Why do projects undergo environmental review?

- Both the federal government and New York State have established environmental review requirements to ensure that agencies consider potential environmental effects of projects that they are undertaking or approving. The federal and state legislation are known as:
  - NEPA National Environmental Policy Act of 1969
  - SEQRA [New York] State Environmental Quality Review Act
- Both processes are similar, and in the event that FHWA and NYSDOT are involved (as is the case with the I-81 Viaduct Project), one Environmental Impact Statement (EIS) can be prepared to satisfy the requirements of both.
- The environmental review process provides a valuable way for agencies to gather public input, coordinate with other public agencies, and make decisions that involve engineers, planners, ecologists, landscape architects, and others.

What are the steps in the environmental review process?

- **Notice of Intent**:
  - Formally announces project and initiates environmental review.
- **Scoping Process**:
  - Establishes framework for environmental review.
- **Draft Environmental Impact Statement**:
  - Documents potential environmental, social, and economic effects.
- **Public Review**:
  - Minimum 45-day public review period of Draft EIS, including a public hearing.
- **Final Environmental Impact Statement**:
  - Addresses public and agency comments on Draft EIS as well as any project refinements.
- **Record of Decision**:
  - FHWA and NYSDOT decision document that officially identifies the preferred alternative and mitigation commitments. It ends the NEPA process and allows the project to enter design and construction.
During scoping, alternatives will be identified and explored further

- Multiple options to be developed for each alternative (e.g., explore different number of lanes and configuration, etc.)
- Develop and engineer multiple options under each scenario and determine their feasibility
- Reasonable alternatives may be suggested during the scoping process and will be considered
- Refined options will be presented for public review at future scoping meeting
WHERE ARE WE GOING?
Next Step: Alternatives Screening

Develop Alternatives
- Explore and engineer multiple alternatives
  - Engineering Studies
  - Public Input

Screen and Evaluate Alternatives
- Screen alternatives based on engineering studies and public input
  - Important Considerations in the Screening:
    - How does the alternative meet project goals and objectives?
    - What are the potential property impacts?
    - What are the effects on regional and local street connections?
    - How well does the alternative correct I-81’s nonstandard features (shoulder/lane widths, etc.)?
    - Is the alternative consistent with community needs?
    - What will the solution cost to construct, operate, and maintain?

RESULT
Alternatives to be Studied in DEIS

Future scoping meeting will present results of the ongoing alternative development process

U.S. Department of Transportation
Federal Highway Administration
New York State Department of Transportation
November 2013
Environmental Impact Statement (EIS)

An EIS is a comprehensive document that analyzes potential effects of a project on the natural, man-made, social, and economic environments. It is prepared following procedures of federal and state mandates.

EIS technical studies are often organized by the following three primary considerations:

<table>
<thead>
<tr>
<th>Affected Environment</th>
<th>Existing conditions, or base line conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Consequences</td>
<td>Potential effects, or a comparison to existing conditions</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Explore opportunities to avoid, minimize, or mitigate adverse impacts</td>
</tr>
</tbody>
</table>
WHERE ARE WE GOING?

The EIS will examine...

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Evaluates potential effects on the movement of people and goods and looks at traffic, public transit, and pedestrian and bicycle movement.</td>
</tr>
<tr>
<td>Land Use and Community Character</td>
<td>Looks at development patterns (e.g., residential, commercial, recreational, etc.) to determine potential effects on land use operations and the character of an area and also considers community visions for the future.</td>
</tr>
<tr>
<td>Socioeconomic Conditions</td>
<td>Evaluates demographic and employment characteristics and the potential impacts and/or benefits on businesses, tax bases, and other economic indicators.</td>
</tr>
<tr>
<td>Land Acquisition, Displacement, and Relocation</td>
<td>Determines if the project would require acquisition of or easements on any property outside the existing highway right-of-way and whether that would result in displacement or relocation of any occupants and whether that would affect tax revenues.</td>
</tr>
<tr>
<td>Visual Resources and Aesthetic Conditions</td>
<td>Evaluates whether the project would affect any views to or from resources where such views are considered defining or important, and evaluates the aesthetic quality of the project itself and its potential effects on the visual character of the surrounding area.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Considers potential impacts to historic and archaeological resources. Historic resources may include buildings, districts, monuments, or sites of architectural, cultural or historic significance. Archaeological resources include buried artifacts or remains that have cultural or historic significance.</td>
</tr>
</tbody>
</table>
WHERE ARE WE GOING?  
The EIS will examine...

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Evaluates how a project may affect (increase or decrease) pollutants in the air we breathe, typically related to vehicle emissions.</td>
</tr>
<tr>
<td>Energy and Climate Change</td>
<td>Considers potential energy consumption of a project and its effect on greenhouse gases and climate change.</td>
</tr>
<tr>
<td>Noise</td>
<td>Analyzes potential changes in ambient noise levels (typically from highway traffic) and potential effects on sensitive receptors (e.g., residences, schools, etc.).</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Considers potential effects on the natural environment, such as plants and wildlife (including endangered or threatened species), wetlands and other water resources, floodplains, and geologic conditions.</td>
</tr>
<tr>
<td>Hazardous Wastes and Contaminated Materials</td>
<td>Identifies the potential to disturb or expose hazardous wastes and contaminated materials and the measures that would be implemented to protect public health from the removal, transport, and disposal of these materials.</td>
</tr>
<tr>
<td>Construction Effects</td>
<td>Considers the short-term effects in each of the subject areas described above that could result from construction of the project.</td>
</tr>
</tbody>
</table>
### WHERE ARE WE GOING?

**The EIS will examine...**

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indirect and Cumulative Effects</strong></td>
<td>Indirect effects consider a project’s potential to induce separate actions later in time or farther removed in distance and result in secondary impacts. Cumulative impacts consider the combined effects of a project with other independent but simultaneous or reasonably foreseeable actions.</td>
</tr>
<tr>
<td><strong>Environmental Justice</strong></td>
<td>Evaluates potential effects on minority and low-income populations to ensure these communities do not suffer disproportionately high and adverse effects from a project.</td>
</tr>
<tr>
<td><strong>Other NEPA and SEQRA Considerations</strong></td>
<td>Considers more general or global aspects of a project, such as potential short-term effects that are necessary for its long-term productivity; irreversible and irrevocable commitment of resources; a summary of unavoidable impacts, which cannot be partially or fully mitigated; and consistency with New York State smart growth principles.</td>
</tr>
<tr>
<td><strong>Section 4(f) Evaluation</strong></td>
<td>An independent evaluation that is often incorporated into an EIS and evaluates compliance with Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966, which prohibits USDOT (including FHWA) from approving any project that “uses” or adversely affects public parks, wildlife refuges, or historic resources unless there is no feasible and prudent alternative to that use and all measures to minimize harm have been implemented.</td>
</tr>
<tr>
<td><strong>Section 6(f) Evaluation</strong></td>
<td>An independent evaluation that documents coordination with respect to Section 6(f) of the Land and Water Conservation Fund Act of 1964. A Section 6(f) analysis is needed when a project would alter parklands or other sites that previously received federal money from the Land and Water Conservation Fund. There is potential that parklands near the existing alignment of I-81 have received Land and Water Conservation Funds.</td>
</tr>
</tbody>
</table>
Traffic Study Fundamentals
With respect to traffic, the Department’s number one priority is safety. But we also need to balance safe operations of our facilities with efficient movement of people and goods, as well as the needs of the community in which the facility is located.

These objectives are consistent with the project goals to improve safety, create an efficient transportation system, and enhance livability.

So for this project, we are undertaking a comprehensive traffic study to identify existing deficiencies and needs, inform the development of alternatives, and support the decision-making process on which alternative is ultimately selected.
We consider a number of things in traffic studies. Safety is a top priority, but safety must be achieved for all modes, including walking and biking, as well as driving.

Mobility, with acceptable levels of service, also be must achieved. This means providing reasonable travel times for motorists.

Travelers also must be provided with acceptable access to the transportation system and to their desired destinations. We achieve this by providing the most direct routes and trying to minimize unnecessary circulation on local streets.

The transportation system should be reliable and without large variations in travel time. Incidents such as collisions or vehicle breakdowns can render the system unreliable if adequate features, such as shoulders, are not provided. Safety concerns, such as reducing the frequency of accidents, have a substantial effect on reliability.

Connectivity—the ability to travel between different routes or modes—also is important.
The traffic study has many uses.

First, it can be used to identify problems with traffic safety and operations, and these are considered when developing the project’s purpose and need statement. Once those problems are identified, various solutions can be developed and packaged into improvement alternatives.

Traffic data also is used to help evaluate and screen alternatives. For example, to what extent does each alternative achieve the project’s traffic goals?

In addition, output from the traffic analysis is used to support other analyses in the EIS. For example, traffic volumes and speeds are key inputs to air quality and noise analyses.

Specific concerns from stakeholders also can be addressed by the traffic study.
The major steps in the traffic study, which we'll discuss in more detail in the slides that follow, include:
• Defining the traffic study area including identifying the area of influence of potential alternatives
• Data collection for the defined study, which involves a variety of traffic data
• Traffic model development
• Analyzing conditions without the I-81 Viaduct Project. This includes both existing and projected future conditions, and
• Analyzing conditions with I-81 improvement alternatives in place. Traffic conditions during construction also will be evaluated.
The study area for this project includes a **Regional Study Area** consisting of Onondaga County and portions of Madison and Oswego Counties, and a **Local Study Area** consisting of the I-81, I-690, I-481, and I-90 interstate system and surface streets that could be affected by the project, including downtown Syracuse and University Hill.
We’ve collected a variety of traffic data for this project including volume data for both vehicular and pedestrian traffic, travel time and delay data, origin-destination information, and physical inventories of the roadways. These are the data that help us define the demand for the transportation system and system’s capacity to service the demand.

The data is used directly as input for the various traffic models and also to help us calibrate those models to better represent actual conditions.
We are using two main models to advance the traffic study for this project. The SMTC regional model is being used to forecast future traffic volumes and travel patterns and is the key tool we’re using to develop the demand for the project.

We also are using the VISSIM micro-simulation model to analyze traffic flow on the network and determine how well the roadway can accommodate projected demand for the project alternatives.
The SMTC regional model will help us determine a number of key characteristics about travel in the region and within the City of Syracuse. Specifically, it will identify:

- The number of trips
- The origins and destination of those trips, and when they travel, and
- The modes and routes used to make the trips
For example, from the data in the model, we know that during the AM peak commuter period, which occurs from 7:30 to 8:30 AM, there are about 35,000 total trips to Syracuse and 13,000 (or 37%) of those originate within the City. The largest number of trips (about 41%) originate north of the City.
Similarly, the SMTC model can identify trips to and from specific areas of the City and region, such as University Hill.
A wide array of other information can be identified using the SMTC model, including the routes motorists choose to use, as shown on this graphic.
As mentioned earlier, we are developing a VISSIM micro-simulation model for the local study area shown on this slide. From this model, we’ll be able to identify the level of service on the interstate system, and individual roadways and intersections.

The operating performance of a roadway is commonly measured by level of service. Level of service (LOS) is represented by the letters A though F. LOS A represents free-flow conditions with minimum or no delay, while LOS F signifies unstable or breakdown conditions.

Travel times along various routes will be determined as well. We’ll also use the model to determine system-wide performance measure such as total delay, and these will be used in evaluating alternatives and developing benefit-cost analyses.
Using the SMTC model, we’ll forecast regional travel for the project’s estimated time of completion year, 2020, as well as 30 years from completion, 2050. The model data includes population and employment data (where people live and work), as well as future planned land use development projects. For the I-81 alternatives, the model will be modified to include proposed improvements. For example, under the Boulevard Alternative, the viaduct is removed from the model, and the boulevard and its other associated improvements are coded into the model. The model is then run to determine where the traffic would go if the interstate is removed. The model would redistribute traffic on the modified roadway networks, as well as identify trips that may switch to other travel modes.
Each of these models has specific uses at the various stages of the project. The SMTC model is used in scoping to help identify travel demand and characteristics, inform the development of alternatives, and test and refine the alternatives. It also will be used during the Draft EIS phase to perform regional analysis for areas beyond the limits of the VISSIM model. The VISSIM model will provide a very detailed analysis for the reduced number of alternatives in the EIS phase of the project. **VISSIM analysis will be used to further refine project alternatives and provide location-specific analysis as needed to develop mitigation measures for potential impacts that may be identified during the traffic study.**

Both of these models may be used in conjunction with other models, such as traffic safety models or traffic signal optimization software, as needed to perform other specific analyses.

**The results of the traffic analyses will be one of several key factors used in the final evaluation of alternatives and ultimately, in the selection of the preferred project alternative.**
During the EIS phase of the project, the traffic analyses will focus on the AM and PM peak commuter hours for existing and future years. The existing and No Build analysis years will be used to represent traffic conditions without any improvements to I-81. The No Build condition, which includes all planned projects except the I-81 Viaduct Project, also serves as the baseline against which the other project alternatives can be evaluated. The project alternatives are then superimposed on the No Build condition to establish the future build analysis.
Thank you
Please visit us at www.i81opportunities.org
Today’s presentation will focus on the viaduct alternatives.
Five viaduct alternatives are under consideration at this time.

These alternatives would either rehabilitate the existing viaduct, or demolish it and replace it with a new viaduct.
The Rehabilitation Alternative would implement a long-term program of substantial capital investment to keep the existing I-81 in a state-of-good repair. The Rehabilitation Alternative would keep I-81 structurally safe, but we would not add shoulders, enlarge medians, or implement other improvements to meet current design standards.
The next three alternatives would build a new viaduct, which would be in about the same location as the existing one. It could be the same height as the existing viaduct or about 5 to 10 feet taller.

This is a bird's-eye view of Alternative V-2.
This slide shows a plan and profile view of the viaduct section of the viaduct alternatives. On the plan, outlined in red, is I-81 northbound and southbound.

What do the new viaduct alternatives have in common? They would all reconstruct the I-81/I-690 interchange to make it fully directional, meaning motorists would be able to connect from one interstate to another from all directions. Right now, this interchange does not allow motorists to travel from EB 690 to NB 81 and from SB 81 to WB 690, but these connections would be available with the new interchange.

In addition, the ramp from NB I-81 to EB I-690, which is a right-hand ramp, would be moved to the left side of NB I-81. This particular exit ramp is currently too close to the entrance ramp from Harrison Street to I-81. The new location of the exit ramp would lessen congestion and improve safety here since motorists would no longer have to weave through traffic.

Another common feature of the new viaduct alternatives is the improvement to the I-690 exit ramp to Harrison Street. Currently carrying one lane, this ramp would be widened to fit two lanes, helping to keep traffic moving smoothly.
This slide shows a possible aerial view of the viaduct over Almond and Harrison Streets. As you can see, the new viaduct alternatives would include improvements underneath the viaduct, such as shorter pedestrian cross walks and urban design improvements.

Almond Street, which currently passes east of the Harrison Street on-ramp, would travel underneath the viaduct because of the greater width of the new structure under the new viaduct alternatives.
This drawing shows some potential ideas for improvements on Almond Street under Alternative V2, New Viaduct Fully Improved to Current Standards. The extent of the viaduct is shown in dashed lines. All of the space below the viaduct would be paved, and lighting and pedestrian safety would be enhanced at the crossing streets. We would look at ways of creating stronger connections between both sides of the highway through the design and consider ways that the design could contribute positively both to the urban context and to the experience of drivers arriving at the Harrison/Adams exits. We would also explore how the architecture of the viaduct itself could be enhanced.

The primary east-west streets would still pass under I-81, and would also be improved. The Connective Corridor crosses here, at Genesee Street. We see this as an opportunity to coordinate and support that initiative with enhancements.

To the north, the new viaduct alignment starts to curve west around Harrison Street, opening up opportunities to re-imagine the space freed up by the removal of the existing viaduct.
This view of a typical section shows the approximate width of the portion of the existing I-81 viaduct between Adams and Harrison Street. As you can see, the replacement I-81 viaduct would be wider, by as much as 20 feet in some areas, so that it could meet today’s highway design standards. The new structure could also be slightly higher.

There are several ways to arrange traffic lanes and new amenities on Almond Street. This configuration shows landscaping and a multiuse path (for bicyclists and pedestrians) on one side, and a sidewalk on another.
Finally, this is a view of what the new viaduct might look like between Cedar and Genesee Streets, where it is substantially wider than in the southern sections. In this area, at the south end of the I-81/I-690 interchange, greater width is necessary to accommodate the viaduct’s curve westward, the on- and off-ramps, as well as the high-speed ramps that would connect the two interstates.

This particular area is currently used almost exclusively for parking lots.
These three alternatives differ in the extent to which they comply with design standards that apply to the interstate system.

What are these standards? They were developed by state highway agencies, acting through the American Association of State Highway and Transportation Officials, or AASHTO, and adopted by the Federal Highway Administration (FHWA). They include design speeds for the highway; a minimum of two travel lanes in each direction; 12-foot lane widths; 10-foot right paved shoulder; and 4-foot left paved shoulder. For I-81, which is an urban highway, we are assuming a design speed of 60 mph, which means that the speed limit would be 55 mph. Today, the speed limit on I-81 is 45 mph.

Both the main highway and its ramps would be improved to these standards. As you can see from this map, the existing I-81/I-690 interchange has several non-standard features that would be addressed under the new viaduct alternatives.

Alternative V-2, New Viaduct Fully Improved to Current Standards, meets all appropriate interstate standards. We estimate that some buildings would need to be acquired for this alternative to be built.
Alternative V-3, the New Viaduct with Substantial Design Improvements, is identical to Alternative V-2 except at 8 locations. Traffic traveling through these 8 locations—curved sections of the highway, delineated by purple boxes on the slide—would need to slow down by about 5 MPH to navigate the curves.

These tighter curves would reduce what engineers call *horizontal stopping sight distance*—the distance that you would need to come to a stop as you’re going around a curve. As a result of these slightly sharper curves, Alternative V-3 would impact fewer buildings than would Alternative V-2.

We estimate that we would need to acquire about 25 percent fewer buildings in total under the New Viaduct with Substantial Design Improvements Alternative than we would under Alternative V-2.
Alternative V-4, New Viaduct with Considerable Design Improvements, is another variation of Alternative V-2. It would reduce the stopping sight distance to meet 55 MPH design standards in these 3 curved sections (in purple) of the highway, and to 50 MPH design standards in 5 curves (in orange). All other parts of the highway would fully meet the applicable design standards.

The tighter curves at these 8 locations allows us to reduce the number of buildings that we would need to acquire. We estimate that V-4 would result in about 40 percent fewer building acquisitions than Alternative V-2.
As part of the scoping process, members of the public can suggest new alternatives. The last of the viaduct alternatives, V-5, the Stacked Viaduct, was proposed by a member of the public during the scoping process. As you can see here, this alternative could place southbound I-81 traffic on a lower deck and northbound traffic on a top deck, or vice versa. To meet applicable design standards, each deck would be about 55 feet wide, slightly narrower than the existing viaduct. However, the proposed structure would be about 25 feet taller than the existing I-81 viaduct.

This alternative would provide a full interchange between I-81 and I-690. However, it would not provide access to Harrison/Adams Street from the top deck of the new viaduct without the closure of Genesee Street.