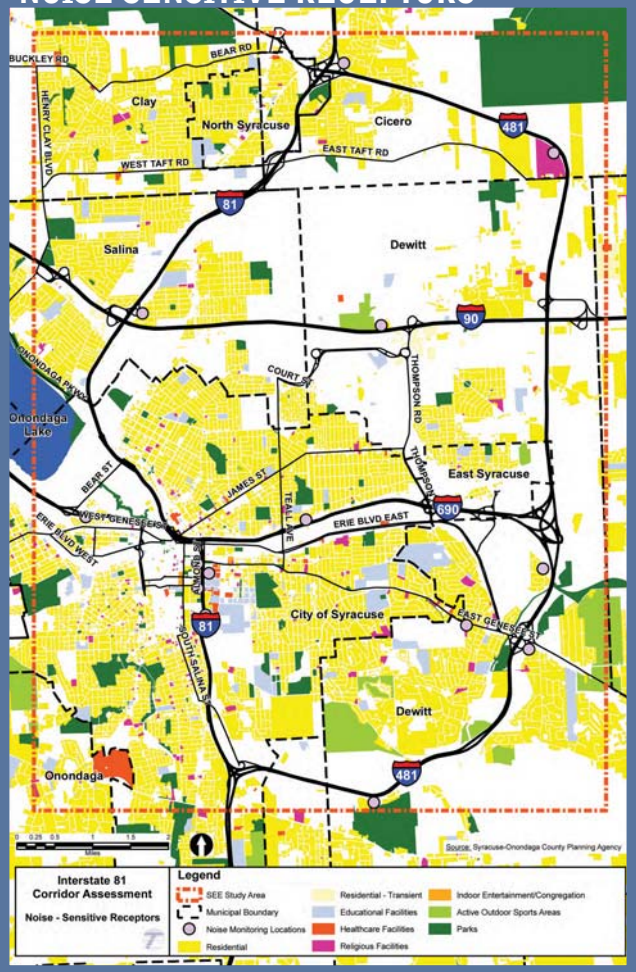
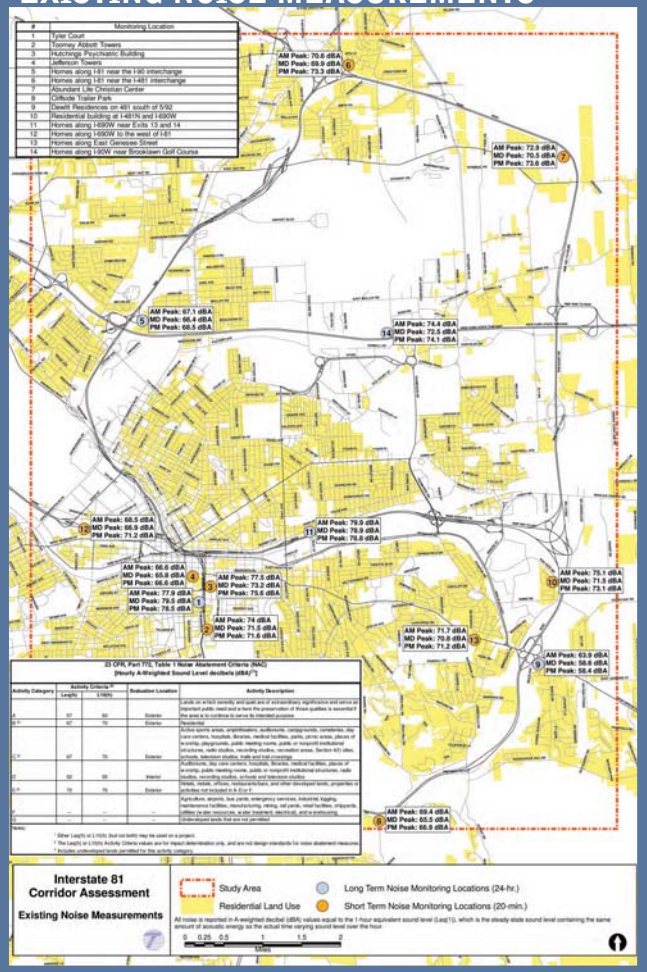
Environmental and Community Resources

Noise & air quality

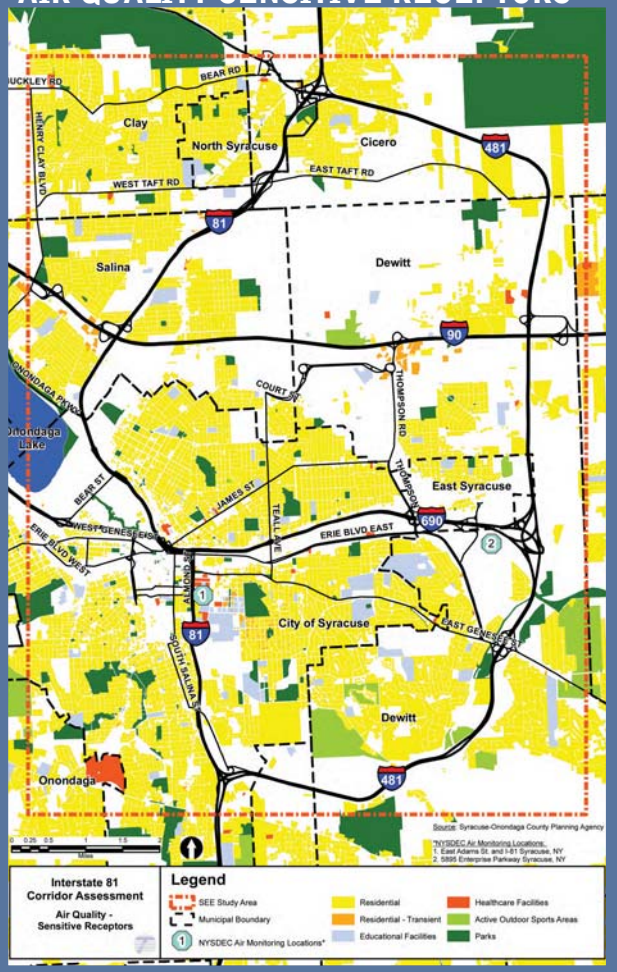
NOISE SENSITIVE RECEPTORS



EXISTING NOISE MEASUREMENTS



AIR QUALITY SENSITIVE RECEPTORS



Regional Travel Demand Model

The Regional Travel Demand Model is a computer software package that replicates our regional transportation system

Population
Household vehicles
Parking
HOV lanes
Income data
Land use
Jobs
Road network
Tolls and fares
Transit system
Speed limits

Inputs

SMTC's model is a "Four Step Model" that takes inputs such as population and economic forecasts, the geographic dispersion of people and jobs throughout the region, and a description of the transportation system – the roads and transit system.

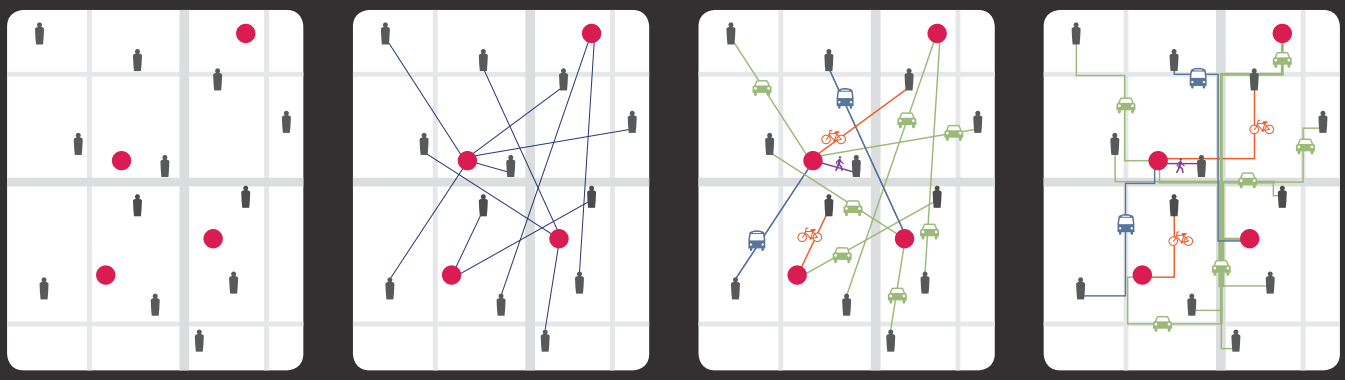
Regional Travel Demand Model

1 TRIP GENERATION
- How many trips will be made?

2 TRIP DISTRIBUTION
- Where will the trips come from and go to?

3 MODE SPLIT
- How many people will drive, take the bus, walk, bike, etc.?

4 NETWORK ASSIGNMENT
- What routes will be used for the trips?



Outputs

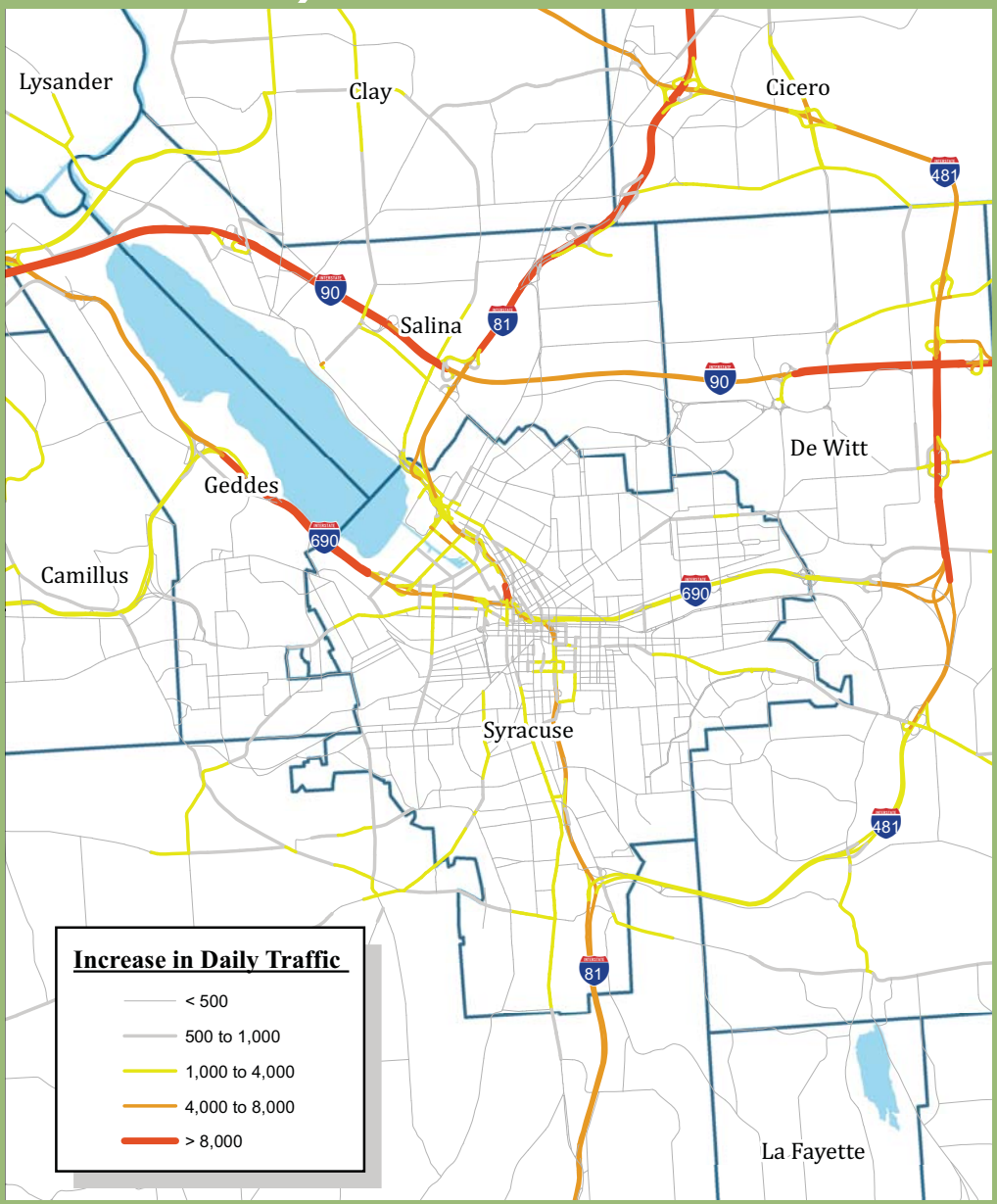
Number of transit riders
Number of vehicles
Travel time
Number of trips
Congestion and delay
Number of miles traveled

The model outputs, to be used in impact analyses to evaluate transportation system alternatives, include the amount of travel, the performance of the transportation system, and mode usage.

Modeling the future

The model can accurately replicate the existing conditions, and it can then be used to predict future travel patterns and demands based on changes in the transportation system, changes in the land use, and changing demographics

PROJECTED GROWTH IN TRAFFIC VOLUMES (2007 TO 2040)*

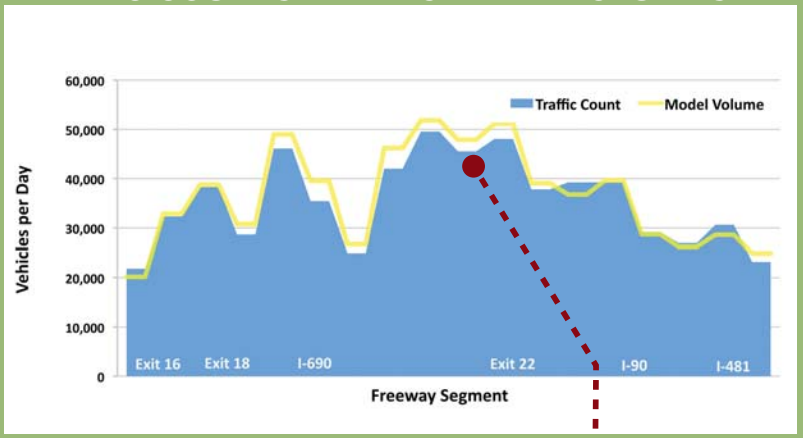


* Assumes no significant changes to I-81

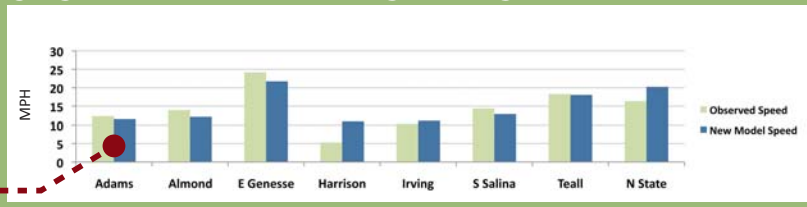
Modeling the present

The first step in using the Regional Travel Demand Model for The I-81 Challenge is to simulate the current “real world”

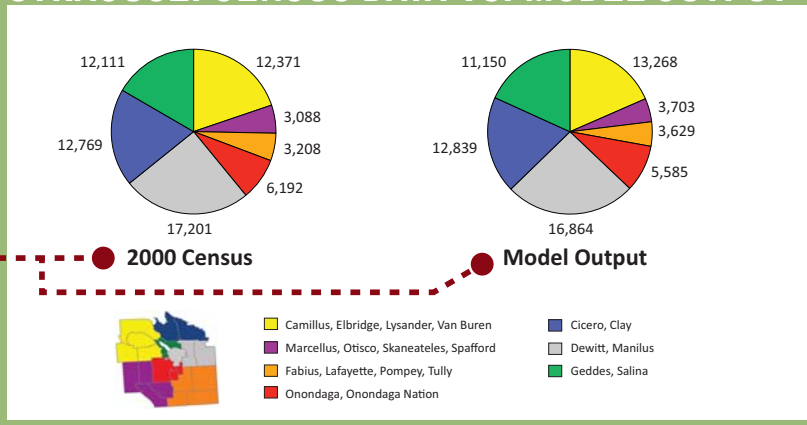
I-81 NORTHBOUND TRAFFIC FLOWS: TRAFFIC COUNTS AND MODELED VOLUMES



MODEL ARTERIAL SPEEDS COMPARED TO OBSERVED ARTERIAL SPEEDS



DAILY WORK TRIPS BY DISTRICT GOING TO SYRACUSE: CENSUS DATA VS. MODEL OUTPUT



WHY THE DIFFERENCE?

Modeling peoples’ travel behavior is a difficult undertaking since behavior is variable and complex. Travel models are developed from and compared to a wide variety of data sources, so travel models can’t be expected to match any one source exactly.

Microsimulation model

Microsimulation models allow us to understand detailed operational aspects of our transportation system. We can examine how traffic flows on a segment of highway, around a sharp curve, or through an intersection or interchange. While the regional model looks at overall demand, microsimulation models focus on the interactions and behaviors of individual vehicles.

What can we do with microsimulation models?

- Understand current operations on the highway: "How, why and where does congestion occur?"
- Evaluate the operational impacts of proposed changes: "What would happen if we changed *X*?"

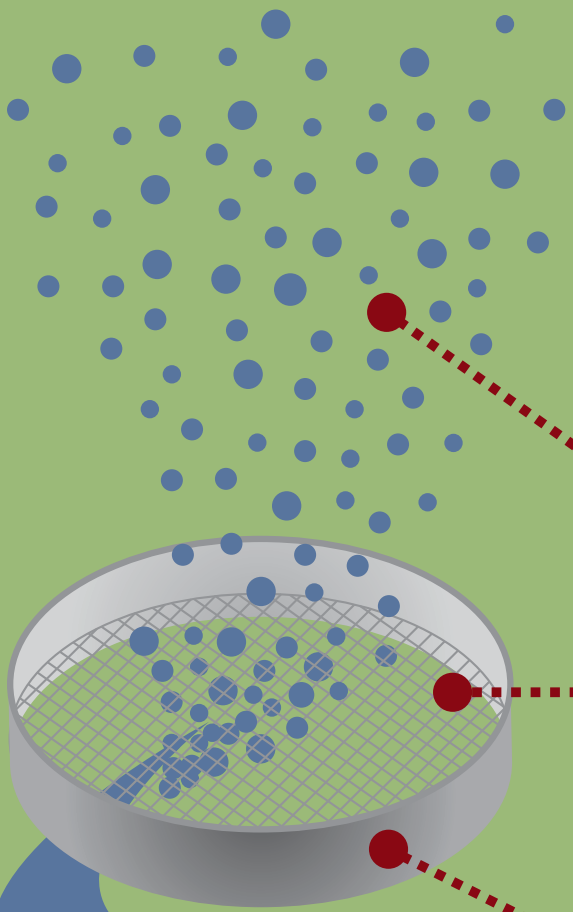
I-81/I-690 Interchange
Congestion and Queuing Due to Almond St Queuing and Poor Ramp Geometry

I-81 Southbound Exit Ramp
Congestion and Queuing Extend Along Ramp onto I-81

Almond St Looking North
Queues from East Adams St Extend Along Almond St

How can we evaluate possibilities for the future of I-81?

After we established goals, we developed criteria to measure and evaluate different possibilities to see which one(s) will best achieve our common goals.



IDEAS

Many different ideas have been generated about future options for I-81

STRATEGIES

Strategies were identified based on initial screening of ideas from the public

EVALUATION

The list of evaluation criteria will be used to reduce possible strategies to a smaller list of potentially viable options

SOLUTIONS

A project or projects that may be implemented will emerge from the list of potentially viable options

FUTURE OF I-81

What should the solution for I-81 accomplish?

The first step in identifying what should ultimately happen with I-81 was determining what is important for us as a region and the role we want I-81 to play in our future.

In the many conversations we have had with communities, elected officials, and other stakeholders, certain key goals have emerged.

The goals for *The I-81 Challenge* are:

- Improve public safety
- Maintain or improve economic opportunities
- Exercise fiscal responsibility
- Share the burdens and benefits of any solution equitably
- Enhance the transportation network
- Preserve or enhance environmental health
- Enhance region-wide mobility
- Support community quality of life

Goals, Objectives and Evaluation Criteria: what are they, and how are they used?

Example:

GOAL:
Preserve or enhance environmental health

Goals:

Goals are a statement of what we intend or hope to achieve with *The I-81 Challenge*. One of our goals is "Preserve or enhance environmental health".

Objectives:

Objectives are the specific and practical steps we can take to achieve our goals. Using the goal above, one objective is to "Maintain or improve air quality".

OBJECTIVE:
Maintain or improve air quality

EVALUATION CRITERIA:
Change in emissions and air pollutants

Evaluation Criteria:

Evaluation criteria identify the specific measures and outputs that can be used to determine the effectiveness of different strategies and options at meeting our objectives and ultimately reaching our goals. Continuing the example above, we could measure and compare the change in emissions and air pollutants across different options.

OPTION A:
2% Increase

OPTION B:
No Change

OPTION C:
2% Decrease

Evaluation Criteria

Goal: Improve Public Safety

Objectives:	How it could be measured:	Example outputs:
Reduce accident occurrences to at or below the statewide average (SWA) for similar facilities.	Quantify results of accident countermeasures by comparing before/after rates to SWA.	Expected reduction in accident rates to future No-Build strategy.
Improve the safety of alternative modes of transportation (pedestrian, bicycle, transit).	Qualitatively review each strategy and compare operational changes to reduce excessive speeds.	Expected reduction in bicycle/pedestrian and car crashes in immediate vicinity of Almond Street. Expected vehicle speeds in vicinity of Almond Street.

Goal: Maintain or Improve Economic Opportunities

Objectives:	How it could be measured:	Example outputs:
Maintain or improve the overall economic environment and infrastructure.	Qualitatively evaluate economic environment and compare.	Net impact to regional economy (non-construction).
Maintain or improve economic opportunities by addressing multi-modal access.	Qualitatively evaluate multi-modal opportunities and compare.	Identify benefit of multi-modal improvements.
Improve transportation system efficiency and reliability, and reduce travel costs.	Reduce and compare Vehicle Miles Traveled and delay, and other congestion reduction measures.	Number or percentage of congested road segments in the Syracuse metropolitan area.

Goal: Exercise Fiscal Responsibility

Objectives:	How it could be measured:	Example outputs:
Minimize capital costs by ensuring that transportation system investments are cost effective.	Compare overall costs of strategy to conformance with project goals.	Projected capital cost of project.

Goal: Share Burdens and Benefits

Objectives:	How it could be measured:	Example outputs:
Share the burden of impacts during construction and long term across stakeholders (e.g. suburbs, adjacent neighborhoods, low-income communities, Onondaga Nation).	Identify community-scale impacts and compare to EJ areas, neighborhoods, etc.	Noise, air quality, congestion, sustainable development, property value, and property impacts.
Share the benefits across stakeholders (e.g. suburbs, adjacent neighborhoods, low-income communities, Onondaga Nation).	Identify community-scale impacts and compare to EJ areas, neighborhoods, etc.	Noise, air quality, congestion, sustainable development, property value, and property impacts.

Evaluation Criteria

Goal: Enhance the Transportation Network

Objectives:	How it could be measured:	Example outputs:
Eliminate structural deficiencies using treatment strategies that provide the lowest life cycle maintenance costs and restore bridge condition ratings, where applicable, to good condition for at least 30 years.	Restore bridge condition ratings to greater than 5.0.	Number of bridges with condition greater than 5.0. Anticipated maintenance cost over life cycle of structure.
Improve existing geometric design through the application of appropriate design standards and the reduction of non-standard elements and/or geometries.	Quantify reduction/elimination of non-standard features. Quantify reduction/elimination of non-conforming features.	Number of non-standard features . Number of non-conforming features.
Identify alternative mode improvements in the vicinity of I-81.	Qualitatively evaluate bicycle and pedestrian improvements and compare. Quantify transit mode share improvements using the Regional Travel Demand Model.	Qualitative evaluation of bike and pedestrian infrastructure. Transit mode share for trips in the Syracuse Metropolitan Planning Area shown by “commuter” and “urban” routes.

Goal: Preserve or Enhance Environmental Health

Objectives:	How it could be measured:	Example outputs:
Support local, regional, and state environmental initiatives.	Provide stormwater management facilities for water quantity and water quality. Quantify Context Sensitive Solutions applied. Quantify Green Streets principles applied.	Opportunities to incorporate green infrastructure – rank low, medium, and high. Opportunities to incorporate Context Sensitive Solutions and Green Streets principles using a scale of low, medium, and high.
Maintain or improve air quality (overall emissions and odor).	Quantify and compare reduction in emissions and air pollutants using the Regional Travel Demand Model.	Total tons of pollutants emitted (e.g., carbon monoxide, volatile organic compounds, and nitrous oxide).
Minimize air quality and noise impacts on adjacent neighbors.	Identify locations that exceed the National Ambient Air Quality Standards (NAAQS) and compare.	Assessment of positive and/or negative impacts of a strategy on air quality.
Minimize impacts on designated community landmarks and historic resources.	Quantify and compare impacts.	Does, or will strategy impact community landmarks and historic resources.
Minimize storm water impacts and improve water quality.	Each strategy must mitigate impacts in accordance with SPDES.	Change in amount of impervious areas (asphalt vs. grass).

Evaluation Criteria

Goal: Enhance Region-Wide Mobility

Objectives:	How it could be measured:	Example outputs:
Improve peak period mobility and reduce delay on the highway system (primary, secondary, and city streets) by providing acceptable operating speeds, improving level of service.	Compare levels of service to future null condition and the project design criteria.	Level of Service at key intersections or links, and operating speed.
Preserve regional mobility by maintaining travel times.	Quantify average travel time.	Average commute time to work.
Improve access to key destinations (i.e. the airport, hospitals, and downtown businesses).	Quantify travel times to key destinations.	Average trip time during peak periods to selected destinations.
Improve connectivity of alternative modes of transportation (pedestrian, bicycle, transit).	Qualitatively evaluate improvements to intermodal connectivity and compare.	Where connectivity points are impacted, improvements will be identified.

Goal: Support Community Quality of Life

Objectives:	How it could be measured:	Example outputs:
Minimize impact to community resources.	Quantify impacts (number of resources) and compare.	Identify the impacts of each strategy on community resources.
Encourage sustainable land use patterns within the city and county.	Qualitatively evaluate land use opportunities, including opportunities for transit oriented development (TOD), and compare.	Assess opportunity for employment and population growth within, and outside, the City of Syracuse considering sustainability principles.
Enhance connectivity between University Hill and downtown.	Qualitatively evaluate changes to connectivity/barrier effect for each strategy and compare.	Compare the connectivity advantage of each strategy.
Encourage Smart Growth: sustainable regional land use patterns that minimize suburban sprawl, which increases demand for infrastructure and services.	Qualitatively evaluate smart growth opportunities.	Assess opportunity for employment and population growth within, and outside, the City of Syracuse considering sustainability principles.
Improve the visual built environment through Context Sensitive Solutions that contribute to roadside/street ambiance, community character, and public safety.	Qualitatively evaluate Context Sensitive Solution opportunities.	Opportunities to incorporate Context Sensitive Solutions – rank low, medium, and high.
Promote other planning and development visions and initiatives (county, city, and region).	Qualitatively evaluate conformance to local and regional land use plans.	Strategy supports or complies with Onondaga County's Development Guide or the City of Syracuse's Comprehensive Plan - rank low, medium and high.

What do you think?