office building  
• Requires pedestrians and bicyclists to make new and unfamiliar crossing movements, some across free-flowing traffic  
• Not supported by City of Las Vegas due to unfamiliar pedestrian movements  
• Poorly received by the public at public scoping meeting  
• Highest overall cost of I-515/Charleston Boulevard interchange alternatives |

<sup>a</sup>The estimated cost of each alternative evaluated includes the total project cost, inflation, and right-of-way required based on a potential 2020 construction date.  
Source: NDOT, 2017<sup>g</sup> (Appendix B)

All the I-515 auxiliary lane alternatives would improve traffic flow and safety on I-515 by providing substantially more weaving and merging distance than exists today. The traffic operations for all the auxiliary lane alternatives would be the same. The differentiator among the auxiliary lane alternatives is the amount and impacts of the right-of-way acquisition required for each alternative. For I-515 between Charleston Boulevard and Eastern Avenue, **NDOT selected the Auxiliary Lanes with I-515 Widened to the North/East Alternative to be part of the Preferred Alternative.**
2. ALTERNATIVES

Both the I-515/Charleston Boulevard interchange alternatives would include:

- Widening Charleston Boulevard between Sacramento Drive and the I-515 interchange ramp intersections
- Similar traffic operations, with the diverging diamond interchange operating slightly better
- Similar total cost
- Similar amount of right-of-way acquisition and displacements
- 10-foot-wide sidewalks

The differentiator between the two alternatives is that the diverging diamond interchange concept would introduce new and unfamiliar traffic and pedestrian movements through the interchange, while the tight-diamond interchange would maintain familiar and expected existing traffic and pedestrian movements. The diverging diamond interchange alternative would result in free-flow turning movements in the westbound to southbound and westbound to northbound directions. Pedestrian crossings of these free-flow ramps with high traffic volumes would pose potential risk of increased vehicle/pedestrian accidents.

Due to the unfamiliar pedestrian movements associated with the diverging diamond interchange, the City of Las Vegas did not support this alternative as part of its feasibility study. Local residents and the Southern Nevada Regional Housing Authority expressed concern regarding pedestrian safety associated with the diverging diamond interchange. In addition, public disapproval of the diverging diamond interchange alternative was expressed at the October 2016 public scoping meeting, based on driver experience with the diverging diamond interchange located on I-515 and Horizon Drive in Henderson. For these reasons, NDOT selected the Tight-Diamond Interchange Alternative to be part of the Preferred Alternative.

2.2 No-Build Alternative

In addition to the alternatives evaluated in Section 2.1.3, NDOT considered not building the project (No-Build Alternative). This alternative does not include any traffic flow or safety improvements, and only routine maintenance would occur along I-515, I-515/Charleston Boulevard interchange, and Charleston Boulevard.

Under the No-Build Alternative, other nearby projects planned by NDOT and the City of Las Vegas would be constructed. This includes the City of Las Vegas’ planned improvements at the Charleston Boulevard/Lamb Boulevard intersection and the components of NDOT’s I-515 Alternative Development Study.

Because the No-Build Alternative would not meet the need and purpose of the project as discussed in Section 1, it is not considered a reasonable solution. However, it is retained for evaluation as a basis of comparison to the Preferred Alternative.
2.3 Description of the Preferred Alternative

The Preferred Alternative is the combination of the Auxiliary Lanes with I-515 Widened to the North/East Alternative and the Tight-Diamond Interchange Alternative. Figure 2-1 provides an overview of the Preferred Alternative. The estimated total cost of the Preferred Alternative is $44.75 million. The Preferred Alternative is described in the following sections.

2.3.1 I-515 Improvements

The Preferred Alternative would widen I-515 only to the north/east and add an auxiliary lane in both northbound and southbound directions along I-515 between Charleston Boulevard and Eastern Avenue. As shown on Figure 2-2, the Preferred Alternative includes the following improvements to I-515:

- Three 12-foot-wide through travel lanes in each direction
- One 12-foot-wide auxiliary lane in each direction between Charleston Boulevard and Eastern Avenue (approximately 1.2 miles in each direction)
- Full 12-foot-wide outside shoulders in each direction
- Full 10-foot-wide inside shoulders in each direction
- 2-foot-wide concrete center median barrier

The Preferred Alternative would also include two-lane exits at the northbound I-515 off-ramp at Charleston Boulevard, southbound I-515 off-ramp at Charleston Boulevard, and westbound I-515 off-ramp at Eastern Avenue. The auxiliary lane would be an exit-only lane, while the lane next to it would provide the driver the option of exiting or remaining on I-515. Today there is only one exit lane from I-515 at these interchanges.

The Preferred Alternative would widen I-515 24 feet to the north/east between Eastern Avenue and Charleston Boulevard, shifting the center median barrier 12 feet to the north/east. Space is available within the existing northbound I-515 right-of-way to accommodate the widening and the replacement of the existing traffic noise wall to the north/east. NDOT would utilize retaining walls to avoid additional right-of-way impacts. The retaining walls would minimize the project’s impacts to the shared-use path, which runs adjacent to I-515 on the east side between Stewart Avenue and Charleston Boulevard. NDOT would maintain this shared-use path and resurface the trail between Stewart Avenue and Charleston Boulevard.

By expanding I-515 to the north/east, the existing traffic noise wall, edge of pavement, and roadside barrier rail on the south/west side of I-515 would not need to be moved. The Preferred Alternative would acquire no new right-of-way on the south/west side of I-515 and avoid extensive impacts to the Pecos Park Coach Club (mobile home community).
Figure 2-1. Preferred Alternative Overview
2. ALTERNATIVES

Figure 2-2. Preferred Alternative: I-515 Cross-Section

The widening of I-515 would occur within NDOT right-of-way, except for the bridges over Stewart Avenue and Pecos Road (Figure 2-3). These bridge widenings would require about 0.16 acre of new right-of-way from the City of Las Vegas. The reconstructed Stewart Avenue bridge would result in less than 0.01 acre of new right-of-way from private property. No residences or businesses would be displaced.

Figure 2-3. Preferred Alternative: I-515 Property Impacts at Stewart Avenue and Pecos Road
2.3.2 I-515/Charleston Boulevard Interchange Improvements

The Preferred Alternative for the I-515/Charleston Boulevard interchange is a tight diamond interchange and includes the following improvements (Figure 2-4):

- Widen Charleston Boulevard east of I-515 to Sacramento Drive, to provide:
  - Two dedicated right-turn lanes along westbound Charleston Boulevard to the I-515 northbound on-ramp. One of the lanes would begin at Sacramento Drive. The second lane would begin approximately 100 feet east of Del Amo Drive
  - Two westbound through lanes for traffic on Charleston Boulevard through the I-515 interchange
  - Three left-turn lanes from westbound Charleston Boulevard to the southbound I-515 on-ramp with the dedicated left-turn lane beginning at Sacramento Drive
  - Three eastbound through lanes for traffic on Charleston Boulevard through the I-515 interchange
- Two exit lanes from southbound I-515 to the Charleston Boulevard off-ramp
- Two exit lanes from northbound I-515 to the Charleston Boulevard off-ramp
- Three right-turn lanes from the I-515 northbound off-ramp to eastbound Charleston Boulevard
- Three left-turn lanes from the I-515 southbound off-ramp to eastbound Charleston Boulevard
- Three ramp metered lanes on the I-515 northbound on-ramp

2.4 How Does the Preferred Alternative Address the Need and Purpose of the Project?

As a basis for selecting the Preferred Alternative, NDOT evaluated how well it addressed the need factors described in Section 1.2 and met the project purpose described in Section 1.3. The key need factors NDOT considered in the evaluation are improving safety and reducing travel delay (traffic operations). On Charleston Boulevard, NDOT also considered improvements to pedestrian safety as well.

2.4.1 I-515 Preferred Alternative

The addition of auxiliary lanes on I-515, in conjunction with ramp meters, would allow motorists more time to find gaps in traffic while entering and exiting I-515. The elimination of bottlenecks between the interchange ramps, as well as on the ramps themselves, would improve traffic operations (Figure 2-5). A ramp meter for the three proposed lanes on I-515 northbound on-ramp, in conjunction with the new northbound auxiliary lane on I-515, would allow vehicles stopped at the ramp meter\(^7\) to come up to the speed of the freeway traffic before merging. This is preferable to vehicles trying to merge on the freeway as part of a slow moving line of traffic.

\(^7\) The three proposed ramp meters would be at the same location as the existing two ramp meters.
2. ALTERNATIVES

Figure 2-4. Preferred Alternative: I-515/Charleston Boulevard Interchange Detailed Improvements
Evidence that the addition of auxiliary lanes generally meets the project purpose to reduce congestion and achieve NDOT’s desired level of service D in the present and the future is found in the I-515/Charleston EA Improvements Alternatives Report (NDOT, 2017g) (Appendix B) and Figure 2-6. Analysis shows that most of I-515 would operate at an unacceptable level of service in 2040 without the auxiliary lanes (Figure 1-19). The Preferred Alternative, with auxiliary lanes, generally achieves level of service D or better in 2040.

Adding auxiliary lanes on I-515 would not only improve traffic operations, but also improve safety. Auxiliary lanes allow drivers entering I-515 more time to match the speed of through traffic and find gaps in the vehicle stream. They also eliminate potential conflicts between slower-moving traffic exiting I-515 and faster-moving through traffic. Research funded by FHWA has found that adding an auxiliary lane between an entrance and an exit ramp corresponds to about 24 percent fewer multiple-vehicle crashes (Ray et al., 2011). Because national research has determined that auxiliary lanes improve safety, the Preferred Alternative meets the project purpose of reducing crashes to be comparable to statewide averages for similar roadways.

The fact that the Preferred Alternative has fewer impacts and costs less than the other alternatives also was considered by NDOT and FHWA in identifying the Preferred Alternative. Additionally, the I-515 Alternatives Development Study (NDOT, 2019a) identified an I-515 interchange at Pecos Road as a potential future project. Expanding I-515 to the north/east as part of the current project would not preclude a future I-515/Pecos Road interchange.
Figure 2-6. 2040 Traffic Operations with Preferred Alternative – Morning and Afternoon Rush Hours
2.4.2 Charleston Boulevard Preferred Alternative

Most traffic on Charleston Boulevard using the I-515/Charleston Boulevard interchange is traveling to or from locations east of the interchange. Widening Charleston Boulevard east of the interchange and adding additional turn lanes to eastbound Charleston Boulevard from I-515 northbound and southbound exit ramps would alleviate the traffic operation problems and delays on Charleston Boulevard and the ramps intersecting it as described in Section 1.2.2.2. The Preferred Alternative would improve the existing gridlock along Charleston Boulevard and result in levels of service C and D for the five signalized intersections along Charleston Boulevard within the study area (Figure 2-6). As noted in Section 1.2.2.2, level of service E or better is NDOT’s desired level of service for arterial intersections, such as along Charleston Boulevard. This reduction in congestion meets the project purpose to reduce congestion to achieve NDOT’s desired level of service.

The addition of turn lanes on Charleston Boulevard would improve safety by removing stopped or slow-moving turning traffic from through lanes thus avoiding conflicts with faster-moving through traffic. By improving safety on Charleston Boulevard, the Preferred Alternative meets the project purpose of reducing crashes to be comparable to statewide averages for similar roadways.

Many pedestrians use the Charleston Boulevard corridor to access local businesses as well as transit stops and the shared-use path adjacent to I-515. Included among these pedestrian users is a significant homeless and transient population near the I-515/Charleston Boulevard interchange. The Preferred Alternative would maintain existing pedestrian movements and access to the existing shared-use path adjacent to I-515 and would improve existing conditions by constructing 10-foot-wide sidewalks and Americans with Disabilities Act-compliant features for crosswalk safety. These proposed improvements would meet a secondary project purpose to improve pedestrian safety along Charleston Boulevard.
3. Existing Conditions, Environmental Impacts, and Mitigation

This section provides background information on regional planning and the existing social, economic, and environmental conditions in the I-515/Charleston Boulevard Interchange Project area. The information establishes the context for the proposed improvements and their potential impacts. This section also identifies the beneficial and adverse social, economic, and environmental impacts the project may have, and conceptual measures to minimize and mitigate adverse effects that cannot be avoided. Direct impacts, and where applicable, indirect impacts are discussed in the impacts subsection for each resource in this section. Section 3.10 discusses cumulative effects. When applicable, this section also describes the impact construction activities may have on resources. The No-Build Alternative and Preferred Alternative are addressed within each topic.

3.1 Project Geographic Setting

The project is located near the center of the Las Vegas metropolitan area within the City of Las Vegas and the unincorporated town of Sunrise Manor in Clark County, Nevada. Charleston Boulevard is the municipal boundary between the City of Las Vegas to the north and the unincorporated Clark County town of Sunrise Manor to the south. The I-515/Charleston Boulevard interchange is the key gateway to many residents and businesses located in the northeast section of the Las Vegas Valley.

The Preferred Alternative includes Auxiliary Lanes with I-515 Widened to the North/East and the Tight-Diamond Charleston Boulevard Interchange. Figure 2-1 provides an overview of the Preferred Alternative.

Section 3 analyzes the direct impacts, indirect impacts, and cumulative impacts that the Preferred Alternative would have on social, economic, and natural resources.

- Direct impacts are caused by the project and occur at the same time and place as the project.
- Indirect impacts affect the natural or built environment beyond the freeway’s construction limits and generally occur after construction is completed. An example is a school being displaced by the project, which results in some students being bussed to the school’s new location.
- Cumulative effects are the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions occurring over a period of time.

Source: Code of Federal Regulations Title 40 Section 1508.7 and 1508.8

For many of the resources discussed in this section, technical memorandums were completed that provide detailed analysis of the resource and impacts the project may have on that resource. The technical memorandums are in Appendix C, which is on the flash drive at the back of the document for paper copies.
3.2 Areas of No Impact

NDOT considered all relevant environmental and social issues during scoping and environmental analysis. NDOT’s data collection determined the resources below are not in the study area or would not be affected by the Preferred Alternative. Therefore, the following resources are not discussed in detail in this section:

- Air Quality
- Wetlands
- Cultural Resources
- Floodplains
- Threatened and Endangered Species
- Upland Habitat/Wildlife
- Farmland/Rangeland
- Hazardous Material
- Energy Sources and Materials
- Geology and Soils

It was determined that the project would have no impact on air quality. However, since the potential impact of this resource is not limited to the project right-of-way, NDOT conducted a more detailed evaluation of this resource. This evaluation is summarized in this section.

3.2.1 Air Quality

In February 2018, the United States Court of Appeals for the District of Columbia Circuit made a decision in *South Coast Air Quality Management District v. EPA*. This decision put into question air quality conformity determinations in areas deemed nonattainment or maintenance areas for using the 1997 ozone standard when the 2008 ozone standard came into effect. This decision placed all projects in affected orphan areas10 (including the Las Vegas Valley) on hold. In November 2018, a guidance document was issued from the U.S. Environmental Protection Agency (EPA) regarding transportation air quality conformity requirements for FHWA/Federal Transit Administration planning and project development actions in orphan areas. In accordance with this guidance, the RTC and Clark County Department of Air Quality demonstrated conformity of the metropolitan transportation plan, inclusive of this project, and Transportation Improvement Program in their air quality model on January 10, 2019. This project will continue to meet all transportation air quality conformity requirements and impacts directly associated with project operation would not have a significant adverse effect on air quality.

To evaluate whether the project would increase carbon monoxide (CO) concentrations that would violate the National Ambient Air Quality Standards (NAAQS) due to traffic delay at congested intersections, NDOT performed a CO hot spot analysis (NDOT, 2017d) (Appendix C.8) for the Preferred Alternative at the I-515/Charleston Boulevard interchange following EPA’s *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA, 1992). Following EPA’s guideline, NDOT selected the three intersections with the highest volume and highest delay for quantitative analysis. The hot spot modeling results showed that CO concentrations at the worst-case intersections would not cause exceedances of the 1-hour or 8-hour CO air quality standards. All other intersections within the study area would have lower CO concentrations. Therefore, the Preferred Alternative would not cause new violations of the NAAQS for CO in the study area.

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10 “Orphan areas” in this sense are considered locations that comply with the stricter 2008 ozone standard but are still designated in nonattainment for the 1997 ozone standard.
More information on air quality can be found in *I-515/Charleston Boulevard Air Quality Analysis Technical Memorandum* (NDOT, 2019e) (Appendix C.9).

**Construction Mitigation**

NDOT will require equipment and vehicles used during construction to comply with EPA emissions standards for on-road vehicles and off-road construction equipment. Construction contractors will be required by NDOT to comply with applicable dust-control requirements of the Clark County Department of Air Quality and Nevada Division of Environmental Protection (NDEP), as necessary, and NDOT will implement best management practices to minimize emissions from construction. NDOT’s contractor will submit a dust mitigation plan to the Clark County Department of Air Quality to obtain a dust control permit. Impacts associated with fugitive dust generated by construction will be mitigated by standard dust and emission control measures such as watering disturbed soil as required, reducing nonessential earth-moving activity when it is windy, and limiting vehicle and equipment idling to the extent practicable. Additional measures to reduce construction fugitive dust emissions will be incorporated into the plans and specifications for construction in accordance with NDOT’s *Standard Specifications for Road and Bridge Construction* (NDOT, 2014).

**3.2.2 Wetlands/Waters of the U.S.**

A drainage channel located underground crosses I-515 just west of Mojave Road. The Preferred Alternative would not impact the drainage channel; therefore, no coordination with U.S. Army Corps of Engineers is required and detailed evaluation is not required for this document. Information can be found in *I-515/Charleston Boulevard Environmental Assessment in Las Vegas, Clark County, Nevada, Waters of the U.S. Technical Memorandum* (NDOT, 2016f) (Appendix C.10).

**3.2.3 Cultural Resources**

In consultation with the Nevada State Historic Preservation Office (SHPO), NDOT and FHWA established the area of potential effects (APE) for the project’s direct and indirect effects on cultural resources. NDOT’s consultant conducted a literature search and historical surveys within the APE to identify previously documented archaeological sites or areas of historic importance. As the result of a field survey, NDOT did not identify any properties that would be considered eligible for the National Register of Historic Places (NRHP); therefore, the project would result in No Historic Properties Affected. In a letter dated March 27, 2017, SHPO concurred with NDOT’s recommendation (NSHPO, 2017) (Appendix A). The results of the historic architectural resource investigation are reported in the document, *A Class II Architectural Survey for the I-515 to Charleston Boulevard Project* (NDOT, 2017b) (Appendix C.11).

The literature search did identify one archaeological site. The archaeological site, which is within 0.5 mile of the study area, was previously determined ineligible for the NRHP. No archaeological sites were found during the field survey. The SHPO concurred with NDOT’s findings in a letter dated March 27, 2017 (NSHPO, 2017) (Appendix A). The results of the archaeological investigation are reported in *A Class III Cultural Resource Inventory of Approximately 261.82 Acres for the I-515; Charleston Boulevard Environmental Assessment* (NDOT, 2017a) (Appendix C.12).
3.2.4 Floodplains
Because no part of the project is located within a floodplain, there are no anticipated impacts to floodplains and the resource was not considered for detailed evaluation in this EA. Additional floodplain information is available in Preliminary Drainage Study for I-515/Charleston Boulevard EA (NDOT, 2017f) (Appendix C.16).

3.2.5 Biological Resources
Coordination with the U.S. Fish and Wildlife Service (USFWS) and the Nevada National Heritage Program determined there is no presence of threatened and endangered species in the study area. NDOT identified no endangered, threatened, candidate, or sensitive species and no critical or suitable habitat for these species during research and site-specific investigations. This EA does not consider this resource for detailed evaluation because the Preferred Alternative would not affect threatened and endangered species.

The project study area and the lands adjacent to the study area are highly disturbed and have been completely modified by urban development. The area consists primarily of existing roadways, residential and commercial facilities, and associated landscaping (Figure 3-1). The study area and the lands adjacent do not contain natural or native areas. Thus, the presence of and habitat for wildlife is minimal. The wildlife resource was not considered for detailed evaluation because the Preferred Alternative would not impact wildlife or upland habitat.

Figure 3-1. Example of area behind I-515 traffic noise wall with little natural or native areas. Looking south on west side of I-515 towards Otto Merida Desert Villas.

NDOT biologists confirmed that the potential for migratory birds to nest in the trees and structures within the study area is possible. NDOT requires a pre-construction presence/absence survey for breeding migratory birds and raptors will be performed no earlier than 7 days prior to the initiation of construction (ground disturbance). If active nests are identified, NDOT will protect them in place with a buffer and limit construction until the young leave the nest.
3.2.6 Farmland/Rangeland
The farmland and rangeland resources were not considered for detailed evaluation because no farmland or rangeland occur within or near the study area.

3.2.7 Recognized Environmental Conditions
A recognized environmental condition\(^\text{11}\) was not identified in the existing right-of-way or the proposed property acquisitions. When potential right-of-way acquisitions are formalized, the specific property required can be assessed further as needed according to the current American Society for Testing and Materials (ASTM) Standard E 1527. Hazardous and regulated material surveys can be conducted and necessary materials removed before disturbing identified materials and building demolition. Construction activities would adhere to local, state, and federal ordinances, laws, and regulations.

3.2.8 Energy Sources and Minerals
The energy sources and minerals resource was not considered for detailed evaluation because no energy sources or minerals are present within or near the study area.

3.2.9 Geology and Soils
The geology and soils resources were not considered for detailed evaluation because the Preferred Alternative would not affect geology and soils.

3.3 Traffic Noise
3.3.1 Existing Conditions
Current traffic noise sources within the project area primarily consist of traffic on I-515 and local roadways. The southern part of the project area also falls under the flight path for McCarran International Airport. Traffic noise walls currently line both sides of I-515 between Wyoming Avenue and Eastern Avenue, with only one gap on the northbound side of the freeway adjacent to the Desert Pines Golf Course located between Pecos and Mojave roads. The on- and off-ramps at both Charleston Boulevard and Wyoming Avenue also have traffic noise walls. Along Charleston Boulevard, there are no traffic noise walls. A concrete block privacy wall runs adjacent to the sidewalk next to houses located along westbound Charleston Boulevard from just east of Del Amo Drive to the I-515 northbound on-ramp. Figure 3-2 shows the location of existing traffic noise walls. Additional information can be found in the I-515 Traffic Noise Analysis: Eastern Ave. Interchange to Wyoming Ave. (FHWA and NDOT, 2019) (Appendix C.14)

3.3.2 Impacts
The criteria for evaluating traffic noise impacts in this analysis are contained in 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, in the FHWA Highway Traffic Noise Analysis and Abatement Policy Guidance (FHWA, 2011), and in the NDOT

\(^\text{11}\) The American Society for Testing and Materials defines a recognized environmental condition as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment” (ASTM 2013).
Figure 3-2. Location of Existing and Proposed Traffic Noise Walls in the Project Corridor
Traffic and Construction Noise Abatement Policy (NDOT, 2018a). NDOT conducted the traffic noise analysis to evaluate the change in conditions that could result from constructing the Preferred Alternative. In addition, the No-Build Alternative was analyzed and compared to existing and future (2040) traffic noise levels. Traffic noise levels were evaluated using FHWA’s Traffic Noise Model (TNM) Version 2.5, which is the latest analytical method developed for highway traffic noise prediction.

Traffic noise levels calculated by TNM were validated using onsite traffic noise level measurement data and peak time traffic counts.

The traffic noise analysis shows that much of the existing southbound traffic noise walls and the northbound section between Wyoming Avenue and Charleston Boulevard would continue to meet minimum noise abatement criteria. The widening of I-515 to the north would remove the existing northbound traffic noise wall. The homes on the north side of Charleston Boulevard between Del Amo Drive and I-515 are impacted by traffic noise from the project. Traffic noise levels at the golf course would not exceed FHWA’s traffic noise impact criteria for this resource.

Construction noise would be temporary, intermittent, and the intensity would vary for different areas of the project and the construction activity.

3.3.3 Mitigation

The widening of I-515 to the north will remove the existing northbound traffic noise wall. A new traffic noise wall will replace it from the northbound Charleston Boulevard on-ramp to just past North Pecos Road and again from just west of North Mojave Road to the northbound Eastern Avenue off-ramp. A new small overlapping traffic noise wall will be needed at the southbound Eastern Avenue on-ramp. The gap on the northbound side of the freeway adjacent to the Desert Pines Golf Course located between North Pecos and North Mojave roads will remain. Figure 3-2 shows the locations of the proposed reconstructed traffic noise walls.

The homes on the north side of Charleston Boulevard between Del Amo Drive and I-515 will receive a new traffic noise wall.

Mitigation measures for stationary and mobile equipment will be addressed in the construction contractor’s contract with NDOT as needed and address institutional and engineering controls to reduce or minimize exposure to excessive noise.

3.4 Land Use and Land Use Planning

3.4.1 Existing Conditions

3.4.1.1 Land Use Planning

Two local governments regulate land use within the project area: City of Las Vegas regulates land use to the north of Charleston Boulevard and Clark County regulates land use to the south of Charleston Boulevard through zoning ordinances.

Future Land Use/Planned Land Use Maps are a community’s visual guide to future planning. The map brings together the elements of a comprehensive plan and shows how a community wants to develop in the future.
City of Las Vegas

The City of Las Vegas has documented its land use policies within the study area in the following documents:

- Las Vegas 2020 Master Plan (City of Las Vegas, 2000)\(^{12}\)
- Las Vegas 2020 Master Plan, Land Use and Rural Neighborhoods Preservation Element (City of Las Vegas, 2018b)
- City of Las Vegas Redevelopment Plan for Redevelopment Area 1 and Redevelopment Expansion Areas A-C (Las Vegas Redevelopment Plan) (City of Las Vegas, 2015b)
- City of Las Vegas Future Land Use Map (City of Las Vegas, 2018a)

The most recent revision to the City of Las Vegas Future Land Use Map occurred on August 27, 2018 (Figure 3-3).

The study area is located within what the Las Vegas 2020 Master Plan, Land Use and Rural Neighborhoods Preservation Element calls the “Southeast Sector.” The plan notes that “The Southeast Sector is the most mature and built-out sector within the city. As the city begins to reach its limits on available land, mixed-use projects as well as infill and redevelopment will be emphasized in future developments. The city will encourage new infill development while remaining sensitive to the character of existing stable neighborhoods” (City of Las Vegas, 2018b).

The study area is also part of the Neighborhood Revitalization Area, as outlined in the Las Vegas 2020 Master Plan. Neighborhood Revitalization embodies a strategy of halting and reversing the decline of older areas of the city, which have been affected by a range of social issues or affected by a shift in the land use base. A key component of neighborhood revitalization is the redevelopment of declining commercial centers or vacant land into mixed-use urban hubs, creating a walkable and interesting urban environment.

The Las Vegas Redevelopment Plan shows a redevelopment area along Eastern Avenue at the west end of the project corridor, as well as a targeted redevelopment area adjacent to I-515 between 30th Street and Mojave Road that is currently vacant property. The Redevelopment Plan does not present a specific plan for redevelopment, rehabilitation, or revitalization of these areas but presents a series of ideas and recommendations for revitalization that are designed to reduce and eliminate decline and deterioration, stimulate new investment, stabilize the tax base, and maintain the viability of existing businesses.

\(^{12}\) In spring 2019, the City of Las Vegas is beginning the process for a 2050 Master Plan with anticipation of completion of the new master plan in winter 2020.
Figure 3-3. City of Las Vegas Future Land Use within the Vicinity of the Project
Clark County

Clark County has documented its land use policies in the *Clark County Comprehensive Plan* (Clark County Nevada, 2014) and the *Sunrise Manor Land Use Plan* (Clark County Nevada, 2018). The *Sunrise Manor Land Use Plan* notes there are opportunities for community revitalization and the land use policy documents for Clark County and Sunrise Manor encourage infill development. The Plan does not specifically mention the I-515/Charleston Boulevard interchange or Charleston Boulevard in the study area. Clark County’s *Sunrise Manor Planned Land Use Map* from 2012 is illustrated on **Figure 3-4**.

3.4.1.2 Existing Land Use

Existing land use in the project area generally consists of high-density urban development, including commercial, residential, institutional, parks, transportation, and utilities. The project area is mature and built out.

I-515

Within the City of Las Vegas adjacent to I-515 between Eastern Avenue and Mojave Road, the land uses are medium-density residential and high-density residential with a variety of different apartment complexes. A vacant area that formerly contained public housing is located north of I-515 between Alvin Street and 28th Street. To the south of I-515 there are a variety of community facilities between Eastern Avenue and Mojave Road.

Between Mojave Road and Pecos Road, the Desert Pines Golf Course is located north of I-515, and public facilities (City of Las Vegas Detention Center and Miley Achievement Center) are located on the south side of I-515. On both sides of I-515 near Pecos Road and Stewart Avenue, there are mobile home parks. On the south side of Stewart Avenue, east of I-515, the Southern Nevada Regional Housing Authority (SNRHA) owns and manages the Rulon Earl Mobile Home Park.

Between Pecos Road and Charleston Boulevard are medium- to low-density residential neighborhoods with a shared-use path adjacent to I-515 on the east side. In the northwest quadrant of the I-515/Charleston Boulevard interchange, the Otto Merida Desert Villas, which is owned and operated by SNRHA, consists of single-family and duplex rental units. The community also includes a clubhouse and park adjacent to I-515.

Within the unincorporated Clark County town of Sunrise Manor, land use adjacent to I-515 between Charleston Boulevard and Wyoming Avenue is almost exclusively residential, with a combination of single-family residential, apartments, and a mobile home park.

**Charleston Boulevard**

West of I-515, land uses on the north side of Charleston Boulevard consists of businesses, vacant lots, and residential development including an apartment complex (Sunrise Vista Apartments). On the south side of Charleston Boulevard, west of I-515, land use consists of commercial and single-family land uses. **Figure 3-5** characterizes the residential nature of the project area.
Figure 3-4. Clark County Planned Land Use Map: Sunrise Manor Planning Area in the Vicinity of the Project
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

East of I-515, land uses on the north side of Charleston Boulevard consist of low-density residential, a medical office building, a NV Energy substation, and commercial uses (Figure 3-6). On the south side of Charleston Boulevard, east of I-515, the land use is entirely commercial activities consisting of strip malls, other retail, restaurants, gas stations, banks, a dentist office, and parking lots.

3.4.2 Land Use Impacts

3.4.2.1 No-Build Alternative

The No-Build Alternative would have no land use impacts.

3.4.2.1 Preferred Alternative

The Preferred Alternative would require 1.19 acres of right-of-way acquisition from 8 parcels and would result in four residential displacements. Land use on the remaining parcels of land adjacent to I-515 and Charleston Boulevard would likely not change because of the project.

I-515

The widening of I-515 in the study area would generally occur within existing NDOT right-of-way, except for the bridges over Stewart Avenue and Pecos Road. These bridge widenings to the north/east would require a right-of-way acquisition of about 0.16 acre from the City of Las Vegas because the city controls the right-of-way of and over the local roadway network. The reconstructed Stewart Avenue bridge would result in less than 0.01 acre of new right-of-way required from private property at the Bonanza Village manufactured home community (Figure 3-7). This 0.01 acre is an open area behind a manufactured home.

![Figure 3-5. Residential area in the southwest quadrant of the I-515/Charleston Boulevard interchange](image-url)
Figure 3-6. Looking east at businesses along Charleston Boulevard towards Lamb Boulevard

Figure 3-7. Right-of-Way Acquisitions at Pecos Road and Stewart Avenue
Charleston Boulevard

The roadway improvements along Charleston Boulevard would result in four single-family residential displacements in the northeast quadrant of the I-515/Charleston Boulevard interchange and impacts to a medical office building parking lot (Figure 3-8). The four residential displacements along Del Amo Drive and La Cruz Court would result in 0.78 acre of residential land use converted to transportation right-of-way.

Figure 3-8. Right-of-Way Acquisitions along Charleston Boulevard

In addition, NDOT would acquire a 0.24-acre strip from the south edge of the medical office building parking lot on the north side of Charleston Boulevard between Del Amo Drive and Sacramento Drive. Approximately 26 of the 215 parking spaces (approximately 12 percent of the available parking spaces) would be removed (Figure 3-9). Based on discussion with the building’s owner this removal of parking spaces would not impact the long-term viability of the property, but the property owners were concerned about potential issues in attracting future tenants (Appendix D – Woodbury Corporation Meeting Summaries). There would be no physical impacts to the commercial properties on the south side of Charleston Boulevard east of I-515 or to the properties west of I-515.

As noted, along Charleston Boulevard, the project would convert existing residential and commercial land use to transportation right-of-way. However, the project is consistent with land use plans and would not likely result in unplanned growth or affect resources of concern. In general, land use plans covering the project recommend future growth consisting of infill...
development and neighborhood revitalization. The developed nature of the study area precludes notable growth. The project would not result in indirect effects on the surrounding land uses.

The project is responding to, not driving, development in and adjacent to the study area. As such, the project would not induce residential or commercial growth in the study area.

Figure 3-9. Parking impacts to medical office building

While the Preferred Alternative would result in changes to existing land use of these parcels, those modifications would not change the overall land use characteristics of the neighborhood. Generally, the acquisitions represent a small fraction of the total land in the neighborhood, and no major changes to area land use patterns are expected because of the proposed right-of-way acquisitions.

3.4.3 Mitigation Measures

Mitigation measures for residences and land acquired as a result of this project are discussed in Section 3.5.3.
3.5 Socioeconomic Characteristics

3.5.1 Existing Conditions

The demographic characteristics of the study area are derived from 2011-2015 ACS data. The ACS tracks local demographic conditions annually rather than on a decennial basis like the Census. Figures 3-10 and 3-11 show the limits of the demographic study area and associated census block groups for the project.

As part of the socioeconomic and environmental justice analysis for this study, NDOT used the U.S. Census Bureau's 2011-2015 American Community Survey (ACS) 5-year Estimates (2015 ACS data). During the study, the U.S. Census Bureau released updated demographic data (2013-2017 ACS 5-year Estimates [2017 ACS data]). In February 2019, to determine the validity of the 2015 ACS data, NDOT compared it to the recently released 2017 ACS data. This sensitivity analysis found that while the actual numbers slightly changed, the percentages remained almost the same, meaning there was not a major shift in the make-up of the study area population and the analysis using the 2015 ACS data remains valid. According to 2015 ACS data, minorities account for 78.9 percent of the study area population, which is similar to the 79.3 percent indicated by the 2017 ACS data. Likewise, race/ethnicity group percentages in the study area remained the same between the two data sets. Meanwhile, the percentage of the population living on an income below the poverty level in the study area decreased by about 12 percent, which is in line with the decreases in Clark County, the City of Las Vegas, and Sunrise Manor.
Figure 3-10. Minority Population Distribution in the Study Area
Figure 3-11. Distribution of Low-Income Population in the Study Area
3.5.1.1 Population Levels and Trends

The population of Clark County, the City of Las Vegas, and Sunrise Manor grew between 2010 and 2015 while the population of the study area decreased by 1.2 percent (Table 3-1). This decline can be attributed to two factors:

- The study area is a fully built-out urban area. There are minimal vacant properties available for development.
- A 250-unit public housing complex in the northeast quadrant of the I-515/Eastern Avenue interchange was demolished in 2010 and the parcel remains vacant.

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Sources: U.S. Census Bureau, 2010; ACS, 2015

According to the Nevada Department of Taxation, the 2035 population projection for Clark County is 2,437,854, a nearly 20 percent increase from the 2015 population level (Nevada Department of Taxation, 2016).

In 2015 minorities accounted for 79 percent of the population within the study area, similar to the minority population percentage in Sunrise Manor, but greater than the percentages in Clark County and the City of Las Vegas (Table 3-2). Figure 3-10 shows the location of minority populations in the study area. The percentage of minority population growth in the study area, Clark County, the City of Las Vegas, and Sunrise Manor between 2010 and 2015 was greater than the overall percentage of population growth for the same period.

In the study area, Clark County, City of Las Vegas, and Sunrise Manor, Hispanics or Latinos are the largest minority population (Figure 3-12). In Sunrise Manor, Hispanics or Latinos make up just over half of the total population. Hispanics or Latinos are also the largest population group in the study area with White being the second most populous group.

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Sources: U.S. Census Bureau, 2010; ACS, 2015
Figure 3-12. Population by Race/Ethnicity
Source: ACS, 2015
3.5.1.2 Income

Based on U.S. Census Bureau data from the 2011 – 2015 ACS, the median household income in the study area was lower than the median household income in Clark County, City of Las Vegas, and Sunrise Manor (ACS, 2015). The median household income in the study area was about $20,000 less than Clark County and City of Las Vegas and $10,000 less than Sunrise Manor (Figure 3-13). Figure 3-11 shows the concentration of low-income population in the project area.

The U.S. Department of Health and Human Services (HHS) annually publishes poverty guidelines to determine financial eligibility for certain programs. According to the HHS guidelines, in 2017 a household containing four persons was considered to be living in poverty if the total income of the family/household was less than $24,600 (HHS, 2019). As shown on Figure 3-14, the percentage of residents in the study area living in poverty is 33.0 percent, higher than the City of Las Vegas, Clark County, and Sunrise Manor percentages.

3.5.1.3 Non-English Speaking

The presence of non-English speaking or English-as-a-second language populations may present communication obstacles and limit a person’s ability to understand and offer input on changes to their environment. Based on stakeholder outreach, there is a substantial Spanish-speaking population in the study area. Additionally, 2011-2015 ACS data notes that within the study area, nearly 30 percent of the residents are considered of limited-English proficiency (ACS, 2015). This percentage is over double that of the limited-English proficiency population in both Clark County and the City of Las Vegas.

Public outreach efforts during the environmental study have been made available in English and Spanish to allow for maximum participation. See Section 4 for additional information.
3.5.1.4 Transportation

In the study area, 19.9 percent of the households have no vehicle. This is nearly double the percentages in Las Vegas, Sunrise Manor, and Clark County (Figure 3-15). Additionally, the study area contains a greater percentage of residents who use public transportation to commute to work (Figure 3-16).

As shown on Figure 3-17, within the study area:

- 7.7 percent (724) use public transportation to commute to work
- 86.9 percent (8,167) of workers drive or carpool to work
- 1.2 percent (113) biked to work
- 1.9 percent (177) walked to work

Within the study area, the percentage of workers using public transit and biking to work is greater than Clark County, City of Las Vegas, and Sunrise Manor. The percentage of workers walking to work is similar, while the percentage of those driving or carpooling to work is about 2 to 3 percentage points less.

Figure 3-15. Households with No Vehicle
Source: ACS, 2015

Figure 3-16. Use Public Transportation to Commute to Work
Source: ACS, 2015

Figure 3-17. Study Area Commute to Work
Source: ACS, 2015
3.5.1.5 Employment
Of the working-age civilians in the study area, 14.6 percent are unemployed (Figure 3-18). This percentage is greater than Clark County (10.8 percent) and City of Las Vegas (11.8 percent), but slightly less than Sunrise Manor (15.0 percent).

3.5.1.6 Community Facilities and Services
As noted in Section 3.4, there are schools, parks, community centers, churches, and the City of Las Vegas Detention Center in the study area. Along Charleston Boulevard, just east of the study area is the Charleston Swap Meet, an indoor facility consisting of local merchants which serves as a local gathering location.

As noted in Section 1.2.3, there is a RTC frequent service bus route along Charleston Boulevard, with three stops in each direction in the study area.

There are also two shared-use paths adjacent to I-515: one on the south side of I-515 from Eastern Avenue to Mojave Road and the other on the east side of I-515 from Stewart Avenue to Charleston Boulevard (Figure 1-21). A shared-use path is physically separated from vehicular traffic by an open space or barrier.

Within the Otto Merida Desert Villas is a community clubhouse and unnamed playground primarily for use by residents of the Otto Merida Desert Villas community. The playground contains green space, a picnic table, a bench, and playground equipment.

3.5.2 Socioeconomic Impacts
3.5.2.1 Neighborhood and Community Cohesion
The impacts of roadway expansion can affect the physical and social settings, community services, and other factors that promote a sense of community among residents in the study area. NDOT would not construct new roadways on new alignments as part of this project, limiting the project’s impact on neighborhood and community cohesion.

Community cohesion is the ability of people to communicate and interact with each other in ways that lead to a sense of community.

Community cohesion is reflected in the neighborhood’s ability to function and be recognized as a singular unit and includes buildings and services important to the community, such as churches, commercial development, social services, municipal buildings and services, parks, and schools. Displacements of residential and commercial properties can impact community cohesion.
No-Build Alternative

The No-Build Alternative would not acquire any residential or commercial properties. The existing roadway network would remain in place. However, there would be no project improvements or the associated benefits for the neighborhoods in the study area. The existing traffic noise walls would remain, but no new traffic noise walls would be constructed.

Preferred Alternative

The Preferred Alternative would not create new divisions of any neighborhoods. Residential displacements (four displacements as part of the Preferred Alternative) would occur along the edges of one established neighborhood that is adjacent to I-515 and Charleston Boulevard. Because the Preferred Alternative would not displace businesses, it would have no impacts on community cohesion from a commercial perspective. The Preferred Alternative would improve connectivity and safety through improved sidewalks and pedestrian mobility along Charleston Boulevard. This would improve community cohesion by making it safer to walk along Charleston Boulevard to local businesses and services, other residences/neighborhoods, and transit stops.

The study area is part of the larger Southeast Sector of Las Vegas. City planning documents describe the Southeast Sector as the most mature area of the city with future growth consisting of infill development and neighborhood revitalization. The developed nature of the study area precludes notable growth. As such, no indirect effects with regard to social and economics are anticipated as a result of the Preferred Alternative.

3.5.2.2 Community Facilities and Services

No-Build Alternative

The No-Build Alternative would not result in any changes to the existing community facilities or services.

Preferred Alternative

As part of the Preferred Alternative, NDOT would resurface and improve the shared-use path between Stewart Avenue and Charleston Boulevard on the east side of I-515. Approximately 200 linear feet of this shared-use path just south of Stewart Avenue would be reconstructed due to I-515 widening. The applicability of Section 4(f) to the shared-use path and other public use lands is discussed in Section 3.9.

Many pedestrians use the Charleston Boulevard corridor to access local businesses as well as RTC transit stops. The Preferred Alternative would maintain existing pedestrian movements and improve existing conditions by constructing 10-foot-wide sidewalks and ADA-compliant features for crosswalk safety. The Preferred Alternative may improve travel time reliability for public service providers and RTC routes along the corridor. RTC transit stops will not be impacted by the project.

3.5.2.3 Tax Base Impacts

No-Build Alternative

The No-Build Alternative would not result in any changes to the existing tax base.
Preferred Alternative

The Preferred Alternative would remove 1.03 acres of private property, including four single-family homes, from the local tax base. This impact to the tax base is minor in the context of the total property tax base of the City of Las Vegas and Clark County, and construction of the Preferred Alternative would improve access to and from this part of the metropolitan area, which could benefit commercial businesses and would be a benefit to the tax base.

3.5.3 Mitigation Measures

An estimated 1.19 acres of right-of-way acquisition is required, including four residential displacements. NDOT Right-of-Way Division, under the guidance of the Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act), will negotiate with the property owners directly affected, ensuring that fair market value is received for the required right-of-way. Property owners will receive compensation of not less than the approved appraisal value, and equivalent, safe, and sanitary replacement housing will be made available before anyone is displaced. Expenses for moving and other relocation costs will also be available. Renters will also be compensated and equivalent housing provided.

A survey of available housing will be conducted and inventory identified by the NDOT Right-of-Way Division at the time of final appraisal and acquisition of right-of-way. Per the Uniform Act, this inventory will assist the displaced residents in finding similar residences when it is time to vacate their current property.

The medical office building on the north side of Charleston Boulevard will lose some parking spots under the Preferred Alternative. The value of the lost parking spots will be determined through appraisal and will be part of the acquisition offer made by NDOT.

NDOT will coordinate with residences and businesses to address the construction-related temporary congestion and potential detours (including potential shared-use path detours) and maintenance of access.

3.6 Environmental Justice

3.6.1 Environmental Justice Background

Environmental justice analyses are conducted as part of NEPA reviews. The key legislation and policy directive behind environmental justice assessment requirements is Executive Order
12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued by President Clinton in 1994.

In response to Executive Order 12898, the U.S. Department of Transportation (DOT) issued the Order to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 5610.2(a); updated May 2012), which sets forth the DOT policy to consider environmental justice principles in all DOT programs, policies, and activities. The DOT Order 5610.2(a) notes that environmental justice discussion in environmental documents should include the following:

- Identification of existing minority populations and low-income populations (Section 3.6.2)
- Description of how outreach opportunities were provided and the results from coordination with the environmental justice populations, as well as their access to information and participation in the outreach events (Section 3.6.3)
- Identification of disproportionately high and adverse effects (if applicable) on environmental justice populations (Section 3.6.4)

NDOT and FHWA completed an environmental justice analysis for this project to determine whether the proposed project has the potential to create disproportionately high and adverse effects on minority populations or low-income populations. For any high and adverse effects found to be borne disproportionately by minority and/or low-income populations, the analysis examines mitigation measures, offsetting benefits, and impacts of other system elements in accordance with FHWA Order 6640.23A (as well as DOT Order 5610.2(a)).

This analysis was also prepared in compliance with Executive Order 13166, Improving Access to Services for Persons with Limited-English Proficiency, which directs agencies to ensure limited-English proficiency populations have fair and equal access to services. Section 3.6.3 describes how those with Limited-English Proficiency were provided meaningful access to information they could understand.

### 3.6.2 Identification of Minority and Low-Income Populations

To determine the presence of minority populations and/or low-income populations in the project area, NDOT used census tract and block group data, supplemented by the Project’s public involvement program and other relevant data sources. NDOT compared study area demographics to those of the City of Las Vegas, unincorporated town of Sunrise Manor, and Clark County. The study area for the environmental justice analysis extends 0.25 mile from the

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13 Adverse effects are defined in FHWA Order 6640.23A as the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of human-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community’s economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities.
existing right-of-way boundary, as shown on Figures 3-10 and 3-11. This study area was selected because most of the environmental impacts resulting from this project would occur less than 0.25 mile from the freeway alignments.

For this project, those census blocks containing minority and/or low-income population percentages greater than Clark County are considered environmental justice populations. Of the 24 census blocks within the study area, 23 meet the definition of an environmental justice population.

Section 3.5 provides demographic information on the population in the corridor. Additionally, the Interstate 515/Charleston Boulevard Project Environmental Justice Analysis Technical Memorandum (NDOT, 2017e) (Appendix C.15) provides additional demographic data related to environmental justice populations.

### 3.6.2.1 Minority Populations

As shown on Figure 3-12, Hispanic or Latino persons make up the largest percentage of the population in the study area. Figure 3-10 shows individual census block groups entirely or partially contained within the study area and the percentage of minorities within each census block group. Within the 24 census block groups that comprise the study area, 17 contain a minority population concentration greater than 75 percent. The northwest portion of the study area (near the I-515/Eastern Avenue interchange) has higher concentrations of minority population, and those in the southeast have the lowest concentrations. There are two census block groups at the southern end where the minority population concentration is much lower than the rest of the study area.

### 3.6.2.2 Low Income

Based on U.S. Census Bureau data from the 2011–2015 ACS 5-year Estimates, the low-income population concentration in the study area is approximately double that of both the City of Las Vegas and Clark County (ACS, 2015). As shown on Figures 3-13 and 3-14, respectively, compared to Las Vegas and Clark County, the study area has a lower median household income and higher percentage of transit-dependent households.

#### Minority Persons

- **Black or African American** – a person having origins in any of the black racial groups of Africa
- **Hispanic** – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- **Asian** – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands
- **American Indian or Alaskan Native** – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition
- **Native Hawaiian and Other Pacific Islander** – a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Island.

#### Low-Income Persons

Persons whose median household income is at or below the Department of Health and Human Services poverty guidelines. For a four-person household with two related children, the poverty threshold is $25,750 (HHS, 2019).
which can be an indicator of low-income households.

**Figure 3-11** depicts the percentage of low-income population within each block group. Most of the block groups in the study area have high concentrations of low-income populations, with most block groups ranging between 25 and 37.5 percent and seven block groups that contain low-income populations of over 50 percent. Like the minority population, there are two block groups in the southern portion as well as in the western portion of the study area that have lower low-income population concentrations than much of the study area.

### 3.6.3 Coordination, Access to Information, and Participation

As part of public outreach for the Project, NDOT provided engagement opportunities for minority and/or low-income populations in the planning and development process. Executive Order 12898, DOT Order 5610.2(a), and Executive Order 13166 require agencies to provide full and fair opportunities for minority and/or low-income populations to engage in the public participation process. The public involvement process was open to all residents and population groups in the study area with targeted outreach efforts to specifically attract input from persons of low-income and/or minority status. As part of the environmental assessment, a Public Involvement Plan (Appendix D) was created to outline effective communication and involvement of both the project stakeholders and the public, including minority and/or low-income populations. The Public Involvement Plan’s objectives include determining the most appropriate timing and methods to gather and disseminate information, ensuring that outreach materials are translated into Spanish, and targeting information to minority populations.

A public information meeting was held on September 22, 2016 (**Figure 3-19**). To ensure targeted outreach for minority and/or low-income populations in the study area, the

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14 Executive Order 13166 was signed by President Clinton on August 11, 2000, and requires federal agencies (such as FHWA) to examine the services they provide, identify any need for services to those with limited-English proficiency, and develop and implement a system to provide those services so those with limited-English proficiency can have meaningful access to them
public involvement team reached out to the local community to inform them of the project and the opportunity to participate in the public information meeting. The public involvement team conducted outreach informing local government officials, advisory boards, community centers, the Charleston Swap Meet, and mobile home parks by mail and/or electronic notice. In advance of the meeting, NDOT and the public involvement team used the following methods to inform the public:

- Print advertisements ran in the main news section of the *Las Vegas Review Journal* on three different dates and in *El Tiempo*, a local Spanish-language newspaper.
- Over 2,500 mailers were sent to owners and residents in the surrounding area. The mailers included the public meeting notice and the “intent to study” letter in English and Spanish.
- Press releases were sent to radio stations, news media, and print media.
- The public information meeting was announced on social media, including Twitter and Facebook.

![Figure 3-19. Members of the public listening to NDOT’s presentation at the September 22, 2016, public information meeting.](image)

For the first time in NDOT history, a public meeting was presented with simultaneous Spanish translation using ear pieces for Spanish language attendees and a full-screen, side-by-side Spanish and English power point presentation.

In addition to the numerous bilingual services used to publicize the public information meeting, NDOT reached out to Hispanic local government officials. Through these officials, the project’s public involvement team learned of important community organizations to which to promote the public information meeting.
Meeting materials were provided to all attendees, with information in both English and Spanish; these materials included project information and a comment form. Information at the public meeting was displayed in English and Spanish. Three Spanish translators attended the meeting to assist as needed. During the public presentation, English and Spanish PowerPoint presentations were shown side-by-side, and spoken word was translated from English to Spanish simultaneously using earpiece technology. This was the first NDOT project to use the earpiece technology. Public comments and responses during the question-and-answer session after the presentation were also summarized and translated into Spanish.

According to NDOT’s Public Hearing Officer, 19 Hispanic individuals attended the public information meeting. Overall, the feedback received from the public at the meeting was positive. Those who provided comments supported the proposed project, but they thought the project needed to be larger in scale to address the growing congestion in the area. Other comments heard during the meeting included concerns about individual’s property being affected. One written comment was provided in Spanish. A Spanish-language written response was provided to the commenter. A summary of this public information meeting is in Appendix D.

On November 28, 2016, NDOT met with representatives of Southern Nevada Regional Housing Authority (SNRHA). SNRHA manages the Otto Merida Desert Villas Community, an affordable housing community located in the northwest quadrant of the I-515/Charleston Boulevard interchange. SNRHA stated it was concerned about pedestrian crossings in the area because many of the residents of the Otto Merida Desert Villas community do not own an automobile and use the sidewalks along Charleston Boulevard to access services and/or transit. They stated the diverging diamond alternative could be confusing and unsafe for pedestrians and asked the team to consider pedestrian bridges over the traffic.

NDOT met again with SNRHA in September 2017 to provide a project update. This meeting focused on potential impacts to the SNRHA-owned vacant parcel in the northwest quadrant of the I-515/Charleston Boulevard interchange. NDOT noted the sidewalk along Charleston Boulevard on the south side of the property will be reconstructed and the existing driveway access will be removed. SNRHA noted that moving the driveway to the west side of the property along Honolulu Street was preferred. Additionally, it was discussed how a temporary construction easement will be required along the south side of the property, for which NDOT will provide compensation to SNRHA.

NDOT will conduct a public hearing during the 30-day public comment period for this document. NDOT and the public involvement team will use similar methods as were used at the first public involvement meeting to inform the community about the public hearing. Materials and notices will again be provided in English and Spanish to ensure the public is informed about the project and the opportunities to engage in the environmental process.

Section 4 of this Environmental Assessment describes the public involvement process NDOT developed and specific activities designed to disseminate information on the project and to obtain public input.
3.6.4 Identification of Disproportionately High and Adverse Effects on Environmental Justice Populations

The Preferred Alternative poses the best efforts to balance project purpose and need with the least impact on the social, economic, and environmental resources. Alternatives were designed to stay within the existing right-of-way as much as possible to minimize the impact on all resources adjacent to I-515 and Charleston Boulevard.

Where there is a potential for adverse impacts, NDOT reviewed the affected resource to demonstrate specifically where and who would likely be affected and to assess if there would be a disproportionately high and adverse effect on minority and/or low-income populations. The analysis provides a review of whether the adverse impact would be predominantly borne by such population or if it would be appreciably more severe or greater in magnitude on the minority and/or low-income population than the adverse impact suffered by the non-minority or non-low-income population.

3.6.4.1 No-Build Alternative

The No-Build Alternative would not directly affect minority and/or low-income community facilities. The No-Build Alternative would worsen traffic congestion and safety hazards in the study area and would have indirect impacts on minority and/or low-income populations by hindering access to housing, businesses, and community facilities and services.

3.6.4.2 Preferred Alternative

At the I-515 Charleston Boulevard interchange, NDOT selected the tight-diamond interchange alternative to be part of the Preferred Alternative. NDOT selected this alternative over the diverging diamond interchange alternative in part due to comments from nearby residents and SNRHA opposing the Diverging Diamond Interchange. Local residents and SNRHA expressed concern regarding pedestrian safety associated with the diverging diamond interchange, and the City of Las Vegas did not support this alternative due to the unfamiliar pedestrian movements. Selecting the tight-diamond interchange alternative as part of the Preferred Alternative over the diverging diamond interchange alternative responds to the concerns of residents and SNRHA, avoiding the pedestrian safety concerns associated with the diverging diamond interchange.

The anticipated project impacts fall into one or more of the following categories:

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**Definition of Adverse Effects**

The totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness, or death; air, noise, and water pollution and soil contamination; destruction or disruption of human-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities.
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

- No project impacts are anticipated
- Project impacts are minor and not adverse
- Project impacts are positive
- Project impacts are adverse, but impacts could be reduced with the implementation of mitigation

For the environmental resources listed below there either would be no impacts, the impacts would be minor in nature and would not result in adverse impacts with mitigation, or impacts would be positive:

- **Air Quality** – The Preferred Alternative improvements are not anticipated to result in any new violation of federal air quality standards. The Preferred Alternative would improve congestion and potentially result in overall air quality benefits.

- **Wetlands/Waters of the U.S.** – The Preferred Alternative would not affect any wetlands.

- **Cultural Resources** – The Preferred Alternative would not affect any historic properties or archaeological sites.

- **Floodplains** – Because no part of the Preferred Alternative is located within a floodplain, there are no anticipated impacts to floodplains.

- **Biological Resources** – The Preferred Alternative would not affect any federally or state-listed threatened and endangered species. Applicable ecological resources in the study area would not be affected. A preconstruction survey would ensure no migratory birds are harmed during construction.

- **Farmland/Rangeland** – There is no farmland or rangeland located in the study area.

- **Recognized Environmental Conditions** – The Preferred Alternative would improve traffic flow, which would reduce the likelihood for vehicle collisions and releases of regulated and hazardous materials. If contaminated soil is encountered during construction, it would be addressed and disposed of per applicable regulation. Removal of any impacted media (e.g., soil or groundwater) would be limited to the extent necessary to complete construction of the project.

- **Energy Sources and Minerals** – There are no energy sources or minerals present within or near the study area.

- **Geology and Soils** – There would be no long-term settlement of soils due to the compression of soils because there are no large structures. Any impacts anticipated are expected to be mitigated by implementing current design methods during construction.

For the following environmental resources, the Preferred Alternative would result in impacts before implementation of mitigation:

- **Traffic Noise** – The project’s traffic noise impacts would be localized and confined to areas adjacent to I-515 and Charleston Boulevard. The existing traffic noise walls on the north/east side of I-515 will be reconstructed to adequately mitigate traffic noise impacts.
along I-515. The existing traffic noise walls on the south/west side of I-515 would remain in place.

The homes on the north side of Charleston Boulevard between Del Amo Drive and I-515 will receive a new traffic noise wall. Other locations along Charleston Boulevard did not meet the regulatory, guidance, and policy criteria for traffic noise mitigation.

The traffic noise impacts can be mitigated in accordance with the regulatory, guidance, and policy criteria for traffic noise mitigation and do not result in project-wide disproportionately high and adverse effects on minority and/or low-income populations.

- Land Use/Property Acquisitions — The Preferred Alternative would require the acquisition of four single-family residences. These displacements are on the same street and in an area where there are high concentrations of minority populations (75.4 percent) and low-income populations (16.8 percent). Because these displacements would occur in an area of high minority population concentrations, the impacts would have a disproportionate impact; however, NDOT will provide compensation and relocation assistance for those residents affected by acquisition and displacement, in compliance with the Uniform Act. Property owners will receive compensation of not less than the approved appraisal value, and equivalent, safe, and sanitary replacement housing will be made available before anyone is displaced. Expenses for moving and other relocation costs will also be available. Renters will also be compensated and equivalent housing provided. There are 23 properties for sale within an approximate 0.25-mile radius of the potentially affected residences that are similar in size and price based on a recent multiple listing service search (Realtor.com, 2017) and could be used as replacement housing.

Because property owners would be compensated and there are replacement properties available in the surrounding area to which the four displaced households could relocate, impacts would be minimized. As part of the property acquisition process, NDOT would coordinate with affected property owners and/or tenants to provide information on federal and state acquisition and relocation assistance policies (NDOT, 2019d).

In addition to the residential acquisitions and displacements, there would be a partial property acquisition from a medical office building on Charleston Boulevard between Del Amo Drive and Sacramento Drive. These offices consist of medical providers, including an allergy center and a mental health counseling clinic. While these clinics are in an area with a high percentage of minority population, they do not provide ethnically unique goods and services that are unique to an ethnic group in the area, such as an ethnic grocery store or store that serves as a community gathering spot. The partial acquisition would not affect the building but would remove 26 parking spaces from the front of the building, including two ADA-accessible parking spaces.

The building’s owners are satisfied with the plan NDOT proposed regarding parking and access to and from Charleston Boulevard (Appendix D – Woodbury Corporation Meeting Summaries). This acquisition would comply with the Uniform Act, and NDOT would coordinate with the property owner to maintain parking and traffic flow into their business.

Efforts during final design of the Preferred Alternative would be made to minimize property acquisitions to the extent possible. This could include reducing full acquisitions to partial
acquisitions, potentially reducing the number of residential displacements, reducing the size of the partial property acquisitions, or avoiding partial property acquisitions. The property acquisitions as part of this project will not result in changes to the existing or approved future land uses.

Given the context of the impacts and the mitigation measures, the adverse effects of property acquisitions would not be disproportionately high and adverse for the affected minority and/or low-income populations.

- **Socioeconomic Characteristics**– The Preferred Alternative would not bisect any neighborhoods or displace community facilities. No parks or recreation facilities would be affected. The Preferred Alternative would not displace businesses or employees. As previously described, the project would affect off-street parking at a medical office building on Charleston Boulevard, but adequate parking would remain available and long-term impacts on the business are not anticipated. NDOT would coordinate with any businesses affected.

The Preferred Alternative would improve traffic operations and safety and would improve sidewalks and pedestrian mobility along Charleston Boulevard. The Preferred Alternative would require the acquisition of up to four single-family residential properties; however, there would not be a negative effect on the larger neighborhood because these impacts would be located on the edge of the neighborhood and would not affect the overall cohesion of the neighborhood. The Preferred Alternative would impact the shared-use path between Stewart Avenue and Charleston Boulevard due to widening I-515; however, those impacts would be minimized with retaining walls and the path will be resurfaced, creating an improved path.

Because the socioeconomic impacts can be mitigated, these impacts would not result in disproportionately high and adverse effects on minority and/or low-income populations.

- **Visual Quality** – The Preferred Alternative would not substantially change views for those properties adjacent to I-515. The existing traffic noise walls would be moved closer to some properties north and east of I-515; however, the severity of change would be minor, resulting in a small decrease in the visual quality rating. Traffic noise walls will include aesthetic treatments sensitive to the surrounding population to minimize potential visual impacts, consistent with the existing aesthetic treatment on traffic noise walls. The traffic noise walls will be painted and have patterns on both sides. In addition, decorative rock is proposed to be placed along all bare ground and slopes from the back of structures to the NDOT right-of-way along I-515. Decorative rock will also be placed along the bare ground between the on- and off-ramps and I-515. This will result in higher aesthetic value while also providing slope protection.

Additional decorative elements could be placed at the I-515/Charleston Boulevard interchange (see Section 3.7.4). The type of ornamentation in the walls and at the I-515/Charleston Boulevard interchange will be selected in consultation with residents as part of a stakeholder group presentation. In addition, in areas where trees will be removed during construction, NDOT will plant more trees than were removed. Trees will be replaced using a ratio of 2:1 or greater. These proposed measures will make the viewed landscape
along I-515 more visually interesting than the current condition and will somewhat improve
the visual setting.

In addition, new lighting for the Preferred Alternative will be focused away from the
residential areas to minimize nighttime visibility of the lights.

Given the context of the impacts and the mitigation measures, impacts to visual quality
would not be disproportionately borne by minority and/or low-income populations.

- **Stormwater** – The construction of stormwater facilities would detain and treat stormwater
  and improve water quality. Much of the study area already consists of impervious surfaces,
  and the Preferred Alternative would result in increases over the current amount.
  Stormwater detention and treatment facilities are included in the project, which would
  reduce the quantity of pollutants prior to discharge. No adverse impacts are anticipated.

- **Public Use Lands** – The Preferred Alternative would impact approximately 200 linear feet of
  a shared-use path adjacent to the east side of I-515 between Stewart Avenue and
  Charleston Boulevard. As part of the Preferred Alternative, NDOT would reconstruct this
  path in the area of the direct impact (just south of Stewart Avenue) and resurface the entire
  path between Stewart Avenue and Charleston Boulevard. No adverse impacts are
  anticipated.

- **Construction** – The Preferred Alternative would result in several short-term impacts,
  including the following:
  - Temporary increases in construction-related noise
  - Temporary increases in particulate matter and other air pollutant emissions
  - Temporary increases in traffic congestion and potential detour routes, including
    potential shared-use path detours
  - Temporary visual impacts due to construction activities
  - Potential release of contaminates due to ground-disturbing activities and spills

To address the construction impacts, mitigation measures and construction-related best
management practices would be implemented. Given the demographics of the study area,
the impacts during construction would result in disproportionate impacts on minority
and/or low-income populations. However, the construction impacts would be temporary
and would not occur in an area for the entire construction duration. As a result, temporary
construction impacts on residents would be intermittent and minor with the
implementation of mitigation measures and best management practices. No
disproportionately high and adverse impacts on minority and/or low-income populations
are anticipated.

- **Indirect Effects** - The Preferred Alternative would not have encroachment effects that
  burden low-income and minority groups as the proposed improvement would not isolate
  communities from employment opportunities, services, or community facilities. The
  developed nature of the study area precludes notable growth, and the project would not
  have a development-influencing effect. As such, there would be no indirect effects on low-
  income or minority populations.
3.6.5 Project Benefits

The I-515/Charleston Boulevard Interchange Project would generate several transportation and environmental benefits for the traveling public, including minority and/or low-income populations located in the study area. These benefits include:

- Improved freeway and local roadway operations, which would reduce travel times and reduce response times for emergency response vehicles
- Improved traffic safety, which includes increased safety at high-accident locations on both Charleston Boulevard and I-515
- More and longer turn lanes along Charleston Boulevard to improve safety and provide better access on Charleston Boulevard, as well as on the local roadway system around the study area
- Improved pedestrian access along Charleston Boulevard due to wider sidewalks and ADA-compliant features for crosswalk safety
- Improved air quality in the surrounding area due to reduced congestion
- Improved water quality due to stormwater improvements that would collect and treat stormwater and decrease pollutants entering local waterbodies
- Reconstruction of approximately 200 linear feet of the shared-use path between Stewart Avenue and Charleston Boulevard due to widening I-515 and resurfacing the remainder of the path
- New lighting focused away from the residential areas to minimize nighttime visibility of the lights from the residences

3.6.6 Final Determination

When making an environmental justice determination, DOT Order 5610.2(a) and FHWA Order 6640.23A direct project proponents to consider the impacts of a project and who may be affected, then consider the mitigation proposed for these impacts, and finally consider any offsetting benefits to minority and/or low-income populations.

Based upon a review of the study area demographics and the potential impacts associated with the Preferred Alternative, the project would disproportionately affect minority and/or low-income populations due to the residential displacements. With the proposed mitigation measures, the severity of impacts would be minimized, and, as noted, there are suitable locations in the surrounding area where those displaced could relocate if they so choose.

The project also includes several transportation and environmental benefits that would positively affect the traveling public, including minority and/or low-income populations located in the study area. These benefits include:

Disproportionately high and adverse effect on low-income and minority populations is:

(1) predominately borne by a minority population and/or a low-income population; or
(2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.
public as a whole, including the minority and/or low-income populations in the study area and in the neighborhood that would be affected by residential displacements; these benefits include ADA improvements to sidewalks and operational and safety improvements on Charleston Boulevard. These improvements would compensate for any remaining impact on minority and/or low-income populations.

Based on these findings, the I-515/Charleston Boulevard Interchange Project would not result in disproportionately high and adverse impacts on minority and/or low-income populations under Executive Order 12898, DOT Order 5610.2(a), and the FHWA Order 6640.23A. Project impacts would be limited in scope or mitigated through the implementation of effective mitigation measures. Furthermore, the Preferred Alternative includes offsetting benefits that would benefit minority and/or low-income populations as much as the general population. Therefore, the project would not result in disproportionately high and adverse effects on minority and/or low-income populations.

3.7 Visual Resources

3.7.1 Visual Resource Background

NDOT analyzed the visual impacts of the project following the guidelines developed by FHWA in *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA, 2015). The FHWA visual assessment methodology requires that visual impacts be determined by assessing changes to the landscape as seen from a freeway project (to determine how people traveling on the proposed project might be affected) and assessing views of the project (to determine how people near the proposed project would be affected). Changes to visual environment are measured by determining how a proposed project would change the visual quality for selected representative views.

3.7.2 Existing Conditions

The study area is a developed urban setting surrounded by distant mountains. Sensitive viewers of I-515 are found in the residential areas, which generally are lower in elevation than the raised freeway. Traffic noise walls are located along the tops of the banks of the freeway right-of-way. The walls are located varying distances from residents throughout the corridor:

- From Eastern Avenue to Pecos Road, the walls are located approximately 120 to 150 feet from the residences.
- From Pecos Road to Charleston Boulevard, most residences (both single-family and multifamily) are oriented away from I-515, with the backs (and backyards) of the residences facing the freeway. Some residences are as close as approximately 25 feet from the traffic noise walls.
- From Charleston Boulevard to the south project terminus the residences along the west side of the freeway are farther from I-515 because Sandhill Road is located between the residences and I-515. Residences along the east side of the freeway abut the I-515 right-of-way, and their fronts are generally oriented away from the freeway. Many of these residences have walls or fences along the I-515 right-of-way that provide visual screening.
The existing 12-foot-high traffic noise walls along I-515 block views from the residences of I-515, most passing vehicles, and areas beyond the freeway. The traffic noise walls along the freeway are concrete panels that have an earth-tone brown color and ornamentation in their top panels. Intermittent groupings of trees within the right-of-way provide green elements along the freeway.

Except for the north edge of I-515 at the Desert Pines Golf Course, traffic noise walls line the entire I-515 corridor in the study area. The immediate view for viewers on I-515 is of the traffic noise walls as described previously in this section, with views of mountains in the distance.

Views along Charleston Boulevard consist of the businesses and residences along the roadway. At the I-515/Charleston Boulevard interchange, I-515 travels over Charleston Boulevard on a bridge with traffic noise walls, dominating the viewshed.

Roadway lighting can also result in a potential visual impact. The existing lighting on I-515 within the study area uses 30-foot-tall light poles each with a 15-foot arm, referred to by NDOT as “type 7” poles. The light fixtures use high-pressure sodium bulbs, which is commonly used for outdoor area lighting, such as along freeways. Most of the light poles along I-515 in the study area are placed on the outside of the roadway between the existing concrete barrier and the traffic noise walls. The lighting poles are set directly across from one another.

### 3.7.3 Visual Resource Impacts

Key observation points were established throughout the corridor to assess the visual impact of the Preferred Alternative (Figure 3-20). Views from the key observation points are represented on Figures 3-21 through 3-28.
Figure 3-20. Key Observation Points
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-21. Key Observation Point #1: 30th Street looking west at I-515 right-of-way, traffic noise wall, and trees
Photo by GoogleEarth © 2017 Google

Figure 3-22. Key Observation Point #2: Elm Street looking east at I-515 right-of-way, traffic noise wall, and trees
Photo by GoogleEarth © 2017 Google
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-23. Key Observation Point #3: Manisa Circle looking south towards I-515
Note traffic noise wall behind wall built along property line of subdivision.
Photo by GoogleEarth © 2017 Google

Figure 3-24. Key Observation Point #4: Rulon Earl Mobile Home Park looking northwest towards I-515.
Photo by GoogleEarth © 2017 Google
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-25. Key Observation Point #5: Sandhill Road looking southwest at I-515 right-of-way and traffic noise wall
Photo by GoogleEarth © 2017 Google

Figure 3-26. Key Observation Point #6: Southbound off-ramp to Charleston Boulevard
Note freeway traffic noise wall on right side of image, off-ramp traffic noise wall to the left of the off-ramp, and the wall along the edge of the subdivision to the left of the off-ramp traffic noise wall.
Photo by GoogleEarth © 2017 Google
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-27. Key Observation Point #7: Olive Street looking at traffic noise wall of northbound off-ramp to Charleston Boulevard, freeway right-of-way, and drainage feature

*Photo by GoogleEarth © 2017 Google*

Figure 3-28. Key Observation Point #8: Northbound off-ramp to Charleston Boulevard

*Note freeway traffic noise wall on right side of image, off-ramp traffic noise wall to the left of the off-ramp, and the wall along the edge of the subdivision to the left of the off-ramp traffic noise wall.*

*Photo by GoogleEarth © 2017 Google*
The Preferred Alternative would result in a wider freeway that would continue to require traffic noise walls to mitigate traffic noise impacts. I-515 would expand 24 feet to the north/east, while the elevation of the roadway would remain the same. The new traffic noise walls would be located within the I-515 right-of-way, and on the north and east sides would be closer to residences than existing traffic noise walls. These new traffic noise walls would be 12-feet high, the same height as the existing traffic noise walls. Existing trees would be removed during construction in areas where widening would occur. In the northeast quadrant of the I-515/Charleston Boulevard interchange the traffic noise wall along the I-515 northbound on-ramp would be extended along Charleston Boulevard to Del Amo Drive.

Although the new traffic noise walls would be closer to some residences than existing traffic noise walls, they would not greatly change the visual setting of views from residences towards I-515. Views towards the freeway would continue to be constrained by traffic noise walls, which would continue to block views of the freeway, most passing vehicles, and views beyond the freeway.

Traffic noise walls would continue to dominate views from I-515. Viewers from I-515 would continue to have views of mountain ranges in the distance. Views along most of Charleston Boulevard would not be notably different under the Preferred Alternative. However, the new traffic noise wall between the northbound I-515 on-ramp and Del Amo Drive would change the view of those residences in the area due to the presence of a traffic noise wall and the removal of four residences.

As part of project improvements, NDOT would remove the existing type 7 light poles along I-515 and install high-mast poles with light emitting diode (LED) fixtures. The high-mast poles would be about 80-feet high, approximately 45 feet taller than type 7 poles. The lighting would be installed entirely within NDOT right-of-way and lighting would be focused away from the residential areas to minimize nighttime visibility of the lights from the residences.

### 3.7.4 Mitigation Measures

The Preferred Alternative will include new traffic noise walls using the same patterning and color as current traffic noise walls for corridor consistency. The traffic noise walls will be painted and have patterns on both sides. In addition, decorative rock will be placed along all bare ground and slopes from the back of structures to the NDOT right-of-way along I-515. Decorative rock will also be placed along the bare ground between the on- and off-ramps and I-515. This will result in higher aesthetic value while also providing slope protection. Existing maintenance access will remain.

Additional decorative elements could be placed at the I-515/Charleston Boulevard interchange (Figure 3-29). The type of ornamentation in the walls and at the I-515/Charleston Boulevard interchange will be selected in consultation with residents as part of a stakeholder group presentation. In addition, in areas where trees will be removed during construction, NDOT will plant more trees than were removed. Trees will be replaced using a ratio of 2:1 or greater.
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-29. Preliminary rendering of potential aesthetic enhancements at the I-515/Charleston Boulevard interchange (looking northwest from Charleston Boulevard towards I-515)

The light system for the Preferred Alternative will use LED fixtures designed to help mitigate sky glow, light trespass, and glare. The LED fixtures last longer than the current lighting along I-515 and require less electricity.

3.8 Stormwater Management

3.8.1 Existing Conditions

The existing stormwater distribution systems used by I-515, Charleston Boulevard, and the I-515/Charleston Boulevard interchange are discussed in detail in the Preliminary Drainage Study for I-515/Charleston Boulevard EA (NDOT, 2018) (Appendix C.16) and represented on Figure 3-30.
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

Figure 3-30. Existing Stormwater Drainage Segments

The following bullets describe the existing drainage systems for the project:

- **I-515: Eastern Avenue to Mojave Road.** Stormwater from this segment of I-515 is collected in a storm drain system that discharges into a detention basin located northwest of I-515 and Mojave Road.

- **I-515: Mojave Road to Pecos Road.** Stormwater from this segment of I-515 is collected in a storm drain system and collects into a perforated corrugated metal pipe that acts as an infiltration basin along the south side of I-515. A berm contains the water that overflows from the infiltration basin within the NDOT right-of-way and allows it to infiltrate back into the ground.

- **I-515: Pecos Road to Stewart Avenue.** Stormwater from this segment of I-515 discharges into the stormwater system associated with Pecos Road.

- **I-515: Stewart Avenue to Charleston Boulevard (includes I-515/Charleston Boulevard interchange).** Stormwater from this segment of I-515 is collected in a storm drain system that discharges into detention ponds in the northeast and northwest quadrants of the I-515/Charleston Boulevard interchange.

- **Charleston Boulevard.** Stormwater on Charleston Boulevard between Pecos Street and Lamb Boulevard is collected in a storm drainage system fed by inlets and laterals on both sides of Charleston Boulevard. This stormwater drainage system does not meet NDOT or Cark County Regional Flood Control District (CCRFCD) drainage design criteria.
Because the drainage systems within the project limits move stormwater infrequently, runoff more than likely results in pulses (i.e., loads and concentrations) of sediment and typical urban highway pollutants (e.g., heavy metals, hydrocarbons, pesticides, debris) conveyed downstream. The final discharge point of the drainages in the study area is the Las Vegas Wash east of the study area. The Las Vegas Wash downstream of the study area is listed on Nevada’s 303(d) impaired waters list.\textsuperscript{15}

3.8.2 Stormwater Impacts

3.8.2.1 No-Build Alternative

The No-Build Alternative would not add new impervious surface to I-515, Charleston Boulevard, or the I-515/Charleston Boulevard interchange. Therefore, no additional stormwater would be added to the existing stormwater systems and no impacts would occur.

3.8.2.2 Preferred Alternative

Stormwater impacts caused by the Preferred Alternative are discussed in detail in the Preliminary Drainage Study for I-515/Charleston Boulevard EA (NDOT, 2018) (Appendix C).\textsuperscript{16} The Preferred Alternative would add approximately 15 to 25 percent impervious surface to the existing drainage systems on I-515 and just under a 13 percent increase (0.63 acre) of impervious surface on Charleston Boulevard. This increase in impervious area along Charleston Boulevard would occur from Honolulu Street/Sandhill Road west of I-515 to Sacramento Drive, east of I-515, a distance of 0.35 mile. Inlet sizing for all stormwater drainage systems would be completed during final design. Table 3-3 provides a summary of changes caused by the proposed increase in impervious surface associated with the Preferred Alternative.

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Summary of Changes Associate with Preferred Alternative</th>
<th>Impact to Stormwater Drainage System (Yes/No)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-515: Eastern Avenue to Mojave Road</td>
<td>The increase in stormwater volume caused by the increase in impervious surfaces in this segment of I-515 would be accommodated by the existing detention basin.</td>
<td>No</td>
</tr>
<tr>
<td>I-515: Mojave Road to Pecos Road</td>
<td>The increase in stormwater volume caused by the increase in impervious surfaces in this segment would exceed existing storage capacity of the infiltration basin.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

\textsuperscript{15} Section 303(d) of the Clean Water Act requires each state to develop a list of water bodies that need work beyond existing controls to achieve or maintain water quality standards, and to submit an updated list to the U.S. Environmental Protection Agency every 2 years.
### 3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Summary of Changes Associate with Preferred Alternative</th>
<th>Impact to Stormwater Drainage System (Yes/No)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-515: Pecos Road to Stewart Avenue</td>
<td>The increase in stormwater volume caused by the increase in impervious surfaces in this segment is minor and would be accommodated by the existing stormwater drainage system.</td>
<td>No</td>
</tr>
<tr>
<td>I-515: Stewart Avenue to Charleston Boulevard (includes I-515/Charleston Boulevard interchange)</td>
<td>The increase in stormwater volume caused by the increase in impervious surfaces in this segment would exceed existing storage capacity of the detention ponds.</td>
<td>Yes</td>
</tr>
<tr>
<td>Charleston Boulevard: Pecos Street to Lamb Boulevard</td>
<td>It is anticipated that any additional stormwater volume due to the Preferred Alternative would be minor compared to the existing amount of stormwater discharge in this area. The excess flows will be mitigated by increased capacity of the detention ponds on the north side of Charleston Boulevard at I-515. The outflow pipes along Charleston Boulevard will be cleared of debris to bring performance up to original design level. This will ensure no additional increases in flows to Charleston Boulevard.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The increase in stormwater flow resulting from the increased impervious surface area could increase the amount of highway pollutants (e.g., sediment, nutrients, heavy metals) into the drainages during storms. Several regional flood control structures downstream of the project limits capture flow conveyed within the larger drainages, allowing for sediment deposition and nutrient attenuation before discharge into the Las Vegas Wash.

During construction, non-stabilized fill material and inadvertently discharged equipment fluids could enter local stormwater drainage systems.

The study area is not expected to experience increases in development or redevelopment intensity, although long-term direct impacts to stormwater would result from the increases in impervious surfaces and, thus, drainage to the drainage system. However, the drainage pattern would be preserved after construction because the Preferred Alternative provides capacity upgrades to the I-515 drainage segments to contain added stormwater runoff and no changes in drainage patterns are proposed for local drainage systems. Based on this assessment, no indirect effects with regard to stormwater are expected as a result of the Preferred Alternative.
3.8.3 Mitigation Measures

The following measures are proposed to mitigate impacts caused by the increase of impervious surfaces associated with the Preferred Alternative:

- **I-515: Mojave Road to Pecos Road.** Modify the existing infiltration basin around the perforated corrugated metal pipe by raising the existing berm approximately 0.5 foot to accommodate the increased stormwater flows.

- **I-515: Stewart Avenue to Charleston Boulevard (includes I-515/Charleston Boulevard interchange).** Expand the existing detention ponds at the northeast quadrant of the I-515/Charleston Boulevard interchange by excavating approximately 2 feet in depth below the existing surface of the detention ponds. Interchange ramps will drain to drainage ponds and not add additional stormwater volume to the Charleston Boulevard stormwater system.

As part of the development of best management practices for the project, NDOT’s construction contractor must file a Notice of Intent with NDEP’s Bureau of Water Pollution Control to comply with the General Permit for Stormwater Discharges Associated with Construction Activity (NVR100000). The contractor will develop a Stormwater Pollution Prevention Plan before construction to identify potential stormwater pollution sources and appropriate best management practices to prevent or reduce, to the maximum extent possible, pollutant discharges associated with construction.

3.9 Public Use Lands/Section 4(f) Analysis

Section 4(f) of the DOT Act of 1966 (49 United States Code [U.S.C.] 303 and 23 U.S.C. 138) (Section 4(f)) states that federal funds may not be approved for projects that use land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless it is determined that there is no feasible and prudent alternative to the use of land from such properties, and that the action includes all possible planning to minimize harm to the property resulting from such use. The purpose of Section 4(f) requirements is to preserve significant parkland recreation areas, refuges, and historic and archaeological sites by limiting the circumstances where such land can be used for transportation projects.

Section 4(f) permits the use of publicly owned park land, recreational area, wildlife and waterfowl refuge, or land of a historic site of national, state, or local significance for a transportation project only if (1) there is no prudent and feasible alternative to using that land, and (2) the project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

The area within 100 feet from the edge of the project right-of-way was examined for potential parks, recreation areas, and wildlife and waterfowl refuges that might qualify as Section 4(f) properties. Those properties were assessed to determine if they qualified as a Section 4(f) property. Finally, each property was assessed to determine if the Preferred Alternative would “use” any portion of the property.

The Section 4(f) “use” of a resource is defined and addressed pursuant to FHWA Regulations in Title 23 Part 774.17 of the Code of Federal Regulations (CFR) at 23 CFR 774.17. Except as set forth in 23 774.11 and 23 774.13, a “use” of Section 4(f) property occurs: (1) When land is permanently incorporated into a transportation facility; (2) When there is a temporary
occupancy of land that is adverse in terms of the statute’s preservation purpose as determined by the criteria in 23 774.13(d); or (3) When there is a constructive use of a Section 4(f) property as determined by the criteria in 23 774.15.

3.9.1 Park/Recreation Uses

Figure 3-31 shows the location of potential Section 4(f) resources in the project corridor.

3.9.1.1 Desert Pines Golf Course

The Desert Pines Golf Course is located on Bonanza Road in Las Vegas (adjacent to the north side of I-515). This resource is an approximately 100-acre, 18-hole public course that is owned by the City of Las Vegas but operated by a third-party contractor. The Desert Pines Golf Course is identified as a public golf course in the Las Vegas 2020 Master Plan Trails Element (City of Las Vegas, 2013a).

Per the Section 4(f) Policy Paper (FHWA, 2012): “Section 4(f) applies to golf courses that are owned, operated and managed by a public agency for the primary purpose of public recreation and determined to be significant. Section 4(f) does not apply to privately owned and operated golf courses even when they are open to the general public. Golf courses that are owned by a public agency but managed and operated by a private entity may still be subject to Section 4(f) requirements depending on the structure of the agreement.” Per this guidance, and by virtue of this golf course being identified as a public recreational resource in the City’s master plan, the Desert Pines Golf Course qualifies for protection under Section 4(f).
Figure 3-31. Section 4(f) Properties and Properties Not Eligible for Protection Under Section 4(f)
The Preferred Alternative would not permanently incorporate any land from the Desert Pines Golf Course, nor would any golf course property be temporarily occupied during construction. No proximity impacts to the golf course are anticipated as a result of the Preferred Alternative, as discussed below:

- Per the traffic noise analysis performed for this EA, traffic noise levels at the golf course would not exceed FHWA’s traffic noise impact criteria for this resource (see Section 3.3 for more detail on Preferred Alternative traffic noise impacts).

- The golf course is not anticipated to experience a visual change from existing conditions as a result of the Preferred Alternative (see Section 3.7 for more detail on Preferred Alternative visual impacts).

- There would be no change in transit, vehicle, bicycle, or pedestrian access to the golf course.

Therefore, FHWA has concluded that there would be no Section 4(f) constructive use of the Desert Pines Golf Course under the project, consistent with 23 CFR Part 774.15(a).

### 3.9.1.2 Unnamed Playground (on Manisa Circle)

There is an unnamed playground located on the east side of Manisa Circle in the Otto Merida Desert Villas development ([Figure 3-32](#)). Otto Merida Desert Villas is a low-income tax credit development that is owned and managed by SNRHA.

![Figure 3-32. View of Unnamed Playground from Manisa Circle](image)

The playground, which is approximately 15,000 square feet, is not identified as a recreational resource in the Las Vegas 2020 Master Plan Parks Element (City of Las Vegas, 2013b). According to staff at SNRHA, use of the playground is intended for Otto Merida Desert Villas residents only (not the general public) and as the official with jurisdiction, the Housing

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*Images and figures have been referenced with appropriate citations and alt-text descriptions.*
Authority does not consider the playground area to be a significant public recreational resource.

Based on the above, the playground is not eligible for protection under Section 4(f). Additionally, the project would not impact this playground.

3.9.1.3 Shared-use Path (between Charleston Boulevard and Stewart Avenue)

Inside the study area there is a paved path located adjacent to I-515 (on the east side of the freeway) that extends approximately 0.60 mile between Charleston Boulevard and Stewart (Figure 3-33). This path is identified by the Las Vegas 2020 Master Plan Trails Element as a “multi-use transportation trail” (City of Las Vegas, 2013a). The plan defines multi-use transportation trails as “facilities that typically have paved paths separated from the roadway for use by cyclists, pedestrians, runners and other users of non-motorized transportation . . . transportation trails are located or aligned to form a transportation system for pedestrian and non-motorized vehicular travel with linearity, continuity and accessibility being the principal factors involved. Trails are designed to be interconnected and carry traffic from one area of the community to another, in a fashion that is similar to a local street system” (City of Las Vegas, 2013a).

Figure 3-33. View of Charleston Boulevard access point to Shared-use Path (between Charleston Boulevard and Stewart Avenue)
The Section 4(f) Policy Paper (FHWA, 2012) provides guidance with regard to what types of trails/paths are protected under Section 4(f):

**Question 15A: Do the requirements of Section 4(f) apply to shared use paths or similar facilities?**

**Answer:** FHWA must comply with 23 CFR 774.13(f) when determining if a Section 4(f) approval is necessary for the use of a trail, path, bikeway, or sidewalk. If the publicly owned facility is primarily used for transportation and is an integral part of the local transportation system, the requirements of Section 4(f) would not apply since it is not a recreational area.

Per 23 CFR 774.13(f):

(f) Certain trails, paths, bikeways, and sidewalks, [are exceptions to the requirement for Section 4(f) approval] in the following circumstances:

1. Trail-related projects funded under the Recreational Trails Program, 23 U.S.C. 206(h)(2);
2. National Historic Trails and the Continental Divide National Scenic Trail, designated under the National Trails System Act, 16 U.S.C. 1241-1251, with the exception of those trail segments that are historic sites as defined in §774.17;
3. Trails, paths, bikeways, and sidewalks that occupy a transportation facility right-of-way without limitation to any specific location within that right-of-way, so long as the continuity of the trail, path, bikeway, or sidewalk is maintained; and
4. Trails, paths, bikeways, and sidewalks that are part of the local transportation system and which function primarily for transportation.

Based on the guidance in the Section 4(f) Policy Paper and the relevant Section 4(f) statute citation noted above, the shared-use path located between Charleston Boulevard and Stewart Avenue is not eligible for protection under Section 4(f) as it is considered a facility primarily used for transportation and located within a transportation facility right-of-way.

**3.9.1.4 Shared-Use Path (between Mojave Road and Eastern Avenue)**

Inside the study area there is a paved path located adjacent to I-515 (on the south side of the freeway) that extends 0.55 mile between Mojave Road and Eastern Avenue (note that this is explicitly referring to the segment within the study area; **Figure 3-34**). The shared-use path located between Mojave Road and Eastern Avenue is defined by the Las Vegas 2020 Master Plan Trails Element as a “multi-use transportation trail” (City of Las Vegas, 2013a). For the reasons described earlier, by virtue of being defined as such by the City this shared-use path is not eligible for protection under Section 4(f).
3. EXISTING CONDITIONS, ENVIRONMENTAL IMPACTS, AND MITIGATION

3.9.1.5 Cultural Resources

There are no NRHP-listed properties identified in the study area.

As part of the cultural resources evaluation performed for this project, a survey of historic buildings as well as a survey of potentially significant archaeological resources in the study area was conducted. The results of this evaluation were that no historic properties or archaeological sites located in the study area were determined to be eligible for the NRHP.

3.10 Cumulative Impacts

The I-515/Charleston Boulevard Interchange Project Indirect and Cumulative Impacts Technical Report (NDOT, 2017f) (Appendix C.17) provides a detailed overview of the cumulative impacts analysis methodology and background. Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the present project. A cumulative impact assessment looks at the collective impacts posed by individual land use actions and projects, regardless of the initiator. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time. A proposed action or alternative must have a direct and/or indirect effect on a specific resource for the proposed action to exert a cumulative impact. If no direct and/or indirect effect to a specific resource is suspected, there is no need to consider cumulative effects to that resource.

3.10.1 Geographic Study Areas

The boundaries of the cumulative impact analysis area have been drawn to approximate the geographic area potentially affected by the project, as well as other reasonably foreseeable improvements. The analysis focuses on a 0.25-mile radius around the existing I-515 and Charleston Boulevard Improvement Project, including the consideration other reasonable...
foreseeable projects. Other past projects and reasonably foreseeable future projects in the project vicinity include:

- **Project Neon**: improvements to I-15 between Sahara Avenue and the I-15/US 95/I-515 interchange (“Spaghetti Bowl” in downtown Las Vegas)
- Improvements to I-515 between the Spaghetti Bowl and Eastern Avenue
- Two planned Clark County Regional Flood Control District storm drain projects
- Eastern Avenue/Civic Center Drive Safety Management Plan
- Charleston Boulevard/Nellis Boulevard Motorist and Pedestrian Safety Improvements
- Charleston Boulevard/Lamb Boulevard Intersection Improvements
- Proposed light rail transit along Charleston Boulevard

Figure 3-35 shows the approximate location of these projects.

### 3.10.2 Cumulative Impacts Analysis

An assessment of potential cumulative impacts on the resources of the natural and built environments was conducted for resources for which a potential post-mitigation, non-significant, adverse, direct or indirect impact has been identified. As such, it was determined Environmental Justice populations would be the only resource to require analysis in order to determine if the project would result in a cumulative impact.
Figure 3-35. Reasonably Foreseeable Future Actions
Environmental Justice

Of the projects identified above, only two have the potential to result in a cumulative impact when considered with this project, the I-515 Alternatives Development Study and the proposed light rail project on Charleston Boulevard. The individual transportation improvements identified as part of the I-515 Alternatives Development Study would be developed and implemented to not have a disproportionately adverse impact on protected populations as the project would be completed with no or minimal new right-of-way and focused on improving safety and operations.

The proposed light rail project on Charleston Boulevard has the potential to spur redevelopment around station locations and thus has the potential to affect protected populations. (Note: Station locations were not identified as part of the City of Las Vegas Mobility Master Plan.) This creates the potential for changes in property values and can be perceived as an impact (generally for renters) or a benefit (generally for owners). These potential “pricing-out” impacts (that is, increased rents and decreased affordability for existing residents) can be offset by the decrease in transportation costs. It is recommended that the City of Las Vegas, Clark County, and developers work together to keep existing housing and provide new affordable housing options in station areas to ensure that neighborhoods near the transit stations continue to be affordable for low-income households.

While there would likely be an adverse impact related to the proposed light rail project, any such impact would affect both environmental justice and non-environmental justice populations proportionately. Both environmental justice and non-environmental justice populations in the study area would also benefit from the proposed light rail project. It would be prudent to conduct additional outreach and coordination with community organizations and area residents to maintain engagement with protected populations when the project advances to ensure the needs of protected populations are met.

Based on this assessment, it is expected there would be no cumulative impact with regard to protected environmental justice populations.
4. Agency Coordination and Public Involvement

This section discusses public involvement activities and coordination with local, state, and federal review agencies and other stakeholders during preparation of the EA. The public involvement process was open to all residents and population groups and did not exclude any persons because of income, race, national origin, sex, age, religion, or disability.

4.1 Public Involvement

Opportunities were provided for local officials, area residents, and other stakeholders to participate in determining why this project is needed (need and purpose statement) and developing alternatives for the I-515/Charleston Boulevard interchange, as well as to provide comments on the project in general. Public involvement efforts included a project website, public information meeting with requisite supporting materials (displays, handouts, fact sheets, and PowerPoint presentation), and stakeholder meetings. NDOT will also host a public hearing in May 2019 when this EA is made available for agency and public review. The results of the public hearing will be documented in the anticipated Finding of No Significant Impact (FONSI).

4.1.1 Public Involvement Plan

In September 2016, NDOT prepared a Public Involvement Plan (Appendix D) for the I-515/Charleston Boulevard Interchange Project, outlining the process to obtain input from a broad range of project stakeholders. The plan identified a communication goal to “Create a comprehensive plan for effective communication and involvement of project stakeholders and the public.” The plan also identified key project stakeholders and key deliverables for the public involvement element of the project.

4.1.2 Project Website

NDOT maintains a website (Figure 4-1) for the I-515/Charleston Boulevard Interchange Project. The website is updated regularly and provides information on the project, links to resources, and contact information.

I-515/Charleston Boulevard Interchange Project Website
Visit the project website for the most up-to-date information
Figure 4-1. Image of the I-515/Charleston Boulevard Interchange Project Website, January (2018)
4.1.3 Public Information/Scoping Meeting (September 2016)

A public information/scoping meeting was held on September 22, 2016, at the East Las Vegas Community Center. NDOT held this meeting to introduce the I-515/Charleston Boulevard Interchange Project and solicit input from stakeholders about the project and project area.

In advance of the meeting, NDOT used the following methods to inform the public:

- Print advertisements were placed in the main news section of the *Las Vegas Review-Journal* on three different dates and in *El Tiempo* (local Spanish language newspaper) (**Figure 4-2**).

  ![Figure 4-2. Example of advertisements placed in Las Vegas Review-Journal (English) and El Tiempo (Spanish)](image)

  More than 2,500 mailers were sent to owners and residents in the surrounding area. The mailers included the public meeting notice and the Intent-to-Study Letter in English and Spanish (**Appendix A**).

- Press releases were sent to radio stations, news media, and print media.

- The public information meeting was announced on social media, including Twitter and Facebook (**Figure 4-3**).
The meeting was conducted in an “open house” format from 4:00 p.m. to 7:00 p.m., providing the public an opportunity to review handouts, view project displays, and individually discuss the project with project team members (Figure 4-4). Based on the sign-in sheets, approximately 40 members of the public attended the public information meeting (Figure 4-5). Meeting materials were provided to all attendees, with information in English and Spanish; these materials included:

- Welcome letter
- PDF version of the project presentation
- PDF version of display boards
- Project fact sheet
- Comment form
Figure 4-5. Audience listening to presentation at September 26, 2016, public information meeting

Information was displayed in English and Spanish. Three Spanish translators attended the meeting. During the public presentation, an English and Spanish PowerPoint presentation were shown side-by-side (Figure 4-6) and the spoken presentation was simultaneously translated from English to Spanish using earpiece technology. This was the first NDOT project to use the earpiece technology. Public comments and responses during the question-and-answer session after the presentation were also summarized and translated into Spanish. According to NDOT’s Public Hearing Officer, 19 Hispanic individuals attended the public information meeting.

Figure 4-6. The public information meeting presentation was projected in both English and Spanish
Comments were submitted by:

- Speaking at the meeting (all comments were transcribed) (three comments)
- Talking to a court reporter at the meeting (two comments)
- Submitting a comment form at the meeting or by submitting mailed or electronically conveyed messages to NDOT (four comments)

The comment period was open for 15 days after the meeting as specified in NDOT’s Public Involvement Plan. Overall, the feedback received from the public at the meeting was positive. Those who provided comments supported the proposed project, while some thought the project needed to be larger in scale to address the growing congestion in the area. Other comments heard during the meeting included concerns about individual properties being affected.

For more details about the September 22, 2016, public information meeting, see the Public Information Meeting Summary, I-515/Charleston Boulevard Environmental Assessment, Las Vegas, Nevada (Appendix D).

4.1.4 Stakeholder Meeting with Woodbury Corporation

In December 2016, NDOT met with representatives from Woodbury Corporation (Woodbury) (Appendix D – Meeting Summary). Woodbury owns a medical office building on the north side of Charleston Boulevard between Del Amo Drive and Sacramento Drive that would be impacted by the Preferred Alternative. NDOT discussed the proposed alternatives under consideration for the I-515/Charleston Boulevard interchange and stated that both would involve partial acquisition of Woodbury’s property. A Woodbury representative noted that losing the berm on the property or losing one of the property’s driveways to Charleston Boulevard was not as critical as losing parking stalls. As a result of this meeting, NDOT conducted a parking evaluation of the Preferred Alternative’s impacts on the property.

In September 2017, NDOT provided a project update to representatives from the Woodbury (Appendix D – Meeting Summary). Based on the parking evaluation of the Preferred Alternative’s impact on the Woodbury property, a reduction of 26 parking spaces was estimated. Woodbury was concerned this may cause impact in term of future tenants. The value of the lost parking spots would be determined through appraisal and it would be part of the acquisition offer made by NDOT.

4.2 Agency Coordination

Coordination with state and federal review agencies for this project began in 2016 and continued through development and refinement of alternatives and EA preparation. Opportunities were provided for local, state, and federal officials to participate in developing the purpose and need factors and alternatives for the I-515/Charleston Boulevard Interchange Project, as well as to provide comments on the project in general. Agency coordination efforts included an Intent-to-Study letter and individual meetings.

4.2.1 Intent-to-Study Letter

NDOT prepared an Intent-to-Study letter and forwarded it to federal and state resource agencies, applicable Native American Tribes, local governments, public organizations, special
interest groups, and property owners within the vicinity of the project (part of the public information meeting invite mailer discussed above). Mailed on September 1, 2016, the Intent-to-Study letter:

- described the preliminary concept of the project
- solicited input for the purpose and need, environmental impacts, and potential mitigation measures
- provided contact information for comments or questions
- provided details of the September 22, 2016, public information meeting

Appendix A contains the Intent-to-Study letter in English and Spanish and the distribution list.

4.2.2 Agency Stakeholder Meetings

NDOT met with stakeholders to discuss the project and solicit information. The following bullets summarize the stakeholder meetings. Appendix A provides more detailed summaries of the stakeholder meetings.

- **City of Las Vegas.** In November 2016, NDOT met with representatives from the City of Las Vegas. The I-515/Charleston Boulevard and I-515/Eastern Avenue interchanges and most of the project area are within the municipal boundary of the City of Las Vegas, and I-515 provides regional access from municipal streets. The City of Las Vegas stated that providing a new access point to I-515 between Eastern Avenue and Charleston Boulevard, potentially at Pecos Road, was one of its top priorities. The City also stated that obtaining the necessary right-of-way for the future interchange now might be an efficient overall approach. The City asked why a future interchange at Pecos Road and the I-515/Charleston Boulevard interchange were not being evaluated together, along with other projects being considered as part of the I-515 Alternatives Development Study. NDOT explained that the I-515/Charleston Boulevard interchange would be designed so it does not preclude the future improvements, and the I-515/Charleston Boulevard Interchange Project team is coordinating with the I-515 Alternatives Development Study team, but each project would be environmentally cleared separately so that the two projects do not need to be financially programmed at one time.

- **Regional Transportation Commission of Southern Nevada (RTC).** In November 2016, the project team met with RTC, which is responsible for regional transportation planning in southern Nevada. RTC asked how the I-515/Charleston Boulevard Interchange Project and the other I-515 Alternatives Development Study alternatives were related and how they were being evaluated. NDOT explained that the I-515/Charleston Boulevard Interchange Project is being advanced under a separate EA, but that the project would be designed considering the potential future improvements included in the I-515 Alternatives Development Study. NDOT further explained that the alternatives for I-515/Charleston Boulevard Interchange Project are being coordinated directly with the I-515 Alternatives Development Study’s concepts, such that this project would not preclude or cause those future concepts to become unfeasible.

- **Southern Nevada Regional Housing Authority (SNRHA).** In November 2016, NDOT met with representatives of SNRHA, which manages the Otto Merida Desert Villas Community, an affordable housing community located in the northwest quadrant of the I-515/Charleston Boulevard interchange. NDOT presented an overview of the project and exhibits of the two
alternatives being considered for the I-515/Charleston Boulevard interchange. SNRHA stated they were concerned about pedestrian crossings in the area because many of the residents of the Otto Merida Desert Villas community do not own an automobile and use the sidewalks along Charleston Boulevard to access services and/or transit. They also stated that the diverging diamond interchange alternative at Charleston Boulevard could be confusing and unsafe for pedestrians and asked NDOT to consider pedestrian bridges over the traffic along Charleston Boulevard.

NDOT once again met with the SNRHA in September 2017 to provide a project update. This meeting focused on potential impacts to the SNRHA-owned vacant parcel in the northwest quadrant of the I-515/Charleston Boulevard interchange. NDOT noted the sidewalk along Charleston Boulevard would be reconstructed and the existing driveway access would be removed. SNRHA noted that moving the driveway to the west side of the property along Honolulu Street was preferred. Additionally, it was discussed how a temporary construction easement would be required along the south side of the property, for which NDOT would provide compensation to the SNRHA.

4.2.3 U.S. Environmental Protection Agency
In October 2016, EPA provided comments to FHWA and NDOT in response to the Intent-to-Study letter. NDOT incorporated many of the EPA scoping comment recommendations in this EA. NDOT sent a letter to EPA in February 2019 with a study update. Appendix A contains the EPA scoping comments and the NDOT update letter.

4.2.4 State Historic Preservation Office Coordination
NDOT and FHWA coordinated with SHPO to determine whether the I-515/Charleston Boulevard Interchange Project would have an adverse effect on cultural resources within the project’s APE. NDOT and FHWA sent correspondence to SHPO outlining the proposed APE for cultural resources. On September 1, 2016, SHPO concurred that the APE was adequate.

NDOT and FHWA requested concurrence from SHPO on the properties within the APE that are eligible for the NRHP. On March 27, 2017, SHPO concurred with NDOT’s list of properties eligible for the NRHP and the finding that the project would not adversely affect any eligible properties (Appendix A).

4.2.5 U.S. Fish and Wildlife Service
NDOT consulted the USFWS Information for Planning and Conservation database in August 2016 to determine whether federally endangered, threatened, candidate, or sensitive species are located within the project area (Appendix A). Results indicated potential habitat for four federally listed species. NDOT did not identify any endangered, threatened, candidate, or sensitive species during its research and site-specific investigations, and no critical or suitable habitat for these species is present.

4.2.6 Nevada National Heritage Program
NDOT coordinated with the Nevada National Heritage Program to obtain a list of state endangered, threatened, candidate, and/or at-risk plant and animal species within or near the I-515/Charleston Boulevard Interchange Project area (Appendix A). Results indicated potential habitat for two state-listed species. NDOT did not identify any endangered, threatened,
candidate, or sensitive species during its research and site-specific investigations, and no critical or suitable habitat for these state-listed species is present.
5. References and Supporting Documents


Clark County Department of Comprehensive Planning. 2016. *Clark County, Nevada Comprehensive Master Plan Transportation Element 2016*. http://www.clarkcountynv.gov/comprehensive-planning/ advanced-
5. REFERENCES AND SUPPORTING DOCUMENTS


Federal Highway Administration (FHWA). 2016. “KABCO Injury Classification Scale and Definitions.”


Realtor.com. 2017. Search for similar properties for sale within 0.25 mile of project.


