

CHAPTER 8

SUMMARY OF ALTERNATIVES

This chapter summarizes the social, economic, and environmental considerations for the Viaduct and Community Grid Alternatives.

Chapter 5, Transportation and Engineering Considerations, and **Chapter 6, Social, Economic, and Environmental Considerations**, detail the potential effects of the Viaduct and Community Grid Alternatives. For each topic area, future conditions with the project alternative in place (i.e., build condition) were compared with future conditions without implementation of the alternative (i.e., no build condition). Where adverse effects were identified, measures to minimize or otherwise mitigate the effects to the extent practicable were discussed. This chapter provides a summary of the effects of the build alternatives.

8.1 DESCRIPTION OF THE NO BUILD ALTERNATIVE

The National Environmental Policy Act (NEPA) requires examination of a No Build Alternative. The No Build Alternative serves as the baseline to which the other alternatives are compared. The No Build Alternative would maintain Interstate 81 (I-81) and Interstate 690 (I-690) in their existing configuration through Syracuse, although ongoing maintenance and repairs to ensure the safety of the traveling public would continue. In addition, NYSDOT would implement safety measures to the extent feasible and financially practicable. I-81 through Downtown Syracuse has required an increasing number of emergency repairs of greater magnitude to keep it serviceable, and over time under the No Build Alternative, these repairs would become increasingly costly as the highway continues to deteriorate.

8.2 DESCRIPTION OF BUILD ALTERNATIVES

Chapter 3, Alternatives, of this Draft EIS describes the Viaduct and Community Grid Alternatives. The following discussion identifies key features of each of these alternatives. There are also a number of common elements between alternatives, which are detailed further in Chapter 3.

8.1.1 Viaduct Alternative

The Viaduct Alternative would involve a full reconstruction of I-81 between approximately Colvin Street and Spencer Street, as well as modifications to highway features north of Spencer Street to Hiawatha Boulevard and along I-690 between Leavenworth Street and Lodi Street. The new viaduct would provide four 12-foot travel lanes (a minimum of two in each direction), as well as inside shoulders (a minimum of four feet in each direction) and outside shoulders (a minimum of 10 feet in each direction). Other improvements under the Viaduct Alternative would include a new partial I-81 interchange at Dr. Martin Luther King, Jr. East (MLK, Jr. East); the removal of the West Street overpass, allowing West Street to

intersect with Genesee Street at grade; the conversion of Crouse Avenue between Genesee Street and Adams Street and other local streets from one-way to two-way operation; and provision of pedestrian and bicycle facilities along Almond Street and portions of Lodi, McBride, and Salina Streets (see **Chapter 3, Alternatives**, for further details).

From the south, the Viaduct Alternative alignment would begin as I-81 approaches the city near Colvin Street. Near Van Buren Street, the interstate would go over the bridge carrying the New York, Susquehanna and Western Railway at approximately the same elevation as the existing I-81 viaduct, and begin to climb until nearby Adams Street, where it would be approximately 10 to 15 feet higher than the existing 20-foot-tall viaduct. This increased height generally would be maintained throughout the length of the viaduct.

South of Harrison Street, the new viaduct generally would be approximately 10 to 20 feet wider, depending on the section, than the 66-foot-wide existing viaduct. Between Harrison and Genesee Streets, the viaduct would begin to split into two separate bridges, with the bridge on the west carrying two southbound I-81 through lanes and lanes for ramp connections, and the bridge on the east carrying two lanes for northbound I-81 and lanes for ramp connections. As a result of these connections, separate bridges, and wider shoulders, and other improvements, the transportation footprint above Almond Street would be substantially wider than the existing viaduct footprint, ranging from approximately 84 feet at Harrison Street (20 feet wider than existing) to 280 feet north of East Genesee Street (150 feet wider than existing).

From East Genesee Street to the I-690 interchange, I-81 would continue on separate bridges, which would join and end around Salina Street (for comparison, the existing I-81 viaduct rejoins at approximately State Street). From Salina Street northward, the interstate would be carried on an embankment. Elevations would match those of the existing interstate near existing Butternut Street.

The Viaduct Alternative would provide connecting ramps from southbound I-81 to westbound I-690 and from eastbound I-690 to northbound I-81, and it would correct most non-standard and non-conforming highway features within the I-81 viaduct priority area.¹ The alternative would meet 60 mph design standards except for horizontal stopping sight distance² at five curves. Three curves would meet 55 mph design standards and two curves would meet 50 mph design standards. The sight distance restriction would apply to only the inside lane of the five curves. The posted speed limit on the viaduct would be 55 mph, but warning signs to encourage motorists to reduce speed would be installed at the five curves.

¹ The I-81 viaduct priority area refers to the segments of I-81 and I-690 in Downtown Syracuse where the greatest concentration of infrastructure deficiencies were identified as part of the I-81 Corridor Study (NYSDOT, July 2013), which prompted the I-81 Viaduct Project and are the focus of the Project. See **Chapter 1, Introduction**, for further discussion.

² As defined by FHWA, “stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object.” “Horizontal stopping sight distance” refers to the distance that a motorist needs to see around horizontal curves at a given speed.

The Viaduct Alternative would take approximately six years to construct, which would involve closure of portions of I-81 and I-690 during various stages of construction. At these times, traffic would be routed to other highways or local streets. The cost of the Viaduct Alternative would be approximately \$1.7 billion.

8.1.2 Community Grid Alternative

The Community Grid Alternative would involve demolition of the existing viaduct between the New York, Susquehanna and Western Railway bridge and the I-81/I-690 interchange. The section of I-81 between the southern I-81/Interstate 481 (I-481) interchange and the I-81/I-690 interchange in Downtown Syracuse would be de-designated as an interstate, and existing I-481 would be re-designated as the new I-81. The portion of former I-81 south of MLK, Jr. East to the former I-481 interchange would be reclassified from an interstate to a State route. North of MLK, Jr. East, the State route would transition to a two-way street with signalized intersections (“urban arterial”) to become integrated into the city street system. The section of I-81 between the I-81/I-690 interchange and the northern I-81/I-481 interchange would remain a limited-access roadway, but it would carry a different route designation.

The Community Grid Alternative would disperse traffic throughout the city grid by promoting broader use of the existing street network. Vehicular traffic would be channeled through Almond Street, Oswego Boulevard, and along parallel corridors, such as Crouse Avenue, Irving Avenue, State Street, and Townsend Street, as well as other local streets that would have the capacity to accommodate this traffic. New interchanges would be constructed from I-690 at Crouse Avenue and Irving Avenue, as well as new entrance and exit ramps to/from the former I-81 connecting with Willow Street, James Street, and Erie Boulevard. Sections of Crouse Avenue, as well as Harrison Street and Adams Street west of Almond Street, would be converted from one-way streets to two-way streets. West Street would be lowered to intersect with Genesee Street at grade. By dispersing traffic to these other streets, the reconstructed Almond Street would maintain a narrow vehicular transportation footprint (with generally two lanes, as well as turn bays when needed, in each direction). Streets incorporated into the Community Grid Alternative would be designed to meet Federal, State, and local design standards consistent with their anticipated function.

The section of the existing I-81 between its southern interchange with I-481 (Exit 16A) and MLK, Jr. East, which would be renamed as a New York State Route, is referred to herein as the “State route.” The section of I-81 between Butternut Street and its northern interchange with I-481 (Exit 29), which would be renumbered as another interstate (e.g., I-581, etc.), is referred to herein as the “former I-81 northern segment.”

Between East Kennedy Street and MLK, Jr. East, the State route would transition from a highway to an urban arterial, intersecting with MLK, Jr. East at grade. The roadway would then descend to pass beneath the New York, Susquehanna and Western Railway and return to street level at Van Buren Street.

Almond Street would consist of two 11-foot-wide³ travel lanes in each direction, turning lanes at intersections (where needed), widened sidewalks, a landscaped median, and bicycle facilities. Bicycle facilities would include bicycle lanes, raised cycle tracks, and shared use (bicycle and pedestrian) paths in various segments along Almond Street, as well as some adjacent streets (see **Chapter 3, Alternatives** for further details). Curbside parking lanes would be provided, except in the portion between East Adams Street and MLK, Jr.

The new Almond Street would provide vehicular access to all existing intersections between Van Buren Street and Erie Boulevard. However, only right turns would be possible to and from Madison and Monroe Streets because of the presence of a continuous median on this portion of Almond Street. Only access to and from northbound Almond Street would be available at these two intersections; access to and from southbound Almond Street would not be possible.

The former I-481, once designated as the new I-81, would carry a minimum of four lanes (two in each direction) of through traffic. Interstate re-designation and associated numbering must meet American Association of State Highway Transportation Officials (AASHTO) protocols and receive approval from FHWA. The change in highway designation and associated changes in traffic volumes would require modifications to the new I-81. These modifications would include:

- **I-81/I-481 South Interchange (Interchange 16A):** Reconstruction of this interchange would involve re-routing existing I-81 to connect with existing I-481, which would serve as the new I-81. The new I-81 would meet 70 MPH design standards. The existing ramps that connect northbound I-81 to northbound I-481 and southbound I-481 to southbound I-81 would be demolished, and these movements would be made on the main line of re-designated I-81. The East Brighton Avenue bridge over the interchange would be reconstructed. The intersection of East Brighton Avenue and Rock Cut Road would be maintained.
- Motorists traveling north on I-81 south of Interchange 16A who are headed to Downtown Syracuse would exit the interstate to the State route, while through travelers would continue onto the re-designated I-81. Travelers on the southbound State route headed to the re-designated northbound I-81 would turn left at a new signalized intersection with a new road, which would connect to Brighton Avenue.
- **I-81/I-481 North Interchange (Interchange 29):** This interchange would be reconstructed to connect the re-designated I-81, which would meet 70 MPH design standards, with the existing I-81. The existing ramps that connect northbound I-481 to northbound I-81 and southbound I-81 to southbound I-481 would be demolished, and these movements would be made on the main line of re-designated I-81.

³ To clarify, these 11-foot lanes would have a one-foot curb offset, therefore, any lane adjacent to a curb would be 12 feet wide, and “interior lanes” (which would exist where there are two lanes plus turning lanes if needed) would be 11 feet wide.

The Community Grid Alternative would take approximately five years to construct, which would involve closure of portions of I-81 and I-690 at various stages of construction. A plan has been developed to sequence project elements to reroute traffic as various phases of the Project are completed. The cost of the Community Grid Alternative would be approximately \$1.3 billion.

8.3 SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONSIDERATIONS

Table 8-1 describes the social, economic, and environmental considerations for the Viaduct and Community Grid Alternatives. It provides an overview of conditions in the study areas (“affected environment”) for each topic, and briefly describes effects associated with the Viaduct and Community Grid Alternatives. While study areas vary by technical topic, four general study areas were established to encompass the Project:

- **I-81 Viaduct Study Area:** the area within one-quarter mile of the project limits along I-81 and I-690 generally within and near Downtown Syracuse.
- **I-481 South Study Area:** the area within one-quarter mile of the project limits around the southern interchange of I-81 and I-481.
- **I-481 East Study Area:** the area within one-quarter mile of the project limits along I-481, generally between I-90 and I-690.
- **I-481 North Study Area:** the area within one-quarter mile of the project limits around the northern interchange of I-81 and I-481.

The study areas are shown in **Figure 6.1-1**. For more detailed information about a specific environmental topic, refer to the appropriate section of **Chapter 5, Transportation and Engineering Considerations**, and/or **Chapter 6, Social, Economic, and Environmental Considerations**.

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Table 8-1
Summary of Alternatives

Topic	Affected Environment Summary	Effects	
		Viaduct Alternative	Community Grid Alternative
Construction Means and Methods and Cost	N/A	Construction duration: 6 years Cost: \$1.7 billion	Construction duration: 5 years Cost: \$1.3 billion
Transportation	<p>The regional highway network within Greater Syracuse comprises I-81, the primary north-south travel route; I-90 (NYS Thruway), the primary east-west travel route; I-481, an auxiliary route around the eastern suburbs of Syracuse; and I-690, an auxiliary route that connects I-90 to I-481, passing through Downtown Syracuse. The local street network in Downtown Syracuse is characteristic of a city street grid, with a mix of local neighborhood streets and urban arterials.</p> <p>The highest traffic volumes in the Project Area are in the I-81 Viaduct Study Area along I-81, with volumes over 90,000 vehicles per day. A total of 260 intersections were evaluated for level of service (LOS), with a focus on 113 critical intersections.</p> <p>Highway sections in the Project Area comprise a number of nonstandard and nonconforming features, contributing to high accident rates. The highest accident rates in the Project Area are in the I-81 Viaduct Study Area along I-81, where over 1,300 accidents were reported for a three-year period between 2010 and 2013. In addition, over 800 and nearly 500 accidents were reported for I-690 and I-481, respectively, during this period.</p> <p>Pedestrian and bicycle facilities are lacking on some streets under and near the existing I-81 viaduct where sidewalks are incomplete, pavement markings are unclear in sections, and designated bicycle facilities are limited.</p>	Viaduct would remain, but would be wider to substantially meet current design standards.	The viaduct would be removed and Almond Street would become a urban principal arterial
		I-81/I-690 interchange would become a full interchange with connector ramps added from southbound I-81 to westbound I-690, and from eastbound I-690 to northbound I-81.	I-81/I-690 interchange would become a full interchange with connector ramps added from southbound I-81 to westbound I-690, and from eastbound I-690 to northbound I-81.
		Traffic signal coordination, signage, and pavement markings would be improved.	Traffic would disperse throughout the local street grid, increasing traffic on some local streets and arterials. Traffic signal coordination, signage, and pavement markings would be improved
		Improved traffic flow on the viaduct would attract more vehicles and traffic volumes would increase on some segments of I-81 and I-690. Changes in travel times between various origins and destinations is provided in Table 8-2 .	Vehicle speeds would be slower with I-81 removed from Downtown. Traffic volumes would increase on former I-481 and I-690. Changes in travel times between various origins and destinations is provided in Table 8-2 .
		LOS (<i>freeway</i>): - LOS would generally improve, but some freeway segments would operate at LOS E or F during AM and PM peak periods.	LOS (<i>freeway</i>): - LOS would generally improve, but some freeway segments would operate at LOS E or F during AM and PM peak periods.
		LOS (<i>intersections</i>): LOS E or F operations: - 2020 AM peak hour: 0 intersections - 2020 PM peak hour: 3 intersections - 2050 AM peak hour: 1 intersection - 2050 PM peak hour: 12 intersections Most locations could be mitigated with traffic signal and other easily implementable improvements when appropriate.	LOS (<i>intersections</i>): LOS E or F operations: - 2020 AM peak hour: 5 intersections - 2020 PM peak hour: 8 intersections - 2050 AM peak hour: 4 intersections - 2050 PM peak hour: 13 intersections Most locations could be mitigated with traffic signal and other easily implementable improvements when appropriate.
		Accidents: - Rear-end conflicts: 15 percent increase (+) - Lane change conflicts: 23 percent reduction (-) - Crossing conflicts: 3 percent reduction (-) - Overall: 5 percent reduction	Accidents: - Rear-end conflicts: 37 percent reduction (-) - Lane change conflicts: 24 percent reduction (-) - Crossing conflicts: 13 percent reduction (-) - Overall: 21 percent reduction
		Parking: Parking under the existing viaduct would be removed and other lots would be affected. Impacts would be mitigated by a combination of creating parking lots beneath elevated structures, parking garages, and/or transportation demand management measures.	Parking: Parking under the existing viaduct would be removed and other lots would be affected. Impacts would be mitigated by a combination of creating parking lots beneath elevated structures, parking garages, and/or transportation demand management measures.
		Pedestrians: Sidewalks would be improved along Almond Street and other local streets. The Almond Street crossing width would be narrower. A new shared-use path would be provided on the west side of Onondaga Creek from Erie Boulevard to Evans Street, and on Almond Street from Genesee Street south to Van Buren Street.	Pedestrians: Sidewalks would be improved along Almond Street and other local streets, and improved pedestrian refuges in the median along Almond Street would be provided. In the area of heaviest pedestrian traffic between Genesee Street and Adams Street, the Almond Street crossing would be narrower than under the Viaduct Alternative. A new shared-use path would be provided on the west side of Onondaga Creek from Erie Boulevard to Evans Street, and on Almond Street from Adams Street south to MLK Jr East.

Table 8-1 (cont'd)
Summary of Alternatives

Topic	Affected Environment Summary	Effects	
		Viaduct Alternative	Community Grid Alternative
		Bicyclists: New bicycle facilities would be provided on Almond Street from Erie Canalway Trail to Van Buren Street, and between Van Buren Street and Raynor Avenue via shared use lanes on Fineview Place. New shared-use paths would be provided on the west side of Onondaga Creek via shared use lanes on Fineview Place to Evans Street, on Salina Street from Herald Place to Laurel Street. New bike facilities would be provided from Salina Street to Evans Street via the new Butternut Street bridge and from Salina Street to Clinton Street via the new Spencer Street bridge.	Bicyclists: New bicycle facilities would be provided on both sides of Almond Street, with a shared-use path between Adams Street and MLK Jr East, and between Van Buren Street and Raynor Avenue. New shared-use paths would be provided on the west side of Onondaga Creek from Erie Boulevard to Evans Street and on Salina Street from Herald Place to Laurel Street. New bike facilities would be provided from Salina Street to Evans Street via the new Butternut Street bridge, and from Salina Street to Clinton Street via the new Spencer Street bridge. New bike facilities would be provided on Harrison Street from Almond Street west to Salina Street. New bike facilities would be provided from the Erie Canalway Trail to Burnet Avenue at State Street and Crouse Avenue.
SOCIAL CONSIDERATIONS			
Land Use	Land uses near the existing I-81 viaduct are characteristic of a downtown urban environment, with a mix of institutional uses, commercial office and retail space, residences, parking areas, and transportation uses. Land uses along the I-481 project limits are more suburban and rural, with a less dense mix of land uses. A number of local and regional plans have established goals for land use, economic development, and transportation facilities involving the I-81 corridor in Syracuse.	The project would convert 29 acres of non-NYSDOT right-of-way to state right-of-way. Affected properties include vacant parcels and structures, surface parking areas, and commercial and industrial land uses. Conditions would remain similar to today, as the viaduct would be reconstructed and remain in the same general alignment through Downtown Syracuse. Except for property acquisitions and displacements (discussed below), land use would not be affected. The Viaduct Alternative would be consistent with local and regional plans that call for replacing the viaduct, but would be inconsistent with local plans that call for its removal to improve connectivity between areas east and west of it.	The project would convert 26.3 acres of non-NYSDOT right-of-way to state right-of-way, but the area of the removed viaduct and former right-of-way could be available for future development. Most affected properties include vacant lots and surface parking areas, but also include some commercial and industrial land uses. Land uses would not be adversely affected by removal of the viaduct, and potentially developable land may be created under this alternative. The Community Grid Alternative would be consistent with the local plans that call for the viaduct to be removed to improve connectivity between areas east and west of the existing viaduct. While plans have also called for the replacement of the viaduct due to disrepair, the Community Grid Alternative is not necessarily inconsistent with those plans as the purpose and need was for the replacement to maintain a functioning transportation network, which the Community Grid Alternative would also provide.
Neighborhoods and Community Cohesion	The Project Area comprises several distinct neighborhoods. The existing I-81 viaduct demarcates neighborhoods east and west of the highway, and has been identified by some local plans as a barrier that impedes connectivity between these areas.	The viaduct would remain, but would be 10 to 15 feet higher than the existing viaduct. Pedestrian and bicycle facilities would be installed along Almond Street under the viaduct and improved between areas east and west of the viaduct. The viaduct and its ramps would limit the extent of pedestrian and bicycle improvements in some areas.	The viaduct would be removed and Almond Street would be reconstructed as a “complete street” for users (vehicles, bicycles, and pedestrians). Connectivity between areas east and west of Almond Street would be improved.
Social Groups Benefitted or Harmed / Environmental Justice	Areas near the I-81 viaduct in Downtown Syracuse are more densely populated than the outlying areas along I-481. Since 2000, many of the census block group populations in the Project Area have remained fairly steady, with more notable growth in northern parts of Downtown and near the I-481 northern interchange. Areas near the I-81 viaduct generally have higher levels of households with poverty status, which has increased since 2000. In the Project Area, 60 census block groups (mostly near Downtown Syracuse) are considered minority communities, and 55 are considered low-income communities. Of these, 38 census block groups comprise both minority and low-income communities.	Elderly individuals and individuals with disabilities would benefit from safety and mobility improvements and new facilities compliant with the Americans with Disabilities Act (ADA) in the Almond Street corridor under the new viaduct and along West Street. However, the Viaduct Alternative would limit pedestrian and bicycle improvements in some areas. Transit-dependent individuals, pedestrians, and bicyclists would benefit from the improved pedestrian and bicycle facilities in the Almond Street corridor under the new viaduct, as well as potential transit amenities incorporated into the project in coordination with Centro (such as bus stops and shelters, and designs to facilitate bus maneuvering). While the project would result in adverse effects, minority and low-income populations would not bear a disproportionately high and adverse share of effects. Construction-related effects would occur in minority and low-income areas and would be mitigated to the extent practicable.	Elderly individuals and individuals with disabilities would benefit from the safety and mobility improvements and new facilities compliant with the Americans with Disabilities Act (ADA) in the Almond Street corridor and adjacent streets, and the east side of West Street. Transit-dependent individuals, pedestrians, and bicyclists would benefit from the improved pedestrian and bicycle facilities in the Almond Street corridor, as well as potential transit amenities incorporated into the project in coordination with Centro (such as bus stops and shelters, and designs to facilitate bus maneuvering). While the project would result in adverse effects, minority and low-income populations would not bear a disproportionately high and adverse share of effects. Construction-related effects would occur in minority and low-income areas near the construction areas and would be mitigated to the extent practicable.

Table 8-1 (cont'd)
Summary of Alternatives

Topic	Affected Environment Summary	Effects	
		Viaduct Alternative	Community Grid Alternative
Schools and Places of Worship	Three public schools are located within the I-81 Viaduct Study Area. One private school and two universities are also within the I-81 Viaduct Study Area. In addition, 26 places of worship were identified in this study area.	No schools or places of worship would be acquired, and none would be adversely affected. An existing driveway to Dr. King Elementary School would be closed, but another existing driveway would remain open.	No schools or places of worship would be acquired, and none would be adversely affected. Pedestrian and bicycle enhancements would benefit students and workers along the Almond Street corridor.
ECONOMIC CONSIDERATIONS			
Land Acquisition, Displacement, and Relocation	The Project is located in a dense urban environment where many properties and structures are adjacent to the state right-of-way.	Full/Partial Land Acquisition: 28.9 acres Full Acquisitions: 56 properties Partial Acquisitions: 97 properties Buildings Acquired: 22 (occupied); 2 (vacant) Displaced Residents: 49 Displaced Employees: 622 Approximate Loss in Annual Tax Revenue: \$699,327	Full/Partial Land Acquisition: 26.3 acres Full Acquisitions: 28 properties Partial Acquisitions: 136 properties Buildings Acquired: 5 (occupied) Displaced Residents: 0 Displaced Employees: 83 Approximate Loss in Annual Tax Revenue: \$245,401
Local and Regional Economy	Downtown Syracuse is the commercial center for the city and region, with a typical mix of office, commercial, and ground-floor retail. Educational and health service facilities are dominant employers. The I-481 study areas have lower-scale commercial, industrial, and retail uses. The labor force has grown in some areas and declined in others. Overall, there was a 1.4 percent decline in the Project Area's employment from 2010 to 2014. The I-81 Viaduct Study Area comprises over 80,000 employees of the total 114,000 in the Project Area, 44 percent of which are in the educational, health, and social services fields.	Displacement: 38 businesses with a total of 622 employees; this represents 0.8 percent of total I-81 Viaduct Study Area employment.	Displacement: 8 businesses with of total of 83 employees, representing 0.1 percent of total I-81 Viaduct Study Area employment
		I-81 would remain in its current alignment and land use patterns would not be affected. Some businesses in the I-81 Viaduct Study Area would be displaced, but could potentially be relocated within this study area.	The viaduct would be removed and the street grid would be re-established. Land may become available for new development. Traffic would be dispersed on local roads, which would change delivery patterns.
ENVIRONMENTAL CONSIDERATIONS			
Historic and Cultural Resources	The project is located in a dense urban environment with a number of historic properties. In addition, potential archaeological resources are located within areas of potential ground disturbance.	There is potential to disturb archaeologically sensitive areas by construction of the Viaduct Alternative. Adverse effects would occur to: 10 properties listed or eligible for listing on the National Register of Historic Places A Memorandum of Agreement has been developed under Section 106 of the National Historic Preservation Act, which identifies measures to avoid, minimize, or mitigate these adverse effects as the project progresses.	There is potential to disturb archaeologically sensitive areas by construction of the Community Grid Alternative. Adverse effects would occur to: 2 properties listed or eligible for listing on the National Register of Historic Places A Memorandum of Agreement has been developed under Section 106 of the National Historic Preservation Act, which identifies measures to avoid, minimize, or mitigate these adverse effects as the Project progresses.
Parks and Recreational Resources	Twenty-nine (29) parks and recreational resources exist in the study areas. Seven resources are within close proximity to the project limits and have the greatest potential to be affected by the Project. Recreational resources include local and state trails and bicycle routes, and urban and suburban community parks.	The new viaduct would be wider than the existing viaduct and overhang the edge of Wilson Park, including a basketball court, but would not adversely affect use of the park or basketball court. During construction, a temporary easement on 0.12 acres within Wilson Park would be needed for three years; one of the two basketball courts would be unavailable during this time.	Existing viaduct would be removed, thereby removing the overhead structure near Wilson Park and increasing daylight at the park. During construction, a temporary easement on 0.12 acres within Wilson Park would be needed for two years; one of the two basketball courts would be unavailable during this time.
Visual Resources and Aesthetic Considerations	The Project is located in a dense urban environment that is visually dominated by built forms and transportation infrastructure. Topography ranges from relatively flat along the interstate corridors Downtown to more varied terrain, with increased elevations in the outer portions of the corridors and surrounding neighborhoods. Vegetation is sparse in Downtown areas, with increases in density and canopy away from the city center.	New viaduct would be 10-15 feet higher than the existing viaduct, with the new I-81/I-690 interchange about 20 feet taller than the existing interchange. - Adverse effects would occur at: 11 viewpoints - Neutral effects would occur at: 10 viewpoints - Beneficial effects would occur at: 5 viewpoints	The existing viaduct would be removed. - Adverse effects would occur at: 3 viewpoints - Neutral effects would occur at: 3 viewpoint - Beneficial effects would occur at: 20 viewpoints

Table 8-1 (cont'd)
Summary of Alternatives

Topic	Affected Environment Summary	Effects	
		Viaduct Alternative	Community Grid Alternative
Air Quality	Pursuant to the National Ambient Air Quality Standards (NAAQS), Onondaga County is currently in attainment for all standards of particulate matter (PM; both PM _{2.5} and PM ₁₀), ozone, lead, carbon monoxide (CO), nitrogen dioxide, and sulfur dioxide.	Mesoscale: There would be no adverse increases in area wide emissions. Compared with the No Build Alternative, in year 2020, the Viaduct Alternative would result in marginally higher emissions of CO (nearly 0.0% increase) and lower emissions (less than 1 % decrease) of all other modeled criteria pollutants (see Table 6.4.4-3). Microscale: PM concentrations would be below the NAAQS and would be similar to conditions under the No Build Alternative. Construction: Pollutant concentrations would not exceed the NAAQS.	Mesoscale: There would be no adverse increases in area wide emissions. Compared with the No Build Alternative in year 2020, the Community Grid Alternative would result in higher emissions of VOCs (3.5% increase) and lower emissions (less than 1% decrease) of all other modeled criteria pollutants as a result of the steeper projected improvements in emissions, as projected in the emission rates of the USEPA MOVES2014a emissions model, offsetting the increase in VMT (see Table 6.4.4-9). Microscale: PM concentrations would be below the NAAQS and would be similar to conditions under the No Build Alternative. Construction: Pollutant concentrations would not exceed the NAAQS.
Energy and Climate Change	All of New York State is subject to potential effects of climate change, and projections for the project region indicate steady increases in temperature and precipitation through the 2080s.	Regarding emissions associated with grid power to be used for lighting, message boards, and signals, since the Viaduct Alternative would replace some existing roadway components and the new components would be more energy efficient, it is anticipated that the Viaduct Alternative would reduce electricity use and associated emissions relative to the No Build Alternative. Operational GHG emissions and energy use would increase under the Viaduct Alternative. The changes in GHG emissions and energy use over the years are driven by two opposing processes: 1) decreases in overall fleet-wide average emissions per vehicle-mile over time as engine technology and efficiency improve, and 2) increases in traffic volumes due to growth. The change in engine emissions is projected to be more pronounced in earlier years, while growth in traffic is more steady; thus the overall increase from 2020 to 2030 is much less than from 2030 to 2050. To mitigate the increase in GHG emissions and energy use, the project would be designed to achieve certification at the Silver level under NYSDOT's GreenLITES project design certification program. Enhancements to pedestrian and bicycle infrastructure could encourage non-motorized modes of transportation and reduce emissions associated with driving.	Regarding emissions associated with grid power to be used for lighting, message boards, and signals, since the Community Grid Alternative would replace some existing roadway components and the new components would be more energy efficient, it is anticipated that the Community Grid Alternative would reduce electricity use and associated emissions relative to the No Build Alternative. Operational GHG emissions and energy use would increase under the Community Grid Alternative in analysis years 2020 and 2050, but would decrease over the No Build Alternative in 2030. The changes in GHG emissions and energy use over the years are driven by two opposing processes: 1) decreases in overall fleet-wide average emissions per vehicle-mile over time as engine technology and efficiency improves, and 2) increases in traffic volumes due to growth. The change in engine emissions is projected to be more pronounced in earlier years, while growth in traffic is more steady; thus the net change from 2020 to 2030 is a decrease, while the net change from 2030 to 2050 shows considerable increase. To mitigate the increase in GHG emissions and energy use, the project would be designed to achieve certification at the Silver level under NYSDOT's GreenLITES project design certification program. Enhancements to pedestrian and bicycle infrastructure could encourage non-motorized modes of transportation and reduce emissions associated with driving.
Noise	Existing ambient noise conditions in the study areas are largely influenced by traffic along I-81, I-690, I-481, and some local roadways.	Impacted receivers: 764 (out of 2,240) The viaduct would be reconstructed generally in its current alignment, but the change in height, width, and curve alignment would change noise levels. As such, the number of impacted receivers would increase from 696 under 2013 existing conditions to 764 under the Viaduct Alternative. Where feasible and reasonable, noise barriers are recommended in impacted locations to provide noise abatement.	Impacted receivers: 679 (out of 2,240) The removal of the elevated viaduct, new traffic patterns on the local street grid, and increase of traffic volumes on former I-481 would result in lower noise levels in some areas and higher noise levels in other areas as compared to existing conditions. Where feasible and reasonable, noise barriers are recommended in impacted locations to provide noise abatement.
Water Resources	The Project is located in a largely urban environment with limited water resources. Water resources in the study areas include Onondaga Lake, Onondaga Creek, Ley Creek, North Branch of Ley Creek, Mud Creek, Butternut Creek, and several unnamed streams.	Best management practices would be implemented to meet water quality standards. The wider viaduct would increase impervious surface. State and federal stormwater runoff management requirements would be followed to protect water quality and ensure adequate drainage.	Best management practices would be implemented to meet water quality standards. Removal of the viaduct and replacement with an urban arterial would reduce overall impervious surface coverage. State and federal stormwater runoff management requirements would be followed to protect water quality and ensure adequate drainage.

Table 8-1 (cont'd)
Summary of Alternatives

Topic	Affected Environment Summary	Effects	
		Viaduct Alternative	Community Grid Alternative
General Ecology and Wildlife Resources	The Project is located in a largely urban environment with limited natural habitat and wildlife. Within the Project Area, there are 13 state and federal freshwater wetlands, five ecological communities totaling approximately 765 acres, and largely fragmented or urban-adapted wildlife habitats. State and federal endangered, threatened, and other protected species were identified as having the potential to occur in the area based on federal and state data sources, including: Indiana bat; Northern long-eared bat; Eastern massasauga; American hart's-tongue fern; Peregrine falcon; Least bittern; Lake sturgeon; Seaside bulrush; Midland sedge; Saltmarsh aster; Reflexed sedge; Straight-leaf pondweed; and Inland salt pond	Area of wetland disturbance: 0.5 acres . 0.9 acres of NYSDEC-regulated adjacent areas are within the limits of disturbance, but all construction activities would occur on existing roadways and pavements, and not result in additional disturbance to these areas.	Area of wetland disturbance: 2.37 acres and 0.54 acres (operation/ construction – direct footprint and shading, respectively). 7.4 acres of NYSDEC-regulated adjacent areas would be in the limits of disturbance (much of which includes maintained right-of-way and pavement).
		Removal of habitat: 233 acres total - 223 acres of terrestrial cultural communities - 10 acres of successional southern hardwood communities	Removal of habitat: 418 acres total - 371 acres of terrestrial cultural communities - 29 acres of successional southern hardwood communities - 10 acres of successional shrubland communities - 7 acres of successional old field communities - 2 acres of floodplain forest communities
		While several threatened and endangered plant and wildlife species may occur in the I-81 Viaduct Study Area, this area does not provide ideal habitat for these wildlife species. Surveys would be conducted prior to construction to identify protected plant species so they may be handled properly, and construction activities would be timed to avoid or minimize potential adverse effects on species. As such, no significant adverse impacts to threatened or endangered species are anticipated.	While several threatened and endangered plant and wildlife species may occur in the Project Area, this area does not provide ideal habitat for these wildlife species. Surveys would be conducted prior to construction to identify protected plant species so they may be handled properly, and construction activities would be timed to avoid or minimize potential adverse effects on species. As such, no significant adverse impacts to threatened or endangered species are anticipated.
Asbestos	Based on the age of transportation infrastructure and buildings in the Project Area, some structures to be removed likely possess asbestos containing materials (ACM).	The Viaduct Alternative would involve removing buildings and rebuilding ramps and bridges. These structures may contain ACM. Any ACM would be abated and handled in accordance with applicable state and federal regulations.	The Community Grid Alternative would involve removing buildings and removing or rebuilding 63 ramp and bridge structures. These structures may contain ACM. Any ACM would be abated and handled in accordance with applicable state and federal regulations.
Hazardous Waste and Contaminated Materials	Over 200 sites of potential concern related to hazardous waste and contaminated materials were identified in the Project Area.	The Viaduct Alternative would involve removing 24 buildings and a smokestack, and rebuilding 46 ramps and bridges. A detailed assessment of each affected property and building structure would be completed prior to its acquisition and removal. All ground disturbance and structure demolition would be conducted or remediated in accordance with applicable state and federal regulations, and standard NYSDOT roadway operating procedures.	The Community Grid Alternative would involve removing 5 buildings and a smokestack, and removing or rebuilding 63 ramp and bridge structures. A detailed assessment of each affected structure would be completed prior to its acquisition and removal. All ground disturbance and structure demolition would be conducted or remediated in accordance with applicable state and federal regulations, and standard NYSDOT roadway operating procedures.
Scenic Byways	No state-designated scenic byways were identified in the Project Area.	The Viaduct Alternative would not affect scenic byways.	The Community Grid Alternative would not affect scenic byways.
Farmlands	The Project Area comprises land that is exempt from the federal Farmland Protection Policy Act (FPPA). A small area adjacent to the project limits in the I-481 North Study Area is classified as a New York State agricultural district.	The Viaduct Alternative would not affect farmland.	The Community Grid Alternative would not affect farmland, including the New York State agricultural district adjacent to the project limits in the I-481 North Study Area.

Table 8-2
Sample Travel Times (Minutes) in 2050

Origin	Destination	AM				PM			
		Existing	No Build	Viaduct	Community Grid	Existing	No Build	Viaduct	Community Grid
Baldwinsville	Cicero	22	23	23	23	23	23	23	23
	Destiny USA	23	23	25	25	20	21	22	24
	Downtown	22	22	24	23	20	21	21	21
	Fairmount	18	18	18	18	18	18	18	18
	Fayetteville/Manlius	32	31	33	31	31	31	31	31
	LaFayette	34	33	34	36	31	32	32	36
	Liverpool	15	15	15	15	15	16	16	16
	St. Joseph's Hospital	23	23	24	24	21	21	21	22
Cicero	University Hill	27	26	26	25	23	23	23	22
	Baldwinsville	21	21	21	21	23	23	23	23
	Destiny USA	12	13	11	11	12	11	11	11
	Downtown	16	17	13	13	14	16	13	14
	Fairmount	21	23	20	20	22	23	21	22
	Fayetteville/Manlius	19	18	18	17	19	19	19	18
	LaFayette	28	28	23	27	25	27	24	27
	Liverpool	13	13	13	13	14	13	13	13
Destiny USA	St. Joseph's Hospital	16	17	12	13	13	16	13	14
	University Hill	22	21	16	17	17	19	15	16
	Baldwinsville	22	22	23	22	24	26	26	26
	Cicero	11	10	10	10	12	11	11	12
	Downtown	8	8	7	7	8	10	8	9
	Fairmount	11	11	11	11	14	15	14	15
	Fayetteville/Manlius	19	17	17	18	19	21	19	20
	LaFayette	22	19	18	23	19	21	20	25
Downtown	Liverpool	8	8	9	8	9	9	10	9
	St. Joseph's Hospital	7	7	7	8	7	8	8	8
	University Hill	13	12	10	12	11	13	11	11
	Baldwinsville	20	19	21	22	21	21	24	26
	Cicero	15	13	14	14	16	14	14	16
	Destiny USA	5	5	5	5	6	5	6	7
	Fairmount	13	12	14	14	14	13	16	18
	Fayetteville/Manlius	15	15	15	16	18	16	17	19
Fairmount	LaFayette	17	17	16	17	18	17	18	18
	Liverpool	9	8	9	9	10	9	10	11
	St. Joseph's Hospital	3	3	3	4	4	3	3	5
	University Hill	7	7	6	7	7	7	7	7
	Baldwinsville	17	18	18	18	18	19	19	19
	Cicero	23	22	21	21	23	22	21	21

Table 8-2 (cont'd)
Sample Travel Times (Minutes) in 2050

Origin	Destination	AM				PM			
		Existing	No Build	Viaduct	Community Grid	Existing	No Build	Viaduct	Community Grid
Fairmount	Destiny USA	13	13	13	13	13	13	12	12
	Downtown	14	13	16	15	12	13	13	13
	Fayetteville/Manlius	24	23	24	22	23	23	23	23
	LaFayette	26	25	25	28	23	24	24	28
	Liverpool	17	17	18	16	17	18	17	16
	St. Joseph's Hospital	15	14	16	15	12	13	13	14
	University Hill	19	17	18	16	15	15	15	14
Fayetteville/ Manlius	Cicero	27	28	28	27	29	30	30	32
	Destiny USA	17	16	16	16	17	17	17	17
	Downtown	13	13	13	13	13	14	13	14
	Fairmount	14	14	14	15	14	14	15	16
	Fayetteville/Manlius	20	20	20	20	22	22	22	24
	LaFayette	18	18	18	18	19	19	19	19
	Liverpool	17	17	17	17	18	18	18	18
	St. Joseph's Hospital	13	13	13	14	12	13	14	15
	University Hill	15	16	16	15	15	15	16	15
LaFayette	Baldwinsville	30	31	30	37	31	32	32	39
	Destiny USA	25	25	24	26	26	24	24	26
	Downtown	15	16	15	23	15	16	15	21
	Fairmount	17	17	17	20	16	16	16	17
	Fayetteville/Manlius	23	23	23	30	24	24	24	31
	LaFayette	18	18	18	18	18	18	18	18
	Liverpool	19	20	20	27	20	20	20	25
	St. Joseph's Hospital	17	19	18	22	18	16	18	18
	University Hill	15	17	15	18	15	15	14	15
Liverpool	Baldwinsville	13	14	14	14	15	14	14	14
	Cicero	14	13	13	13	15	14	14	14
	Downtown	6	6	8	8	7	7	8	10
	Fairmount	11	10	8	8	9	12	9	10
	Fayetteville/Manlius	16	16	15	16	17	19	17	17
	LaFayette	21	20	18	19	20	22	19	21
	Liverpool	24	22	19	24	20	23	20	26
	St. Joseph's Hospital	10	10	8	9	8	11	8	9
	University Hill	17	14	12	12	12	15	11	12
St. Joseph's Hospital	Baldwinsville	20	20	20	21	21	23	23	24
	Cicero	13	12	12	12	13	12	12	14
	Destiny USA	3	3	3	3	3	4	4	4
	Fairmount	3	3	3	3	3	3	3	5

Table 8-2 (cont'd)
Sample Travel Times (Minutes) in 2050

Origin	Destination	AM				PM			
		Existing	No Build	Viaduct	Community Grid	Existing	No Build	Viaduct	Community Grid
St. Joseph's Hospital	Fayetteville/Manlius	13	13	13	14	14	15	15	16
	LaFayette	14	14	14	15	16	15	16	19
	Liverpool	18	18	17	19	18	18	19	21
	St. Joseph's Hospital	7	7	7	7	8	8	8	9
	University Hill	7	7	7	8	7	7	8	9
University Hill	Baldwinsville	21	21	21	21	22	24	24	26
	Cicero	16	15	14	15	17	16	17	17
	Destiny USA	7	7	6	7	7	7	8	8
	Downtown	7	6	6	6	7	6	6	6
	Fayetteville/Manlius	14	14	13	14	15	15	16	18
	LaFayette	15	15	15	14	17	17	17	16
	Liverpool	16	16	14	16	16	16	16	17
	St. Joseph's Hospital	10	10	10	11	11	11	12	12
	University Hill	7	7	6	6	6	6	7	6