

## *TRANSPORTATION TOMORROW 2035 ~ CREATING A SUSTAINABLE FUTURE*

The Binghamton Metropolitan Transportation Study has been designated by the Governor of New York as the metropolitan planning organization (MPO) responsible for carrying out federal transportation planning requirements for the Binghamton region. One of the primary responsibilities given to MPOs by Congress is the development of a long range transportation plan.

“(a) The metropolitan transportation planning process shall include the development of a transportation plan addressing no less than a 20-year planning horizon as of the effective date.

(b) The transportation plan shall include both long-range and short-range strategies/ actions that lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand.

(c) The MPO shall review and update the transportation plan...at least every five years in [air quality] attainment areas to confirm the transportation plan's validity and consistency with current and forecasted transportation and land use conditions and trends...”

23 CFR 450.320 (a),(b),(c)

Simply put, proper planning supports making good investment choices, in this case with funds from the Federal Highway Administration and Federal Transit Administration. Requiring a twenty year horizon recognizes that major transportation projects often take many years to move from plan to construction, and that what is built has a long lifespan; and that changing the shape of urban communities takes a long time. At the same time, the requirement for an update cycle recognizes that forecasting, whether of population, employment, or travel demand, is an inexact science. Updating the Plan also provides for a periodic reexamination of community values and goals. A region that supported suburban development in 2000 may have shifted to a smart growth model in 2010.

An MPO transportation plan must also address eight specific “planning factors” enumerated in federal law.

“(a) The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the following factors:

(1) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;

(2) Increase the safety of the transportation system for motorized and non-motorized users;

(3) Increase the security of the transportation system for motorized and non-motorized users;

(4) Increase accessibility and mobility of people and freight;

(5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;

(6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

(7) Promote efficient system management and operation; and

(8) Emphasize the preservation of the existing transportation system.”

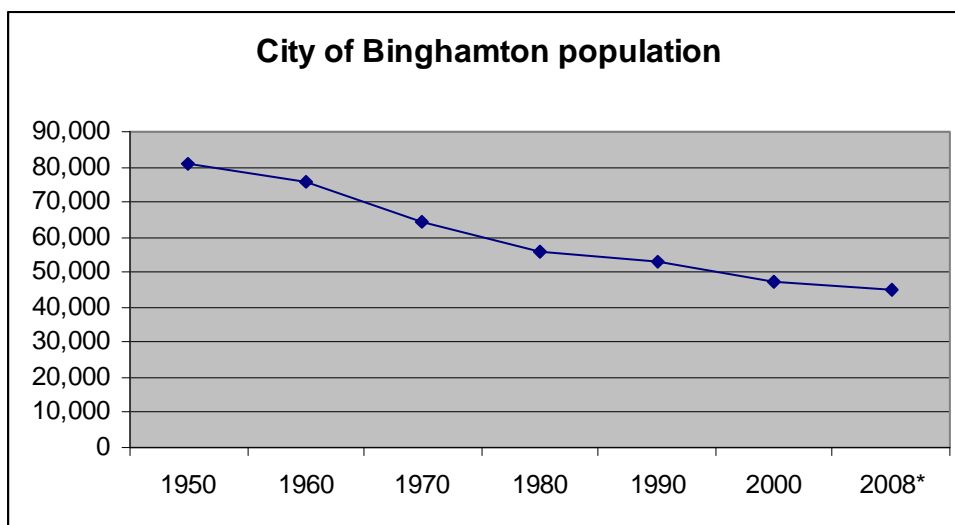
23 CFR 450.306 (a)

In meeting Federal law, BMTS begins the update of its long range transportation plan with an examination of the current Plan, *TRANSPORTATION TOMORROW 2030 ~ PLACEMAKING FOR PROSPERITY*, including the validity of the stated goals and objectives; the population, employment, and travel forecasts; and the status of recommended actions and strategies.

### **TRANSPORTATION TOMORROW 2030 ~ PLACEMAKING FOR PROSPERITY**

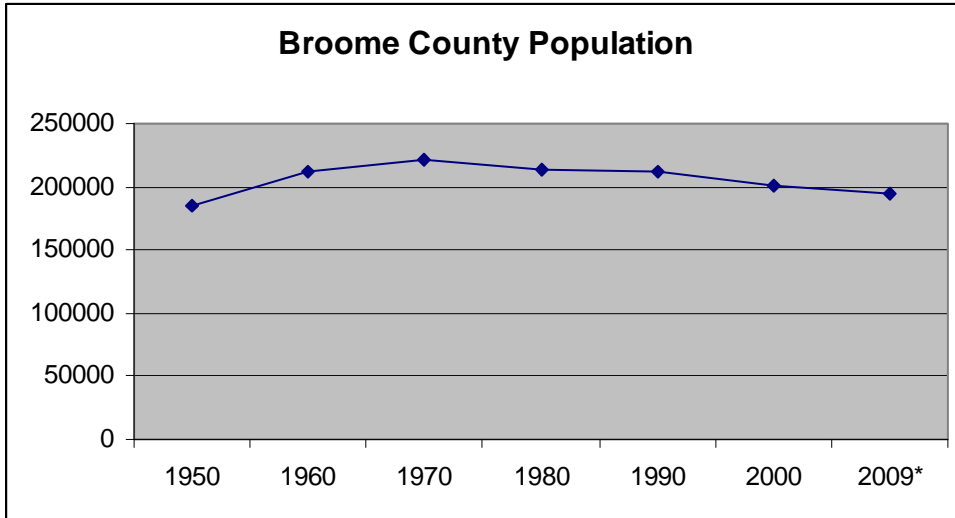
BMTS' current plan [for ease of reference, hereinafter "2030 Plan"] was adopted in September 2005. The 2030 Plan was a major effort that used a scenario planning framework, which was recognized as one of the first applications of scenario planning in a region not experiencing rapid growth. A community visioning exercise formed the basis of the plan's goals and objectives, and led to the development of four alternative scenarios. After analyzing the land use and transportation outcomes of each of the scenarios, consensus was reached on a recommended scenario. Entitled "Moving Inward", the scenario focused on revitalization and redevelopment of the urban core communities. Based on that scenario, a set of transportation projects and strategies was adopted that are the fiscally constrained 2030 Plan.

"Moving Inward" formed the basis of the 2030 Plan because of the recognition of what many viewed as a negative trend. By no means unique to Binghamton, this trend in older industrial cities is often referred to as "hollowing of the core" accompanied by "sprawl without growth". The first phenomenon is population loss in the central city and adjacent urban core communities, accompanied by decline in wealth and economic activity. Figure (x) shows what has happened to the City of Binghamton, where the population has declined from over 80,000 in 1950 to less than 45,000 in 2008. This is a lower population than a century ago. Historic census records show the population of the city in 1910 was 48,443.

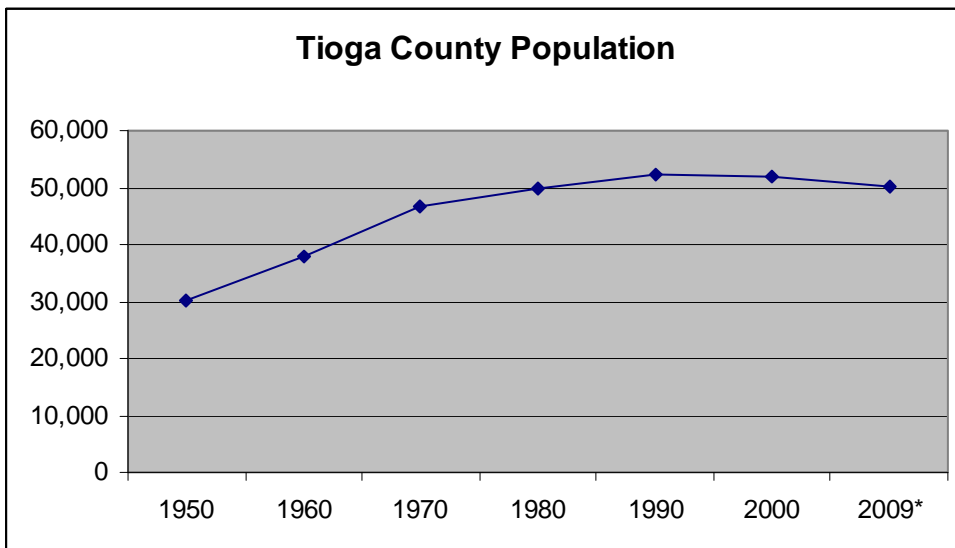


Source: Office of the New York State Comptroller, "Population Trends in New York State's Cities", Dec 2004  
\* US Census Bureau population forecast

The second phenomenon means that there has been continued growth in the suburban communities: first the Towns of Vestal and Union, and later the Towns of Chenango and Owego, even while the city was shrinking. As shown in Figure (xx), Broome County has experienced population decline since it peaked at 222,065 in the 1970 Census. While the trend has not been as steep as the city, the Census estimated population in 2009 of 194,630 represents a loss of 12.4% from the peak. Tioga County shows a somewhat different pattern in Fig (xx). A very rural county, Tioga experienced rapid growth from 1950 to 1970 of more than 50% in response to industrial development in the Town of Owego. Growth then leveled off, and since 1990 there has been a modest decline similar to that of Broome County.



SOURCE: U.S. Bureau of the Census  
\* 2009 forecast



SOURCE: U.S. Bureau of the Census  
\* 2009 forecast

Sprawl without growth results in more infrastructure to maintain in terms of roads and utilities without a concurrent increase in the tax base to support it. This led to the conclusion in the 2030 Plan that making the Greater Binghamton region a successful place required reversing those trends. By focusing transportation investment in the urban core communities, public monies could be used to leverage private investment in economic development. Conversely, deteriorated infrastructure and blight often discourages developers from considering an urban site.

The status of the 2030 Plan is reviewed in detail on page \_\_\_\_\_. But as a result of significant fiscal constraint over the past five years, little progress has been made on even the highest priority projects in the plan. One of the first measures of the ability of core investment to encourage private development is the Greater Binghamton Transportation Center, an intermodal passenger terminal slated to open in downtown Binghamton in September 2010.

An important element of that project was to stimulate development on the north side of the CBD. Additional core focused projects include the Court Street Gateway, which is begin construction in 201x; and projects to rebuild Main Street using the principles of placemaking and context sensitive design.

Because of the significance of the 2030 Plan, and the amount of work still undone, *TRANSPORTATION TOMORROW 2035* can be considered a modest update. New population and land use forecasts have been developed, but continue to be based on the “Moving Inward” scenario.

The most significant change in this update is a new focus on sustainability, a topic that has become more central to transportation planning in the past five years.

## ***SUSTAINABILITY: A NEW FOCUS***

A decision was made by the BMTS Policy Committee that this Plan must address the concept of sustainability, and how transportation can contribute, or potentially detract from, achieving a sustainable region.

The notion of sustainability grew out of the environmental movement of the 1970's and the recognition of resource limitations on a planetary scale. The World Commission on Environment and Development, known as the Brundtland Commission, was convened by the United Nations in 1983 to address deterioration of the human environment and consumption of natural resources. That Commission developed what has become a widely quoted definition of sustainability and sustainable development: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The Commission's final report demonstrates how complex this seemingly simple idea is; it addresses such diverse topics as human population, food security, energy, and industrial development.

Subsequent work proposed a notion of the "three pillars" of sustainability: environmental quality, social equity, and economic development. These sectors generate demands that often seem to be in conflict with one another, and with the base definition. For example, a proposed economic development activity requires the input of natural resources that can be environmentally damaging, while the cost of certain environmental protection actions may have negative implications for social equity. To achieve sustainability, these competing demands must be reconciled.

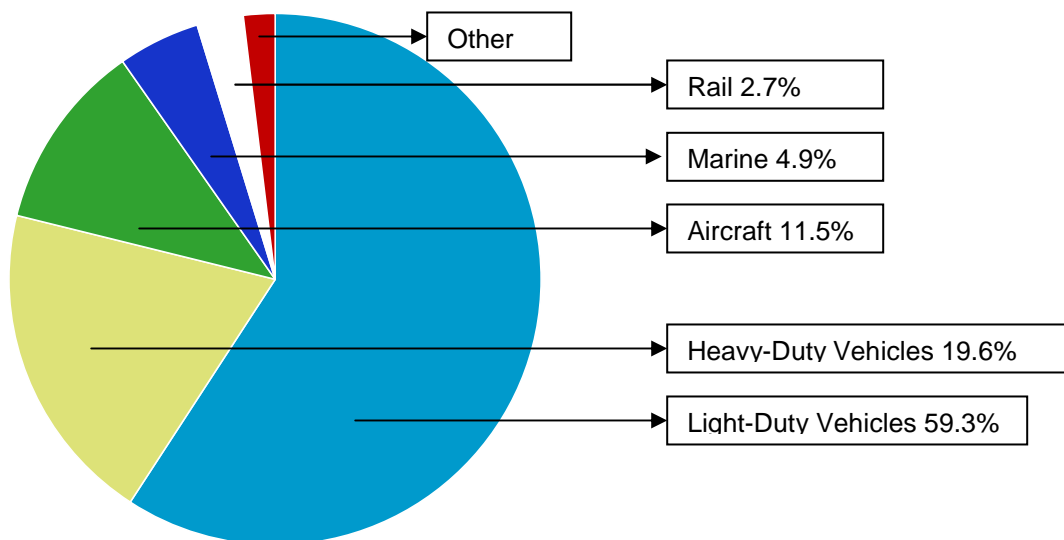
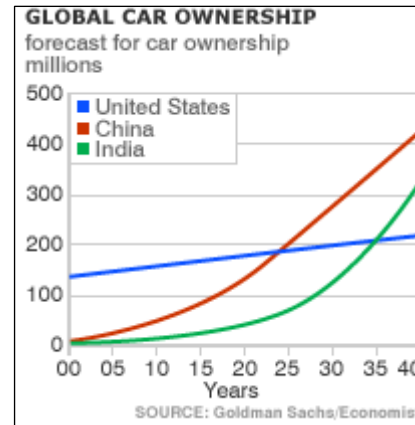
***Climate Change, Energy, and Air Quality:*** Within the realm of sustainability, climate change has received much of the attention recently. There is general agreement among scientists that the planet is warming as a consequence of human activity, and that the warming will have meaningful impacts on the natural and human environment. The linkage between climate change, energy, and air quality is found in the widespread use of carbon-based energy sources and the resulting emission of carbon dioxide, a greenhouse gas that traps solar energy and warms the planet. Carbon-based fossil fuels, including coal, petroleum, and natural gas, produce other emissions when burned. The passage of the Clean Air Act in 1970 recognized that air pollution is a significant threat to public health, and that these emissions must be reduced or captured. Technology has provided most of the solution; changes in personal behavior very little. Unleaded gasoline and low-sulfur coal demonstrate how certain pollutants can be removed from the fuel prior to combustion. Other technology, whether scrubbers on smokestacks or catalytic converters in cars, has been developed to capture hydrocarbons, oxides of sulfur and nitrogen, and particulate matter. Since carbon dioxide was only recently identified as a harmful emission, capture technology has not yet been developed.

There are other issues related to carbon-based fuels as a sustainable energy source. With regard to fossil fuel sources, each type has its own supply forecasts. Coal is plentiful, both domestically and globally. Oil extraction can meet current demand, but there is a phenomenon defined as "peak oil" that is the point at which the global rate of extraction will begin to decline. There is little agreement among experts on when this will occur. The International Energy Agency, which may be seen as a neutral expert party, predicts a plateauing of production in 2020 and a peak around 2030. Peak oil production is presented against a backdrop of increasing worldwide demand. The large consumer markets of China and India are becoming a source of enormous growth in automobile production and

ownership, as shown in Figure xxx. Flattening production and increasing demand do not present a sustainable future for the use of oil as an energy source.

Natural gas supplies nearly one-quarter of the world's energy needs, but forecasts of peak production are even less uniform than those of oil.

**Transportation:** Since this is a transportation plan, the next step is to understand how transportation fits into the understanding of sustainability. Perhaps the most obvious relationship is the consumption of petroleum based energy by the transport sector. According to work done by the New York State Energy Research and Development Authority for the New York Climate Action Plan, the transportation sector accounts for approximately 34% of carbon dioxide/greenhouse gas (GHG) emissions in the state. Figure x shows national figures for production of GHG emissions by mode.



Source: US Environmental Protection Agency, "Inventory of U.S. Greenhouse Gas Emissions" April 2009

Since on-road vehicles account for nearly 80% of transportation sector emissions, or about 27% of all the GHG emissions, reductions must rely heavily on changes in that sector.

One view of sustainable transportation is becoming more fuel-efficient (or less carbon intensive) while having no negative impact on accessibility. For personal travel, this means a multimodal transportation system that creates fewer miles of automobile travel, with more trips made on foot, by bicycle, or transit. It also means using alternative fuel/propulsion vehicles such as hybrid, plug-in hybrid, or fuel cell that consume less fuel and produce fewer GHG emissions. For the freight sector, this means using more efficient logistics across an entire supply chain to reduce unnecessary travel, more efficient modes like rail or water when feasible, and alternative fueled vehicles.

Perspectives on sustainable transportation often concentrate on strategies to reduce vehicle-miles of travel (VMT). But it must be recognized that a transportation system provides a foundation for positive input into the economic and social sectors. It creates access for people to employment, education, and other needs and opportunities. It provides access of the business sector to materials, workforce, and markets. In that sense, travel represents economic health.

**Land Use:** Transportation demand is created by location of land uses: where people live in relation to where they work, shop, go to school, and meet other needs; and where businesses are located in relation to customers, workforce, and shippers. VMT is therefore a consequence of both the level of economic activity and of urban form. The American model of suburban development over the latter half of the 20<sup>th</sup> century can be characterized as an amalgam of single uses spread over large land areas. Residential subdivisions may include a school or recreation site, but typically no commercial uses. Retail was concentrated along arterial corridors. Commercial uses were likewise concentrated in industrial parks and office parks. The result of this model for travel is more numerous and longer vehicles, thus high VMT per capita.

Sustainable transportation strategies can achieve reduced VMT without reduced economic activity through appropriately planned land use across a region. More compact development with a mix of uses can shorten trip lengths as more destinations are closer to more residences; and can help make transit and non-motorized modes more attractive and usable. The challenge in an already built community is the time it takes to reconstruct the urban form and fabric. The “hollowing of the core” discussed earlier may actually contribute opportunities. To the extent that there are vacant properties that can be assembled into larger parcels, the construction of mixed-use urban developments may become feasible.

## **A SUSTAINABLE REGION: BROADER PERSPECTIVE**

While climate change and energy consumption are an important piece of sustainability, public input on this plan has suggested a broader definition as well.

<p style="text-align: center;"><b>What makes the Greater Binghamton Region a sustainable place over the next 25 years?</b></p>
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The trends described above, significant and ongoing loss of population of the central city accompanied by more modest but continual decline in the population of the region, do not create a picture of a sustained place. Reduced population translates into less economic activity and tax base for local governments at the same time that aging infrastructure creates demand for increased public expenditure. The key question is how to reverse those trends. What makes this place a region that people want to move to, rather than move away from? What role may transportation investment play in accomplishing that end?

To begin to explore that question, representatives of local governments and the public were asked to participate in a “SWOT Analysis”. This is a standard tool of strategic planning that looks at Strengths, Weaknesses, Opportunities, and Threats. In this case, people were asked about strengths and weaknesses both now at the Plan horizon of 2035. A somewhat condensed list follows:

### **STRENGTHS – NOW**

- ♦ Education:
  - Binghamton University
  - Broome Community College
  - Local school system(s)
- ♦ Transportation:
  - Highway system – provides good local/regional/northeastern US access
  - Rail access (freight)
  - Having a regional airport
  - Transit
- ♦ Development potential:
  - Trained workforce
  - Available utility capacity
  - Low cost land and buildings
  - Landfill long life expectancy (40-50 yrs, possibly extended to 100)
  - Water supply – plentiful
  - Natural gas – potential local production
- ♦ Quality of life:
  - Reasonable cost of living
  - Established retail sector
  - Quality health care sector
  - Entertainment venues: Forum, Arena
  - Sports venues: BC Mets, Binghamton Senators
  - Public parks
  - Golf courses
  - Natural beauty
  - Arts & cultural tourism
  - Interesting architecture
  - Relatively low crime rate

## **WEAKNESSES – NOW**

- ♦ Governance:
  - Too much local government, too many school districts
  - Dysfunctional New York State government
  - High taxes – local property tax, and especially school tax
  - Mandated costs of numerous social programs
  - Reduced Federal/State funding for essential services (eg transit)
  - Lack of regional planning and a regional vision
- ♦ Lack of job opportunities
- ♦ Lack or loss of industry
- ♦ Relatively low household income
- ♦ Changing demographics – more aging, more disabled
- ♦ Lack of appealing arts & culture for younger people
- ♦ Urban blight
- ♦ Sprawl development
- ♦ Crime rate
- ♦ Aged infrastructure, especially water and sewer
- ♦ Lack of appropriate housing for aging population
- ♦ New flood plain maps:
  - Lack of developable land out of floodplain
  - Potential floodplain related expenses (public and private)
- ♦ Development:
  - Cost to develop urban properties (brownfields, etc)
  - Lack of form-based code (versus traditional zoning)
  - High cost of utilities
  - High taxes – property/school

## **STRENGTHS – 2035**

### **In 25 years, Greater Binghamton will be characterized by...**

- ♦ More employment opportunities
  - Strong local manufacturing base, driven by Binghamton University research and entrepreneurship
- ♦ Stable population growth
- ♦ More recreational opportunities
- ♦ Consolidation of governments and public services
  - Reduced tax burden
- ♦ Turnaround of New York State government
- ♦ Successful infill development
  - The village center/neighborhood retail hub model
  - The mixed-use shopping center retrofit model
  - Retirement community type housing to permit older residents to age in place
  - Therefore, less urban core blight
- ♦ Improved local and regional transportation facilities and services
  - Enhanced regional transit
  - Improved air service
  - New passenger rail service
- ♦ Expanded Binghamton University, including a law school
- ♦ Local food sourcing

- ♦ Regional vision and collaboration
- ♦ More sustainable energy sources
- ♦ Continued growth in the health care sector
- ♦ Wealth generated by natural gas exploration/production – Marcellus Shale

### **WEAKNESSES – 2035**

#### **In 25 years, Greater Binghamton may be suffering from...**

- ♦ A population that is older and more disabled
- ♦ High tax burden on both individuals and businesses, the latter caused in part by over-regulation
- ♦ Deteriorated infrastructure
- ♦ Accelerated sprawl without growth, driven in part by an enlarged flood plain negatively impacting core development opportunities
- ♦ More numerous and severe storm events as a consequence of global climate change
- ♦ Environmental impacts of natural gas exploration – Marcellus Shale
- ♦ Challenges of providing adequate government funding for essential services

### **OPPORTUNITIES**

#### **A positive future may be reached by taking advantage of...**

- ♦ Having space for population growth and mixed-use development in the urban core
- ♦ Extending and incentivizing the current trend of private investment in downtown Binghamton
- ♦ Promoting a livability agenda
  - Collaboration among transportation/housing/environment agencies and professionals (as currently being established by federal government)
  - Adopting form-based zoning code to promote desired growth patterns
  - Increasing housing choices for the aging and Millennial generations
  - Preserving agricultural land to support regional food production and markets
  - Promoting cultural tourism by focusing on local history
  - Exploiting natural resource and recreational potential of the rivers
- ♦ Improving transportation choices that
  - Reduce energy consumption and GHG emissions
  - Support/accommodate new housing choices
  - Take advantage of transit growth opportunities
  - Provide enhanced walkability
  - Improve intercity travel by bus, rail, and air
- ♦ Growth of Binghamton University
  - Increasing technology transfer and commercializing Binghamton University research
- ♦ Growing Broome Community College:
  - On-campus student housing
  - 4 year degree programs
  - Training workforce out front of emerging technologies
  - Catering to the “shale market” with training related to the natural gas industry
  - Attracting more international students
- ♦ Proximity to New York City, attracting back-office and other employment opportunities
- ♦ Improving storm water management
- ♦ Educating the citizenry

## **THREATS**

### **Reaching the positive future may be made more difficult by...**

- ♦ Parochial attitudes that work against consolidation of local governments and school districts
- ♦ An aging workforce compounded by inability to attract/retain a young workforce
- ♦ Inability of the public sector to fund desired outcomes
  - Potential hyper-inflation of construction costs, driven by global demand for resources
  - Unanticipated large scale infrastructure failures
- ♦ Inability to attract sufficient private investment to pay for desired outcomes
- ♦ Unpredictable local and global events that drain resources
  - Terrorism and wars
  - Severe weather events
- ♦ Inability of electric power grid to meet demand
- ♦ Growth in population sectors that demand/require high level of services
- ♦ Perception of limited sewage treatment capacity

This analysis suggests that the Greater Binghamton Region has enough base strengths to overcome its long trend of urban decline; but also enough weaknesses and threats to make doing so potentially difficult. Key barriers include lack of employment opportunities and high property taxes driven by what many see as too many local governments and too many school districts. It is difficult for local elected officials to take a regional view when they have the legal responsibility for their own municipality.

Binghamton has a long history of entrepreneurs who turned ideas into companies that provided a large employment base. Patent medicine from Dr. Kilmer, shoes from Endicott-Johnson, calculating machines and computers from Thomas Watson and International Business Machines, flight trainer simulators from Edwin Link. There are also existing businesses with growth potential, like BAE Systems that builds the HybriDrive® diesel-electric hybrid drivetrain for city buses, and is researching similar technology for trucks. This could be a positive as demand for alternative fuel technology for heavy vehicles grows.

Many residents look to the research programs at Binghamton University to generate new business opportunities in the 21<sup>st</sup> century. Ever accelerating technological advances support the idea that research will drive entrepreneurship. This is in keeping with the notion put forth by futurists that many of the jobs that will be held by children now in school have not yet even been invented. While this makes it difficult to plan for specific employment opportunities, it reinforces the value in supporting research and development.

## VISION

In 2035, Greater Binghamton will be a successful, livable, and vibrant region, and its regional transportation system will have the following characteristics:

- ♦ Sustainability. Community sustainability will be supported in terms of reduced energy consumption and greenhouse gas emissions; and improved public health and social equity.
- ♦ Accessibility: All users will have convenient, mode-neutral access to employment, education, services, and other destinations.
- ♦ Mobility. Personal travel and goods movement will be efficient, with many modes of travel and excellent connections among them.
- ♦ Safety: All users will be able to travel safely and with a sense of security, regardless of which mode they choose to use.
- ♦ System Preservation: Transportation infrastructure will be maintained in a state of good repair, as the foundation for providing safe, efficient mobility

## GOALS AND OBJECTIVES

Goals are high level statements of what needs to be accomplished to attain the 2035 Vision of the Greater Binghamton region. Each goal has a subset of objectives that are measurable over the life of the Plan, and that are within the jurisdiction of BMTS. For example, while compact mixed-use development in the urban core is a strategy to reduce personal vehicle travel, BMTS cannot directly impact land use and development decisions. It is important that objectives are measurable, so progress over time can be determined; these metrics must be clear and concise to enable an unbiased evaluation.

Goals and objectives are stated below, while performance measures are listed in the following table.

### ♦ Sustainability Goals:

(1) To reduce the per capita amount of carbon-based energy consumed and greenhouse gases produced by the transportation sector by 50% by 2035.

*[CAVEAT: Climate science generally recognizes that the primary means to accomplish this goal lies in changes in vehicle and fuel technology, which cannot be controlled or influenced by BMTS.]*

(2) To enhance the livability of the Region with appropriate transportation investment

### ♦ Sustainability Objectives:

(1) Invest in strategies to reduce per capita vehicle miles traveled (VMT)

1.1 Improve the availability and level of service of public transit

- ♦ Reduce headways
- ♦ Increase fleet as necessary
- ♦ Periodically reevaluate and adjust route structure

1.2 Construct sidewalks to ensure connectivity in the urban core communities and contiguous residential areas.

1.3 Complete the Greater Binghamton Greenway Plan within 10 years

1.4 Overcome barriers to bicycle use identified in a cycling suitability analysis

1.5 Promote travel demand management strategies, including ridesharing, car sharing, modified work schedules, and telecommuting.

(2) Invest in strategies to reduce truck ton-miles of travel (TMT)

2.1 Improve rail freight service access for local shippers by supporting limited, appropriate public investment in freight railroad improvements including restoration of quality service between Binghamton and Syracuse

2.2 Develop a truck-rail intermodal terminal in Greater Binghamton by supporting appropriate participation in a public-private partnership.

(3) Invest in strategies to reduce vehicle emissions

3.1 All public transit buses purchased will use best available propulsion technology to limit GHG emissions

3.2 Local governments will be encouraged to purchase vehicles for both light duty and heavy duty vehicle fleets that use the best available propulsion technology to limit GHG emissions

3.3 Improve traffic signal timing to reduce unnecessary delay.

- ♦ Convert signalized arterial streets to traffic adaptive signal timing technology within 10 years.
- ♦ Retime/optimize isolated signals no less than every 2 years.

3.4 Actively investigate the opportunity to replace signalized intersections with roundabouts. Construct those determined feasible.

3.5 Partner with land use authorities to encourage strategies to limit land consumption for new development and create opportunity for short trips:

- ♦ Promote compact, mixed-use development
- ♦ Promote infill development/redevelopment in the urban core communities

♦ **Accessibility Goal:**

To ensure that the regional transportation system provides convenient mode-neutral access to destinations including employment, education, and services.

♦ **Accessibility Objectives:**

(1) Improve the availability and level of service of public transit

- 1.1 Reduce fixed route bus headways
- 1.2 Increase fixed route bus fleet as necessary to meet demand
- 1.3 Increase ADA paratransit bus fleet to accommodate all requests for service
- 1.4 Periodically reevaluate and adjust route structure to provide access to new destinations

(2) Improve pedestrian accessibility by

- 2.1 Construct sidewalks where gaps are identified in the existing sidewalk network within 5 years to ensure a continuous network in high priority locations; and over the life of the Plan to all destinations.
- 2.2 Continue to bring existing sidewalks and curb ramps into ADA compliance.
- 2.3 Use best available pedestrian signal technology in both new installations and as retrofits

(3) Overcome barriers to bicycle use identified in a cycling suitability analysis

(4) Maintain access for motor vehicles and truck freight delivery

♦ **Mobility Goal:**

To create a regional transportation system that provides travel choices so personal travel and goods movement can maximize efficiency.

♦ **Mobility Objectives:**

(1) Invest in strategies to provide alternatives to single-occupant vehicle personal travel

- 1.1 Improve the availability and level of service of public transit
  - Complete the consolidation of Broome County, Tioga County, and OCC Transport services
  - Reduce fixed route bus headways
  - Increase fixed route bus fleet as necessary to meet demand
  - Increase paratransit bus fleet to accommodate all requests for service

- Periodically reevaluate and adjust route structure to achieve greatest efficiency
- 1.2 Continue to support and promote regional rideshare service
- 1.3 Promote the creation of a car share service
- 1.4 Complete Greater Binghamton Greenway multiuse path system within 10 years.
- 1.5 Overcome barriers to bicycle use identified in a cycling suitability analysis
- (2) Invest in strategies that improve the efficiency of vehicle travel
  - 2.1 Complete the deployment of the ITS Regional Architecture
    - Robust traffic and transit management center
    - Pervasive traveler information systems
    - Best available traffic signal system technology
    - Incident management on all primary arterials
  - 2.2 Participate in statewide efforts that support Advanced Commercial Vehicle Operations
  - 2.3 Address congested areas with appropriate measures, including
    - Improving traffic signal timing
    - Transportation systems management strategies
    - Capacity improvements only as last resort

♦ **Safety Goal:**

To create a regional transportation system that provides safe and secure travel for all users and all modes.

♦ **Safety Objectives:**

- (1) Improve roadway safety by reducing number and severity of crashes
  - 1.1 Continuously analyze traffic crash data to identify high crash locations
  - 1.2 Study and propose countermeasures for high crash locations within two years of identification
  - 1.3 Proactively identify and deploy techniques to improve safety for special populations of drivers, including older drivers and new drivers
- (2) Improve safety for transit users
  - 2.1 Develop and implement a plan to make bus stops accessible to all users within 5 years
  - 2.2 Install shelters at key locations
  - 2.3 Provide support as necessary, including cameras, for on-board safety and security
- (3) Improve pedestrian safety
  - 3.1 Complete the construction of sidewalks in identified high priority areas within 5 years
  - 3.2 Use best available accessible pedestrian signal technology in both new installations and as retrofits.
- (4) Improve safety for cyclists
  - 4.1 Complete within 2 years a new Regional Bicycle Plan that addresses the need for improvements to on- and off-road cycle facilities.

♦ **System Preservation Goal:**

To maintain the regional transportation system in a state of good repair.

♦ **System Preservation Objectives:**

- (1) Invest to maintain pavement sufficiency on both State system and local arterial roadways at no more than 10% poor, using most cost-effective asset management tools.

- (2) Invest to continuously reduce the number of structurally deficient bridges using most cost-effective asset management tools
- (3) Address functionally obsolete bridges that are not structurally deficient based on safety assessment and resource availability
- (4) Manage the Broome County and Tioga County transit fleets based on Federal Transit Administration bus replacement guidelines
- (5) Adopt a “Rebuild Smarter” policy for all infrastructure projects that includes:
  - ♦ Road Safety Assessment to identify and include necessary safety elements;
  - ♦ Complete Streets Assessment to identify and include appropriate complete streets elements;
  - ♦ Green Construction Assessment to identify best practices for reducing the environmental impact of construction.

<b>PLAN OBJECTIVE</b>	<b>PERFORMANCE MEASURE</b>
<b>Sustainability</b>	
1.1 Transit availability and level of service	BC Transit headways, on-time performance, % population served
1.2 Sidewalk connectivity	% streets in urban core and contiguous residential areas with sidewalks
1.3 Complete Greater Binghamton Greenway plan	% of total miles in Plan completed
1.4 Overcome barriers to cycling	Complete cycling suitability analysis. Performance measures to be extracted from analysis
1.5 Promote TDM strategies	Number of strategies promoted. # of people utilizing rideshare, car share, and telecommute
2.1 Improve rail freight service	# of local shippers with access to Class 1 railroads, directly or through shortlines
2.2 Develop truck-rail intermodal terminal	Opening of terminal
3.1 Purchase buses with low-GHG technology	# buses purchased and % of BC Transit and Tioga Public Transit fleet with best available low-GHG emission technology
3.2 Encourage public fleet purchases of low-GHG technology	# of public fleet vehicles purchased with best available low-GHG emission technology
3.3 Install traffic adaptive traffic signal technology on arterial streets	# of streets/# of signals converted to traffic adaptive technology
3.3 Retime isolated traffic signals	# and % of signals retimed each year
3.4 Study/construct roundabouts	# of signalized intersections studied for roundabouts; # of roundabouts constructed
3.5 Promote compact mixed-use development	# of new developments that fit this description
3.5 Promote urban core infill development	# of vacant parcels in urban core communities that are redeveloped
<b>Accessibility</b>	
Objectives 1.1, 1.2, 1.4: same as Sustainability Objective 1.1	
1.3 Accommodate all ADA paratransit trips	# and % of capacity-based trip denials for ADA paratransit services (BC Lift and Tioga Public Transit)
2.1 Construct sidewalks to fill gaps; high priority locations 5 years, full system life of Plan	Annual measure of new sidewalk construction, and extent of coverage

2.2 ADA sidewalk compliance	# of non-compliant locations
2.3 Improve ped signal technology	# of signal retrofits and new installations that meet this standard
3.0 Overcome barriers to bicycle use	TBD after the completion of the bicycle suitability analysis
<b>Mobility</b>	
Objective 1.1 and sub-bullets same as Sustainability Objective 1.1, except following	
1.1 Consolidate urban bus operations	Progress on consolidation
1.2 Support regional rideshare	Maintenance of rideshare website; # of active carpools
1.3 Promote creation of car share service	Establishment of car share
Objective 1.4 the same as Sustainability objective 1.3	
Objective 1.5 the same as Accessibility objective 3.0	
2.1 ITS deployment per regional architecture	Adopted architecture includes list of deployment actions and strategies, which can be used as performance checklist
<b>Safety</b>	
1.1 Identify high crash locations	System in place to collect and analyze crash data records
1.2 Study HCLs	# and % of high crash locations studied within 2 years of identification
1.3 Improve safety for special driver populations	# of programs deployed; change in crash rate for target populations over time
2.1 Bus stop access and safety	# of bus stops made accessible, # still inaccessible to all users
2.2 Install bus shelters	# of key bus stop locations identified, then % of locations with shelters installed
2.3 Bus on-board safety and security	Response to funding requests from transit operators for on-board security systems: funded, not funded, delay in funding
Objective 3.1 the same as Accessibility objective 2.1	
Objective 3.2 the same as Accessibility objective 2.3	
4.1 Regional Bicycle Plan	Plan completion and adoption on schedule
<b>System Preservation</b>	
1.0 Pavement sufficiency	% poor in annual pavement scoring for State system and local Federal Aid system
2.0 Structurally deficient bridges	# and % of structurally deficient bridges in MPA; jurisdiction neutral; annual change
3.0 Functionally obsolete bridges	# and % of functionally obsolete bridges in MPA; jurisdiction neutral; annual change
4.0 Bus fleet	# and % of buses in the Broome County and Tioga County fleets that exceed federal standard for useful life
5.0 "Rebuild Smarter" approach to system preservation projects	# and % of pavement and bridge improvement/rehabilitation/replacement projects that include Road Safety Assessment, Complete Streets Assessment, and Green Construction Assessment (as project applicable)

## **THE STARTING POINT: STATUS OF THE EXISTING PLANS**

As noted previously, Federal law requires BMTS to update the regional transportation plan at least every five years. This provides not only the opportunity to look forward with new forecasts and ideas, but also to look back at what has and has not been accomplished from previous Plans. *TRANSPORTATION TOMORROW:2025* was adopted in 2000.

*TRANSPORTATION TOMORROW 2030~PLACEMAKING FOR PROSPERITY*, was adopted in September 2005. Each included a full menu of projects and actions, with the explicit understanding that everything in a twenty-five year plan does not get implemented in the first five years. In both cases, however, there were high priority actions that were identified for early implementation.

### **Status of *TRANSPORTATION TOMORROW:2025*:**

- ♦ Construct northbound flyover, NY 201 Traffic Circle, Village of Johnson City
  - ☒ **Completed.**
- ♦ Projects associated with Vestal Corridor Study:
  - ♦ Operational and safety improvements, Murray Hill Rd to Campus Plaza; in conjunction with NY 201 over Vestal Rd and over NY 434 bridge replacement project
    - ☒ **Programmed but reduced in scope, limiting project limits along Vestal Road and NY 434 to Glenn Bartle Dr to Bunn Hill Rd**
  - ♦ Operational and safety improvements, NY 434 - Jensen Rd to African Rd including intersection reconstruction, NY 434/Rano Blvd/Sycamore Rd
    - ☒ **Programmed but reduced in scope to minimal intersection improvements and one sidewalk segment**
- ♦ Widen Front Street, I-81 Exit 5 to Broome Community College
  - ☒ **Completed**
- ♦ Construct new Susquehanna River Crossing, Apalachin to Campville, Town of Owego
  - ☒ **Completed.**
- ♦ Support the designation of Route 17 as Interstate 86: reconstruct I-81/NY 17 overlap
  - ☒ **Programmed**
- ♦ Projects associated with City of Binghamton Access Study:
  - ♦ Court Street Gateway
    - ☒ **Programmed, ready for letting**
  - ♦ Washington Street Gateway
    - ☒ **Programmed, then deleted from program to consider private development on that street segment**
  - ♦ Front Street Gateway
    - ☒ **Programmed but potentially reduced in scope (currently in design with a reduced cost cap)**
  - ♦ Improved truck access into City of Binghamton First Ward: project to reconstruct intersection of Front St/Clinton Streets
    - ☒ **Programmed, ready for letting, now deferred**
- ♦ Continue multimodal enhancement of Main Street (NY Route 17C):
  - ♦ West Endicott
    - ☒ **Completed**
  - ♦ Hooper Road to Harrison Avenue
    - ☒ **Programmed previously, now deferred**
  - ♦ Arch Street to Lester Avenue, Village of Johnson City
    - ☒ **Programmed previously, now deferred**
- ♦ Improve multimodal mobility on Front Street, BCC to I-81 Exit 6
  - ☒ **Completed.**

- ♦ Provide additional transit service in Binghamton: utilizing FTA Job Access-Reverse Commute funds, expanded fixed route bus service (and complementary ADA paratransit service) on weekday nights and Saturdays, and initiated service on Sundays
  - ☒ **Completed/ongoing.**
- ♦ Construct Intermodal Transit Terminal
  - ☒ **Completed.**
- ♦ Provide additional bicycle and pedestrian infrastructure
  - ☒ **Ongoing, as Transportation Enhancement projects are awarded; additional infrastructure has been constructed with street improvement projects**

**Status of *TRANSPORTATION TOMORROW:2030~PLACEMAKING FOR PROSPERITY:***

- High priority actions:
  - Rebuild Main Street using the principles of placemaking and context sensitive solutions
    - ☒ **No projects yet initiated**
  - Rebuild Front Street in the City of Binghamton using the principles of placemaking and context sensitive solutions
    - ☒ **Programmed, in preliminary design; scope to be reduced to meet imposed funding cap**
  - Focus on the rivers and complete the Greenway Plan
    - ☒ **Route 434 Greenway segment programmed, construction deferred; no other new greenway projects programmed.**
  - Support core area economic development strategies with appropriate transportation improvements
    - ☒ **BMTS has participated in Broome County Brownfield Opportunity Area plans for 3 locations in the urban core; no development proposals have yet come forward.**
- System preservation and asset management:
  - Maintain all modal facilities in an acceptable state of good repair and maintenance life cycle
    - ☒ **Little progress made toward this objective because of hyperinflation of construction costs and little growth in revenue over the period. Also true of the Broome Country transit fleet, where a sizable number of buses exceed the federal 12 year standard**
  - Focus pavement investment on urban core area arterial streets.
    - ☒ **Some progress on this objective, primarily as a result of spending ARRA funds on arterial street projects**
  - Expend at least 75% of investments on system preservation over the life of the Plan
    - ☒ **The current TIP shows over 90% of investment directed toward system preservation.**
- Safety:
  - Roadway safety: ensure that high accident locations are addressed, and that safety is accommodated in project design
    - ☒ **High accident locations that are within capital project limits are routinely addressed; stand alone locations as funding becomes available**
  - Pedestrian safety: complete the implementation of the Pedestrian and Bicycle Plan
    - ☒ **Little progress on this objective; 2010-2011 includes development of new Pedestrian Plan, to be followed by new Bicycle Plan**
  - Proactively address the special safety needs of an aging population

- ⊗ **Little progress; staff educational efforts directed at older driver programs and participation in AARP intersection audits.**
- Personal mobility:
  - Transit: enhance service frequency and consolidate into a single transit operation
    - ⊗ **Study of consolidation of BC Transit and OCC-Transit completed; no implementation activities to date. No service enhancements to BC Transit; in 2010, service reductions in response to budget cuts**
  - Roadway: use transportation system management and operations, and intelligent transportation system technology to improve reliability
    - ⊗ **NYSDOT Region 9 Traffic Operations Center is operational, and continues to add ITS functionality**
- Freight: focus on multimodal trade corridors; specific strategies pending the outcome of the Binghamton Regional Freight Study
  - ⊗ **Binghamton Regional Freight Study completed; no project recommendations were of high priority for the first 5 years of the Plan**
- Environmental protection and quality of life:
  - Enhance the physical and social environment
    - ⊗ **Modest progress in terms of construction of Greater Binghamton Transportation Center, and some greenway/trail projects**
  - Reduce greenhouse gas emissions and energy consumption
    - ⊗ **Implementation of Broome-Tioga Greenride rideshare matching website**

## **THE NEXT STEP: MATCHING INCOMPLETE ACTIONS WITH NEW OBJECTIVES**

A reasonable strategy in updating the long range plan is to understand how projects and actions from previous plans that have not yet been accomplished fit with the new Plan's goals and objectives. If priorities have changed, as reflected by those goals, then some of those projects may no longer be useful in accomplishing objectives. In that case, they may be removed from the new Plan.

<b>PROJECT or ACTION</b>	<b>2035 OBJECTIVE</b>
Vestal Corridor Study: NY 434-Murray Hill Rd to Campus Plaza (restore project limits and pedestrian/ safety elements)	Accessibility 2.1, 2.2 Safety 3.1
Vestal Corridor Study: NY 434-Jensen Rd to African Rd (restore original project limits and pedestrian/safety/ operational elements)	Accessibility 2.1,2.2 Safety 3.1 Mobility 2.1
Washington Street Gateway	N/A
NY 17C/Main Street – Harrison to Hooper	Sustainability 3.3, 3.5 Accessibility 2.2, 2.3 Safety 2.1, 2.2, 3.2
NY 17C/Main Street – Arch to Lester	Sustainability 3.3, 3.5 Accessibility 2.2, 2.3 Safety 2.1, 2.2, 3.2
NY 17C/Main Street – rebuild using CSS and principles of Placemaking	Sustainability 3.3, 3.5 Accessibility 2.2, 2.3 Safety 2.1, 2.2, 3.2
Front Street (City of Binghamton) – rebuild using CSS and principles of placemaking	Sustainability 3.3, 3.5 Accessibility 2.2, 2.3 Safety 2.1, 2.2, 3.2
Complete Greenway Plan	Sustainability 1.3 Mobility 1.4
Support core urban area economic development proposals	Sustainability 3.5
All modal facilities maintained in state of good repair	System Preservation 1-5
Focus pavement improvement on urban core arterial streets	System Preservation 1
Complete implementation of Pedestrian and Bicycle Plan	Sustainability 1.2, 1.3, 1.4 Accessibility 2, 3 Mobility 1.4, 1.5 Safety 3, 4
Address safety needs of aging population	Safety 1.3, 3
Consolidate and enhance transit service	Sustainability 1.1 Accessibility 1 Mobility 1.1
Deploy ITS to improve travel reliability and system operations	Mobility 2
Improve freight mobility on multimodal trade corridors	Sustainability 2 Mobility 2.2

Quality of life: enhance physical and social environment	Sustainability 1.2, 1.3, 1.4, 3.5 Accessibility 2, 3
Reduce GHG emissions and energy consumption by transport sector	Sustainability - all

Based on the above analysis, nearly all projects from the past two long range plans that have not been completed continue to meet objectives of this Plan. That suggests that they should be retained, and in many cases continue to be identified as high priority actions.

## **THE FINANCIAL PLAN: ESTABLISHING FISCAL CONSTRAINT**

Federal law has, since the passage of the Intermodal Surface Transportation Efficiency Act in 1991, required that MPO regional transportation plans be fiscally constrained.

“(f) The metropolitan transportation plan shall, at a minimum, include...

(10) A financial plan that demonstrates how the adopted transportation plan can be implemented.

(i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

(ii) For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under §450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.

(iii) The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified.

(iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Starting December 11, 2007, revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect “year of expenditure dollars,” based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

(v) For the outer years of the metropolitan transportation plan ( *i.e.* , beyond the first 10 years), the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/cost bands...

(vii) For illustrative purposes, the financial plan may (but is not required to) include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.”

23 CFR 450.322 (f)(10)

The key element is that the MPO, public transit operator, and state must work cooperatively to develop the estimate of funds from all sources that are reasonably expected to be available to implement the projects and actions in the Plan. BMTS worked with New York State DOT and Broome County to develop the financial plan; the county is the designated recipient of FTA funds for the region, although those funds are subsequently shared with Tioga County.

Typically the Financial Plan development begins with a baseline of current Federal aid and State transportation funding. This was made challenging for the current Plan because of uncertainty about all fund sources. The current Federal authorization, SAFETEA-LU, expired on September 30, 2009. Congress has extended the law, but not passed a new authorization. While the House of Representatives considered a bill with a substantial increase in both highway and transit funding, there was not access to revenue to support it. In fact, the Highway Trust Fund, which funds all FHWA programs, and a portion of FTA programs, has not been receiving enough revenue (primarily motor fuel tax) to meet current obligations, necessitating transfers from the US General Fund. The House bill also proposed fundamental changes to the transportation program structure, making it even more difficult to forecast future resources.

The New York State transportation capital program has also expired, on March 31, 2010. Instead of a five year program, which has historically been the case, the Governor and Legislature have considered a two year program, proposed as a bridge through the worst of the state’s current fiscal crisis. There is a more important structural issue with the State

Dedicated Highway and Bridge Fund. This fund receives a variety of transportation related taxes and fees, and pays for NYSDOT capital costs as well as some operating costs, and for the operation of the Department of Motor Vehicles. While the Fund was initially established as a “pay as you go” model, there has been a long term reliance on debt financing for transportation projects. Borrowing has occurred through both voter-approved general obligation bonds, and bonds issued by agencies like the New York State Thruway Authority. The consequence of this heavily debt-financed capital program is that over 50% of expenditures from the Dedicated Fund paid debt service in 2009-2010, based on an analysis by the New York State Comptroller. The New York State Division of Budget forecasts that without a structural fix, this figure will rise to 73% by state fiscal year 2013-2014.

Four financial forecasting methods were created, applied, and made available for public review. As a consequence of federal and state funding uncertainty, all of the parties to the development of the Financial Plan agreed to a conservative methodology. The starting point is the allocations provided by NYSDOT Main Office to Region 9 in 2009 for its five year capital program update, sorted by Federal aid and State Dedicated fund source categories. Based on historical trends, BMTS was sub-allocated 30% (Method 1) or 35% (Method 2) of each FHWA program, 100% of each FTA program, and 15% of State Dedicated funds. For each of these, the allocation was kept flat for the first five year period, then increased 5% in each subsequent five year period, out to years 21-25 of the Plan. The third method used a 30% share, but had a 15% growth in the year 6-10 period that reflected the large increase in federal funding being then proposed in Congress. The fourth methodology used the BMTS TIP as the base rather than the Region 9 allocations, with a 5% increase in each five year period. This created a forecast that was significantly higher than those based on the allocations. The final proposal averaged the first three methods. This was again made available for public review and comment.

The resulting Financial Plan was approved by the BMTS Policy Committee [Resolution 2009-17]:

*2035 LONG RANGE PLAN*  
**FISCAL SUMMARY BASE CASE**

(\$ millions)

REVENUE SOURCE	FORECAST TOTAL	ROUNDED
Interstate Maintenance	202.071	200.000
National Highway System	114.228	115.000
Bridge Program	258.272	260.000
Surface Transportation Program	127.650	130.000
Highway Safety Improvement Program	30.479	30.000
Federal Transit Section 5307	83.628	85.000
Federal Transit Section 5309	22.677	22.000
Federal Transit Section 5316	3.883	4.000
New York State Dedicated Fund	145.175	145.000
Innovative Financing	40.647	40.000
<b>TOTAL FEDERAL AID</b>	<b>842.888</b>	<b>846.000</b>
<b>TOTAL REVENUE</b>	<b>1,028.710</b>	<b>1,031.000</b>

Note that the category labeled “Innovative Financing” addresses a range of potential strategies to encourage private investment in transportation projects, primarily through public-private partnerships where capital costs are shared, or through leasing of revenue producing facilities.

In the event that the next Federal authorization is significantly different in terms of either funding or program structure, the Plan may have to be amended to reflect a new Financial Plan.

While the potential for spending on the order of a billion dollars on transportation investments is large, it must be remembered that it will be spread over 25 years. Based on the methodology used, there would be an average of \$33 million/year for the first five year period, \$40 million for the second, and finally \$46 million/year for years 21 to 25. These funds must cover all needs within the BMTS Metropolitan Planning Area, from a safety improvement on a local arterial to replacement of Interstate bridges to purchase of new hybrid buses. Given the depth of need, and the cost of projects, there is no question that many needs will be left unmet in the fiscally constrained Plan.

Fiscal constraint, even when compounded by uncertainty, is a useful tool in that it makes setting priorities a necessity. The MPO cannot promise everything to everyone to gain consensus. Instead, decisions must be made to choose the most important investments, especially in the first ten years of the Plan.

In order to demonstrate fiscal constraint, the cost of these investments must be estimated. For specific projects that have been identified, the Federal requirement is that the cost must be estimated in “year of expenditure” dollars. Hence, if a current cost estimate is known for a project that is expected to be constructed during years 6-10, it must be inflated. For actions that do not represent individual projects, a reasonable approach is to state that, for example, “\$xx million will be spent during years 6-10 on system preservation/pavement management, with individual projects to be identified each year”. This automatically limits the expenditure to year of expenditure dollars.





Priority: High

Cost estimate: To be determined as specific project proposals are brought forward.

**11. Maintain all Modal Facilities in State of Good Repair:** A high priority of all BMTS long range plans has been to provide adequate funding to maintain the regional transportation system in a state of good repair. This encompasses bridge conditions in terms of both structurally deficient and functionally obsolete bridges; pavement condition on both higher level and local arterial and collector streets; age of buses in the transit fleets; and other structural elements including culverts, traffic signals and signs, and guiderail. Despite the level of investment over the past five years, in some cases as much as 90% of the Transportation Improvement Program, a combination of rapid cost inflation of all elements and flat allocations of funds, conditions have deteriorated rather than improved. Rather than identify specific projects in the Plan, this is a strategic action that identifies both specific objectives and the proportion of available funding that will be dedicated to state of good repair activities.

Priority: High

Cost estimate: See below

**12. Focus Pavement Improvement on Urban Arterial Streets.** *Placemaking for Prosperity* identified a subset of state of good repair that would support the primary goal of revitalizing and redeveloping the urban core communities, which is to focus pavement investment on key urban arterial streets. Economic development agencies agreed that presenting a picture of deteriorated infrastructure can negatively impact business location decisions. As in #11, financial considerations have resulted in little progress being made, except for some work funded by the American Recovery and Reinvestment Act. This action also operates in terms of an overall objective that leads to the identification of specific projects over time.

Priority: High

Cost estimate: See below

The level of investment in <b>system preservation/state of good repair</b> is to be set at 75% of the capital resources in the Financial Plan. That yields an investment of \$600 million in Federal aid and an additional \$108 million in NYS Dedicated Fund expenditures over the life of the Plan.
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**13. Improve Freight Mobility on Multi-modal Trade Corridors.** The Binghamton Regional Freight Study, completed in 2008, was identified in *Placemaking for Prosperity* as the mechanism to identify specific freight improvement projects for both highway and rail. Because the principal arterial system in the region has adequate capacity, the study identify few highway projects, including a long term need for capacity expansion on I-81 south of Binghamton, and some spot improvements to improve local access. Recommended rail improvements, which are not funded by BMTS, include rationalization of rail yards and movements in Binghamton, where Canadian Pacific and Norfolk Southern overlap; and improvement of the New York, Susquehanna & Western railroad between Binghamton and Syracuse, and its Utica branch. This project will provide funding for the identified highway improvements as they become necessary.

Priority: Low

Cost estimate: To be determined as projects are identified

## ***DEVELOPING THE PLAN, PART 2: NEW ACTIONS TO SUPPORT SUSTAINABILITY***

Creating a sustainable region is the focus of this Plan. Certain strategic actions and projects can be undertaken to ensure that this region is accomplishing its sustainability goals and objectives. According to *Sustainable Transportation: Problems and Solutions*, in order to make the transportation system more sustainable there are a number of areas related to travel and transportation that we must seek to improve. These areas are finite fuels, emissions, safety, and congestion. There are specific actions and projects in the BMTS metropolitan planning area that will support sustainability.

Mentioned earlier is the specific linkage between transportation and greenhouse gas emissions, which leads to the objective to invest in strategies that reduce per capita vehicle miles traveled (VMT). One of the ways of doing this is to increase public transit utilization by improving safety, convenience, availability and level of service. Fixed route bus transit must run frequently enough that total travel time does not greatly exceed that of automobile. People will always see time spent waiting for a bus as non-productive and wasteful. Other strategies include establishing more park-and-ride facilities to allow people to shorten their driving trip and then continue their trip on the bus to their destination. Taking advantage of Intelligent Transportation System technology by using Advanced Public Transportation Systems (APTS), such as fleet monitoring systems, dispatching systems, onboard displays, real-time displays at transit stops, and intelligent fare collection systems, would also increase the attractiveness of public transit operations. Increasing the number of bus shelters along the transit routes would be an added convenience to users and may increase the attractiveness of using the system.

A number of individuals use bus transit, but they are primarily captive riders, those with few travel choices including the carless, the elderly, the poor, and the handicapped (Black, 203). Supporting sustainability demands that attempts to alter this perspective be made in order to attract riders who select transit even though they have other choices. A broad range of public outreach can help meet this objective. Transit must be made to be a positive choice where benefits accrue to both the traveler and society.

Ridesharing is another technique used for reducing VMT by decreasing the number of single occupant vehicles travelling to the similarly located destinations. BMTS currently operates Broome Tioga Greenride, a ridesharing website. More advertising and education could increase the number of users of the site.

Reduction of per capita VMT can also be achieved by shifting travel from cars to non-motorized modes by making bicycling and walking as safe and convenient as possible. Constructing sidewalks in continuous networks in the urban area and increasing the number of accessible countdown pedestrian signals are both ways to make a pedestrian feel more secure and safe walking to a destination. The designation of more bicycle lanes with appropriate signing and striping also increase the safety of travelling by bicycle and would encourage more people to do so if they felt secure. Developing a network of multi-use trails for use by pedestrians and bicyclists, and separated from automobile traffic is important to provide further connectivity to destinations. These trails encourage more walking and bicycling, especially for cyclists who currently do not feel comfortable using the roadway.

As discussed earlier, BMTS is taking a view of creating a sustainable region that goes beyond global climate change and greenhouse gas emission reductions. Creating a place that is attractive and healthy encourages residents to stay and others to move here. Improved quality of life can be the result of certain transportation investments. Some, like improving non-motorized modes, achieve both kinds of benefits. Others focus more on livability. Discussed below are some that can be achieved locally.

- ♦ Traffic calming. Traffic calming is an umbrella term for a number of strategies that are intended to slow the movement of traffic. It is applied most frequently in residential areas, schools, shopping centers, malls, and downtown areas with the goal of increasing the safety of residents, pedestrians, or shoppers by enhancing walkability. Local government members of BMTS are the appropriate parties to identify locations where traffic calming techniques may be appropriate.
- ♦

Other techniques are a modified work schedule and telecommuting. There are obvious sectors of employment that would be suitable to a modified work schedule and/or telecommuting. Jobs that can be done over the phone and/or internet that do not require personal contact are most suited for these types of techniques.

### ***The Land Use Connection***

Although BMTS only has authority over the Transportation Plan, the focus on sustainability highlights the importance of discussing land use and its relationship to transportation. Land development has an impact on how the transportation system is used, typically by creating new travel demand. Conversely, transportation investments have an impact on the quality of how land is accessed, and therefore on the value of the land for development. For example, a new freeway interchange will improve access to a nearby parcel of land; because of that access, a developer may build a new office park. The office park in turn creates trips as it is occupied. At some point, the total development in the area may overwhelm the capacity of the interchange, and congestion results.

Local governments have the authority to regulate land use, and may choose to do so with a view to regional sustainability. Having land use regulations that support sustainability are important even for established areas so that when changes take place they are in line with the overall goal of the community. In the current plan, *Transportation Tomorrow 2030 ~ Placemaking For Prosperity*, the focus was to invest in revitalizing the core communities. This policy supports sustainability objectives and encourages land use developments to also focus on the core areas. The link to sustainability is the opportunity to shorten trip length. This not only reduces VMT, but shorter trips also are more likely to be converted to non-auto modes.

Because of the large number of municipalities within the BMTS metropolitan planning area it can be difficult to “enforce” this policy to direct development to the urban core, especially the downtowns, when it means a loss of property tax base. In suburban towns where strip commercial development already exists there may be an opportunity to create a neighborhood Town Center with many of the necessary daily amenities within walking distance or at least a short car-trip away. These Centers would be mixed-use areas of retail, commercial, office space, and housing located at the intersections of selected major cross streets. They may provide a variety of different services including grocery stores, drug

stores, banks, medical and other office space all in close proximity. Centers would generally have higher densities than currently exist, as would neighborhoods close to a Center, and be characterized by attractive design. Centers would be connected by sidewalks to nearby residential communities, enabling residents to walk to shopping, recreation, transportation, and, for some, work.

The concept described above has some similarities to the Smart Growth movement that began in the mid-1990s and has been gaining in popularity since. The Smart Growth principles as listed on [www.smartgrowth.org](http://www.smartgrowth.org) are as follows:

- Mix land uses
- Take advantage of compact design
- Create a range of housing opportunities and choices
- Create walkable communities
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development toward existing communities
- Provide a variety of transportation options
- Make development decisions predictable, fair, and cost-effective
- Encourage community and stakeholder collaboration in development decisions

These principles apply to a range of communities from urban to rural and were developed based on experiences of communities around the United States and could be a basis for the municipalities within the BMTS planning region to begin to revisit their land use codes and make changes based on some of these principles.

Another facilitating mechanism is “form based code”, in which zoning codes are less about specific land uses and more about urban form. A sustainable region is one that understands its own form and fabric. Locations like downtowns are selected for dense development, as are Town Centers, while other locations may lend themselves to traditional single family housing or open space.

One of the goals of sustainability is to reduce the overall VMT. Compact, mixed-use development means that buildings, parking areas, streets, driveways, and public spaces are developed in ways so that trips are shortened and lessens dependence on the automobile, thereby reducing levels of land consumption, energy use, and air pollution.

### ***The Health Connection***

America’s transportation system is very much focused on the convenience and circulation of vehicular traffic. Cars are used for almost all trips, even the shortest ones. Because of the abundance of automobiles on the road today, bicycling and walking are sometimes difficult and dangerous in many communities. Making transportation investments geared towards bicycling and walking allow the population to utilize these means of transportation and feel safe doing so.

Another perspective on being a sustainable region is the one where people are healthy. Physical activity is critical for good health. It has been found that 60 percent of adults in the United States do not meet recommended levels of physical activity, and 25 percent are completely sedentary.<sup>29</sup> Sedentary lifestyles are estimated to contribute to as many as 255,000 deaths each year.<sup>31</sup> Many children and teens are already at risk for heart disease and Type 2 diabetes, once considered “adult” ailments. Today’s youth may turn out to

be the first generation in modern history to live shorter lives than their parents.<sup>32</sup> Physical inactivity is an important factor in the rising rates of obesity and chronic disease—and transportation practices strongly influence physical activity habits.

A transportation system that is safe for walking and bicycling allows people to incorporate physical activity into their daily routine, such as necessary travel to school, work, the grocery store, or travel to social and recreational events. These forms of transportation are also inexpensive so the population, regardless of income level, can utilize these modes to meet their transportation needs as well as improve their fitness.

The number of vehicles on roadways can be reduced as more people are able to walk, bike, or use public transportation. This will work to improve air quality and reduce negative health impacts associated with pollutants such as triggering asthma attacks, respiratory illness, lung cancer, and heart disease.

Walking and bicycling also allows interaction with the surrounding environment and other people, improving one's overall mental and social health.

A transportation system built for safe walking and bicycling will result in a reduction of crash related injuries. This is especially important for our growing aging population and others with mobility difficulties. Contiguous sidewalk systems, with safe crossings at intersections are important to pedestrian safety. Accessible pedestrian signals with audible and tactile cues further enhance the safety for pedestrians with vision impairments.

Quality of life for the entire population, regardless of age, income, or ethnicity is improved by a transportation system that is safe for walking and bicycling. These modes of transportation provide increased access to necessary destinations and important social opportunities, while simultaneously providing for necessary physical activity. Not only will the population's overall health and fitness improve, reductions in health care costs will also be realized.

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Notes from [The Transportation Prescription](#):

<sup>29</sup> CDC, "Preventing Obesity and Chronic Diseases Through Good Nutrition and Physical Activity," 2008, <http://cdc.gov/nccdphp/publications/factsheets/Prevention/pdf/obesity.pdf>.

<sup>31</sup> Transportation Research Board and Institute of Medicine, "Does the Built Environment Influence Physical Activity? Examining the Evidence," Special Report 282 (Washington, DC: National Academy Press, 2005).

<sup>32</sup> S. J. Olshansky et al., "A Potential Decline in Life Expectancy in the United States in the 21st Century," *New England Journal of Medicine* 352, no. 11 (March 17, 2005): 1138–45, <http://www.muni.org/iceimages/healthchp/life%20expectancy1.pdf>.

The following list of projects and actions are derived from the understanding of sustainability and the goals and objectives to be accomplished. As with the existing commitments, input from the public and decision makers has been used to determine priorities.

- 1. Transit: Increase Frequency of Fixed Route Transit.** As noted above, key elements in encouraging more people to use public transit as an alternative to driving are convenience and safety. Currently most BC Transit fixed route bus service operates on a 30 minute headway (headway is the time between buses arriving at a stop), with some routes using a 60 minute headway. Because the routes are laid out in a hub-and-spoke pattern, many trips require transferring from one bus to another. The result is that a trip of only moderate length can have a total travel time of more than an hour. Ride Tioga Public Transit operates fixed route service from Owego that allows transfer to BC Transit at two locations in Broome County. There are a total of 8 runs per day, of which 5 stop in Endicott and 5 in Vestal. There are only 3 buses that return to Owego from Endicott, and 2 from Vestal. This makes inter-county bus travel very difficult. The proposed action to consolidate the Broome and Tioga County transit systems into one may improve the overall service.

The intent of this action is to have the entire BC Transit fixed route system operate on 15 minute headways, which is more consistent with urban fixed route transit because it provides a much greater level of convenience. Until consolidation occurs, the intent is to operate Ride Tioga on one hour headways on the Owego-Vestal-Endicott route. The cost includes both additional operating expense and the purchase of up to 10 additional buses.

Priority: High

Cost estimate: \$90.000 million

- 2. Transit: Improve Regional Paratransit.** Broome and Tioga Counties both operate paratransit systems. BC Lift meets urban area Americans with Disabilities Act requirements by providing complementary service to BC Transit. This service already has capacity challenges; given the aging demographic of the region' population, demand for service will increase. BC Country and Ride Tioga both operate primarily in rural to urban mode, with much of the area designated as rural being within the BMTS Metropolitan Planning Area. Because of the original design of each system, access needs of residents of the service areas are not well met, including for example work trip commutation and rural-to-rural travel. Since rural trips are longer, shifting these from single occupant vehicle to transit has a positive benefit.

The intent of this action is to ensure that (1) there is adequate capacity of paratransit systems to meet demand, and (2) regional paratransit is rationalized in terms of service model and operational characteristics to meet the access needs of residents.

Priority: Medium

Cost estimate: \$20.000 million

- 3. Pedestrian Access: Construct Sidewalks and Intersection Improvements to Achieve Full Connectivity in the Urban Core and Contiguous Residential Neighborhoods.** The regional transportation system must serve all users in a consistent manner. Increasing the use of non-motorized modes of travel creates positive benefits for community sustainability in terms of reduced energy consumption and GHG emissions. Community quality of life also benefits in terms of livability and greater opportunity for healthy physical activity. As with other modes of travel, people are more likely to make choices that they perceive as safe and convenient. Where there are no sidewalks, and people are forced to walk in or alongside the street, they rightly perceive this as unsafe. The same is true of intersections that lack crosswalks or pedestrian signals. A fully connected sidewalk network is even more important to people with mobility or vision impairments. A single gap or intersection that is not traversable can make pedestrian travel impossible.

The intent of this action is to construct sidewalks and improve intersections as necessary to provide a continuous network throughout the urban core communities and contiguous residential neighborhoods. This will increase convenience and accessibility to many destinations. The ultimate outcome will be more pedestrian travel.

Priority: Medium

Cost estimate: \$20.000 million setaside

- 4. Bicycle Access: Overcoming Barriers to Cycling.** The needs of cyclists for safe and convenient travel are similar in concept to those of pedestrians, but differ in specific applications. Treatments may range from wide curb lanes to designated bicycle lanes to off-road paths. Traffic signals that have vehicle detection for certain movements require detection that is functional for bicycles. As referenced earlier, BMTS will be preparing a new Bicycle Plan that will supersede the current Pedestrian and Bicycle Plan. The new Plan will include a bicycle suitability analysis of area streets and highways.

The intent of this action is to construct the improvements identified in the Bicycle Plan in order to improve the suitability of the regional transportation system for cycling.

Priority: Medium

Cost estimate: \$20.000 million setaside

- 5. Reducing Travel: Actively Promoting Demand Management Strategies.** Reducing travel demand is not only about shifting travel to transit and non-motorized modes, but also reducing reliance on single-occupant autos. There are a variety of means to that end, captured under the designation of Travel Demand Management.
- a. Rideshare.** Carpooling and vanpooling are most applicable to the regular trips like commuting to work or school. BMTS already actively promotes such choices through Broome Tioga Greenride.
  - b. Car Share.** Car sharing allows renting a vehicle for as little as one hour, and provides for pick up and drop off in designated locations that are dispersed across a metropolitan region. The availability of such a service can convince members of a household that they need fewer vehicles, or perhaps no car at all. This can force people to make efficient travel choices and plans because there is a direct cost associated with each trip.
  - c. Modified Work Schedule or Location.** There are many variations that permit people to be more efficient in their commute travel. Traditional flex time allows travel outside the peak periods, reducing congestion and emissions. Compressed work week reduces the number of days worked each week. Telecommuting provides work from home for some or all of the work schedule.

This strategic action recognizes the value of facilitating the modification of individual travel behavior. When options are made available, accompanied by information about the personal benefits that may accrue, like reduced household travel costs, people are more likely to make choices that also support community sustainability. This action is not envisioned to involve direct sponsorship of anything other than Greenride, but rather to actively promote and inform individuals, employers, and educational institutions about the benefits of supporting demand management.

Priority: Medium

Cost estimate: No capital cost

- 6. Reducing Travel: Construct Park & Ride Lots.** Another strategy for reducing trip lengths and encouraging use of shared ride options like transit and carpooling is to provide convenient meeting places. There are presently two park & ride lots in the Binghamton region, in Chenango Bridge and Kirkwood.

It is the intent of this strategic action to perform a study that will determine potential feasible locations for new park & ride lots that will both meet and generate additional demand for shared-ride modes of travel. Project funds would be programmed as projects are identified.

Priority: Low

Cost estimate: Undetermined, pending identification of projects

**7. Goods Movement: Making Freight Move More Efficiently,** While much freight moves through the Greater Binghamton Region without stopping, the Binghamton Regional Freight Study identified 28% of truck freight and 9% of rail freight that has local origin or destination. Shipping decisions can be complex. Most freight moves by truck because of the nature of the commodity. Bulk commodities ranging from coal to lumber to petrochemicals are suitable for rail transport. Goods that move in shipping containers, from food to manufactured items, may also move on rail for at least part of the trip. But smaller shipments move by truck. Scheduling also creates a key decision point. Rail movements are generally slow because of the nature of railroad logistics. A carload of petrochemical moving from Texas to a manufacturer in Binghamton does not make that move directly. It will move from the origin to a rail yard where it becomes part of a train, then to another yard where the train is broken apart and reclassified, and so forth before arriving. Intermodal containers move faster, but are still likely to require truck movements at origin or destination. Nonetheless, shippers can only choose among modes if they are available. Shippers can only choose among available modes. Binghamton is served by two Class 1 railroads – Norfolk Southern and Canadian Pacific; a regional railroad – New York, Susquehanna & Western; and a shortline railroad – Owego and Harford. This provides shippers with modal choice, and also creates the opportunity for economic development professionals to seek companies that require rail shipping.

The rail presence raises the importance of retaining and improving rail service over the life of this Plan. Railroads are private companies that own their infrastructure. Development of public-private partnerships to finance capital improvements is certainly legitimate, but requires that specific public benefit be identified. Such partnerships may be considered for the following improvements:

- a. **NYS&W Syracuse Branch.** The track between Binghamton and Syracuse can be a key link for freight movement, offering access by Binghamton shippers to the CSX Railroad, the other Class 1 railroad in the eastern United States. While the NYS&W continues to offer service, the track is deteriorated to the point where speed limits for freight trains is as low as 10 mph. Restoring the track to FRA Class 4, which would allow freight trains to travel at 55 mph, could have a positive impact on the economy of the Binghamton region.
- b. **Intermodal Terminal.** The construction of a truck-rail intermodal terminal in the Binghamton region has been investigated in the past, with the conclusion that there is not enough demand to generate the minimum level of traffic that a railroad requires to consider such a project. Local industries that ship intermodal freight have indicated that moving containers by truck (known as drayage) to intermodal terminals in Syracuse, Albany/Selkirk, Sunbury PA, and the Port of New York & New Jersey is not a significant barrier to their business. Interest in an intermodal terminal should be monitored over the life of the Plan. If the feasibility improves, participation of public finance would appropriately be limited to making necessary highway improvements to facilitate efficient truck movement to and from the terminal.

Priority: Low

Cost estimate: Undetermined; will be based on specific project requests as determined feasible

**8. Reducing GHG Emissions: Fleet Improvements.** This Plan reaffirms an existing BMTS policy that transit buses purchased with Federal aid use the least polluting propulsion technology that is commercially available. The current standard is diesel-electric hybrid technology. Broome County has six hybrid buses in its fleet, with six more to be delivered by the end of 2010.

While BMTS does not provide funding for the purchase of other public fleet vehicles, the Plan recommends that local governments in the region follow the same policy for vehicle purchase.

Priority: Medium

Cost estimate: \$16 million (assumes cost differential for hybrid is \$200,000; and entire fleet replaced twice over the life of the Plan)

9. **Reducing GHG Emissions: Improving Traffic Operations.** Vehicle delay at traffic signals is often unnecessary. Idling cars produce greenhouse gases and other pollutants. The *National Traffic Signal Report Card* explains the range of solutions, many of which are low cost/high benefit. The easiest and most cost effective is retiming traffic signals. Often years go by without retiming, as traffic volume and conditions change. Optimizing signal timing only requires up to date vehicle and pedestrian counts. Beyond simple retiming, computerized signal control offers options to optimize entire signal systems, including time-based coordination along an arterial street, closed loop systems, and fully traffic adaptive systems. One may allow selection of different time of day plans and for special conditions as pre-planned detours or special events. Centralized computer control of an overall traffic adaptive system can permit continuous optimization based on realtime monitoring of traffic. The *ITS Architecture for the Binghamton Metropolitan Region* called for the creation of a Traffic management Center (TMC) that would have “the capability for controlling traffic signal operations on State signalized arterial streets (NY 434, US 11/Court Street, US 11/Front Street, NY 17C)”. Doing so requires both capital and human resources.

It is the intent of this project to provide the resources for upgrading of traffic signal systems to ultimately permit traffic adaptive control; and for the NYSDOT Region 9 Operations Center to have the necessary communications and human resources to operate these systems.

Priority: Medium

Cost estimate: \$20.000 million

10. **Reducing GHG Emissions: Building Roundabouts.** Replacing signalized intersections with roundabouts is an important strategy in reducing vehicle delay and emissions. While vehicles have to slow on approaching and traversing a roundabout, they only stop when there is conflicting traffic. There are many relatively low volume intersections in the Binghamton region where the existing traffic signal is warranted, but where a roundabout will result in minimal stopped delay. Of course, roundabout construction is not always feasible. In many locations there may not be enough public right-of-way to accommodate the conversion of a signalized intersection to a roundabout. In some instances the purchase of private property may not be desirable; in others, right-of-way acquisition may not be considered a barrier to a project. It is the intent of this project to review each signalized intersection in the Binghamton region to determine the feasibility of converting it to a roundabout based on considerations of design, safety, operations, and right-of-way acquisition cost. Those that are determined to be feasible will be prioritized for programming as funds become available.

Priority: Low

Cost estimate: \$1 million per roundabout (note that there is a cost offset based on elimination of annual operating cost of signal and capital cost of signal upgrade or replacement)

11. **Creating Sustainable Communities: Partnering on Land Use Decisions to Support Downtown and Town Center Development.** As discussed at length, the real key to making Greater Binghamton a sustainable place lies in making appropriate land use decisions. Where people live, work, go to school and meet other personal and household needs defines the extent of the transportation system. The nature of the transportation system in turn defines how people and goods travel, and the positive and negative impacts on both global and regional sustainability. While BMTS does not make land use decisions, its local government members do. It is appropriate to develop

partnerships so that the BMTS Plan priorities can work synergistically with local and regional development goals and objectives.

The focus of *Placemaking for Prosperity* on revitalizing and redeveloping the urban core remains a priority and one where land use decisions and transportation investment converge. In the development of this Plan, a companion concept has arisen, that of development of “town centers” in suburban communities. As discussed above, this pattern can contribute to the shortening of vehicle trips and enhancing access by non-motorized modes. It may also contribute to the sense of livability and quality of life of the region.

Priority:     Supporting downtown development – High  
                 Supporting Town Center development – Low

## **THE PLAN: PROJECTS AND STRATEGIC ACTIONS**

The List of projects and strategic actions that are included in the Plan is based on priorities established through the BMTS planning process and the adopted Financial Plan which establishes the fiscally constrained boundary within which the Plan must remain. Full project descriptions are found in the preceding text.

	<b>Project/Action Name</b>	<b>Description</b>	<b>Cost (\$ million, YOE)</b>
<b>HIGH PRIORITY PROJECTS and ACTIONS</b>			
1.	<b>System Preservation</b>	Maintain all modal facilities (including bus fleets) in a state of good repair; focus pavement improvement on urban arterials.	\$ 708.000
2	<b>Safety: High Risk Locations</b>	Construct safety countermeasures at high crash/high risk locations after completing safety investigation	\$ 30.000
3.	<b>Vestal Corridor: Murray Hill Road to Campus Plaza</b>	Restore geographic and programmatic scope to address safety, operational, and pedestrian elements	\$ 6.000
4.	<b>Front Street Gateway/ Reconstruction</b>	Restore programmatic scope to address context sensitive solutions and placemaking principles	\$ 7.000
5.	<b>Vestal Corridor: Jensen Road to African Road</b>	Restore geographic and programmatic scope to address safety, operational, and pedestrian elements	\$ 10.000
6.	<b>Main Street Reconstruction</b>	Reconstruct Main Street throughout Binghamton, Johnson City, and Endicott using principles of context sensitive solutions and placemaking	\$ 40.000
7.	<b>Transit enhancement: Fixed route bus</b>	Increase frequency of fixed-route bus service to 15 minute headway	\$ 90.000 [operating cost and bus purchase]
8.	<b>Support urban core economic development</b>	Projects to be determined as development proposals are made	TBD
9.	<b>Collaborate with land use decision makers</b>	Support development of compact mixed-use projects in downtowns	\$ 0.000
<b>COST OF HIGH PRIORITY PROJECTS and ACTIONS</b>			<b>\$895.000</b>

<b>MEDIUM PRIORITY PROJECTS and ACTIONS</b>			
10.	<b>Safety: Older Population</b>	Address safety needs of older drivers and pedestrians through new signs, intersection design, accessible ped signals	\$ 15.000
11.	<b>Pedestrian Access</b>	Construct sidewalks and intersection improvements to achieve full connectivity in urban core and contiguous neighborhoods	TBD, pending new Pedestrian Plan Set aside \$ 20.000
12.	<b>Bicycle Access</b>	Construct necessary improvements to overcome barriers to cycling	TBD, pending new Bicycle Plan Set aside \$ 20.000
13.	<b>Greenway development</b>	Complete construction of Binghamton Metropolitan Greenway System in 10 years	\$ 22.000
14.	<b>Reduce GHG emissions: Improve traffic operations</b>	Short term action of traffic signal optimization; longer term action of deploying ITS/Advanced Traffic Signal Systems	\$ 20.000
15.	<b>Transit enhancement: regional paratransit</b>	Expand Broome and Tioga County paratransit systems in terms of service area and hours of service	\$ 20.000
16.	<b>Travel demand management</b>	Actively promote ridesharing, car share, modified work schedules and telecommuting	\$2.000
17.	<b>“Complete Streets”</b>	Adopt a policy that all BMTS supported street reconstruction projects will follow Complete Streets design as feasible	
<b>COST OF MEDIUM PRIORITY PROJECTS and ACTIONS</b>			<b>\$ 114.000</b>
<b>LOW PRIORITY PROJECTS and ACTIONS</b>			
18.	<b>Reduce GHG emissions: Roundabouts</b>	Convert signalized intersections to roundabouts as determined feasible	\$1.000 each
19.	<b>Reduce GHG emissions: Freight Movement</b>	Roadway spot improvements as identified; public-private partnerships for rail improvements if public benefit	TBD
20.	<b>ITS: Travel reliability</b>	ITS deployments for roadways and transit to improve traveler information and travel time reliability	\$ 15.000
21.	<b>Transit enhancement: amenities</b>	Construct bus shelters, kiosks to improve safety and convenience	\$ 1.500

22.	<b>Travel demand management</b>	Construct Park & Ride facilities to meet and enhance demand	
23.	<b>Collaborate with land use decision makers</b>	Support development of mixed-use suburban Town Centers	\$ 0.000

Based on the above information, all of the high and medium priority projects and actions can be accommodated under the fiscal constraint requirement of the approved Financial Plan. The low priority actions will generally fall outside of the Plan, and be considered illustrative. However, as noted in the discussion of the Financial Plan, there is a high level of uncertainty with respect to forecasts of both Federal and State revenues. As a result, it is likely that the Financial Plan and the Plan will be amended prior to the next update.

## **ELEMENT: INFRASTRUCTURE PRESERVATION**

It was noted earlier that, as in previous BMTS long range plans, preservation of our investment in transportation infrastructure remains the top priority. It is essential, as part of the long range plan's focus on creating a sustainable region, to restore the regional transportation infrastructure to a state of good repair and then maintain it. Deteriorated roads and bridges and aging bus fleets not only interfere with safe travel, but also contribute to a negative image of a region. Reversing the trends of declining population and economic activity is made more challenging when bridges are posted or buses break down in the middle of their daily run.

### **TRANSIT**

Application of the concept of "state of good repair" to public transportation in the Greater Binghamton region is primarily about the age and condition of the bus fleet, since there are no transit stations. The Federal Transit Administration establishes the useful life of a bus purchased with Federal funds. That standard is twelve years for a heavy-duty transit bus, seven years for a smaller medium-duty bus, and five years for a light-duty bus like those used for paratransit. Since most bus purchases are supported by Federal funds, this provides a uniform standard.

FTA grants may also be used to pay for preventive maintenance of buses. This helps ensure that transit operators will perform proper maintenance. They have an incentive to do so, because when a bus breaks down and has to be taken out of service during a run, it creates a major disruption to the system. Another bus has to be dispatched, passengers have to wait, and general satisfaction declines.

The information on bus fleet is only for the BC Transit and BC Country fleets. BC Lift and Ride Tioga are both operated by private companies under contract, with vehicles purchased by the contractor.

	<b>FLEET INFORMATION</b>			
	<b>NUMBER OF BUSES</b>	<b>YEAR OF PURCHASE</b>	<b>TYPE OF BUS</b>	<b>FTA YEAR OF REPLACEMENT</b>
BC Transit	6	2009	Heavy Duty Transit - Orion VII Hybrid	2021
	5	2009	Medium Duty Transit International 3200 Cutaway	2016
	23	2000	Heavy Duty Transit - Orion VI Diesel	2012
	6	1998	Heavy Duty Transit - Orion VI Diesel	2010
	11	1996	Heavy Duty Transit - Orion V Diesel	2008
BC Country	4	2009	Medium Duty Transit International 3200 Cutaway	2016
	6	2006	Light Duty Transit – Ford E450 Cutaway	2011
	1	2004	Light Duty Transit – Ford E450 Cutaway	2009

Because of challenges in maintaining the BC Transit fleet, and lack of capital resources to purchase new buses even when they were beyond their useful life, Broome County was able to acquire some surplus buses from the Capital District Transportation Authority in Albany (1998 Orion VI diesel). While this is only an interim measure to provide more serviceable buses, it did reduce the number of road calls.

The primary challenge to maintaining the bus fleet in a state of good repair is the availability of capital resources. FTA §5307 is a formula-based block grant. Recipients may choose among eligible uses each year. For small metropolitan areas with population less than 200,000, like Binghamton, eligible uses include both capital projects and subsidizing operating deficits. Preventive maintenance of the bus fleet is considered an eligible capital cost.

Broome County is the FTA designated recipient for the Binghamton urbanized area. The current apportionment is \$3.1 million. BMTS directs a portion of that amount to Tioga County, based on relative proportion of transit ridership. Broome County has chosen for many years to utilize this block grant for operating subsidy and preventive maintenance because of the size of the operating deficit. On a scale typical for smaller transit operations, BC Transit recovers about 35% of costs from the farebox, with the rest subsidized by federal, state, and local government revenue. Directing more of the FTA revenue to capital projects would mean that county government would pay a larger share of the subsidy, with a direct impact on Broome County property tax rates and residents.

In the past, Broome County has been able to finance some bus purchases with transfer of money from the FHWA Surface Transportation Program, and others with Congressional earmarks. Most recently, the county ordered 6 hybrid buses with money apportioned under the American Reinvestment and Recovery Act. These are scheduled for delivery in January 2011, and will replace an equivalent number of the oldest buses in the fleet. Because such an approach is not a reliable funding stream, the fleet replacement schedule has not been met. There are no FTA funds programmed in the current TIP for replacement of buses, although a large proportion of the BC Transit fleet, 34 buses, is due during that time period.

#### *PAVEMENT*

NYSDOT measures the pavement sufficiency of all State Highways each year, using a visual surface scoring methodology. BMTS staff does the same for the remainder of the Federal Aid system: minor arterials and collector streets under local jurisdiction. The result not only provides an annual assessment, but also time series data of overall pavement condition. In the hierarchy of roadway functional classification, there is no question that the principal arterial highways under NYSDOT jurisdiction are the most important to through traffic, including trucks. These roads, including Interstates 81 and 88, and NY Route 17, are also used substantially by local travelers. Minor arterial streets like Main Street and NY Route 434 provide a primary means of travel for local residents across the region. Collector streets are included in the pavement database because they are eligible for use of federal aid. They serve an important role of providing access between neighborhoods and arterial streets. While the lower traffic volume on collector streets typically make them a low priority for Federal investment, the perspective of a sustainable region places as much focus on these streets because of their immediate visibility to residents and businesses.

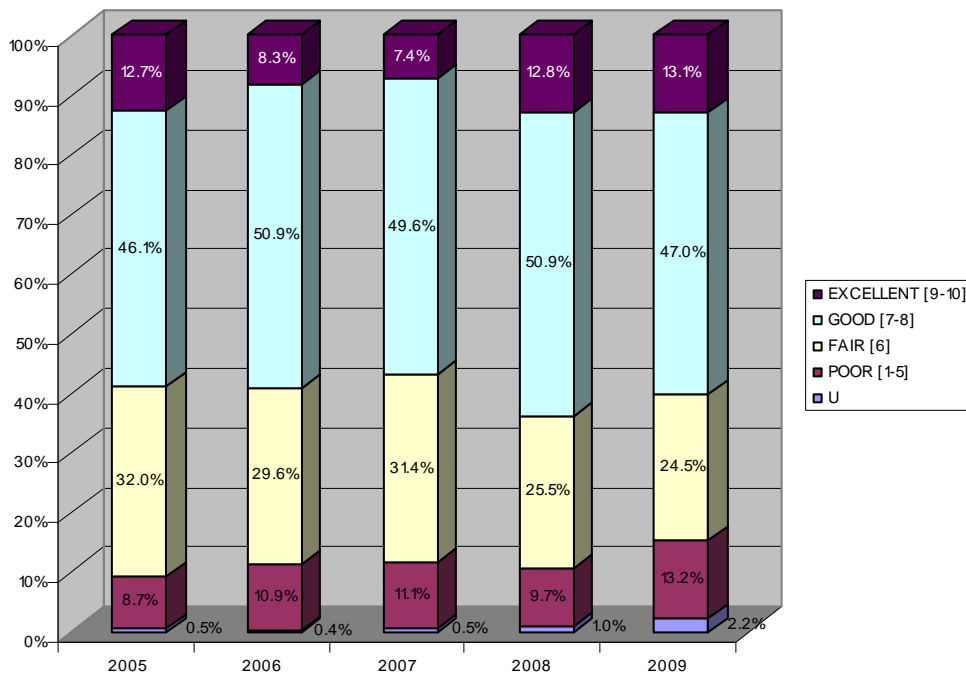
NYSDOT (On-System) Pavement Sufficiency Scoring – Binghamton Urban Area

The percentage of Binghamton Urban Area NYSDOT road mileage rated poor steadily decreased from 19.9% in 1999 to 8.7% in 2005, but has increased to 13.2% in 2009. The percentage of miles rated fair increased, from 23.6% in 1999 to 32.0% in 2005. Pavements rated fair have since decreased to 24.5% on 2009. This is important, as pavements in this category can often be treated with cost-effective measures that result in significant improvement, while poor pavements typically need more costly reconstruction.

**PERCENT MILEAGE FOR ALL NYSDOT REGION 9 URBAN AREA ROADS**

	Under Constr'n	POOR [1-5]	FAIR [6]	GOOD [7-8]	EXCELLENT [9-10]
1999	1.6%	19.9%	23.6%	43.0%	11.9%
2005	0.5%	8.7%	32.0%	46.1%	12.7%
2006	0.4%	10.9%	29.6%	50.9%	8.3%
2007	0.5%	11.1%	31.4%	49.6%	7.4%
2008	1.0%	9.7%	25.5%	50.9%	12.8%
2009	2.2%	13.2%	24.5%	47.0%	13.1%

**PERCENT MILEAGE FOR NYSDOT URBAN AREA ROADS**



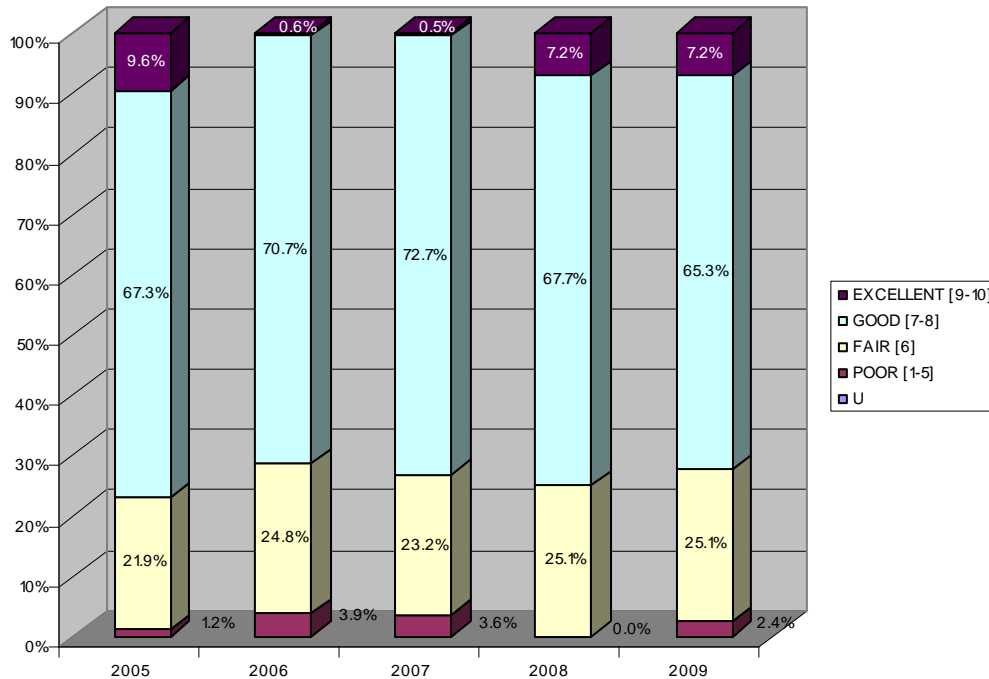
NYSDOT Interstate and Route 17 road mileage in the Binghamton Urban Area is broken out because of the importance to interstate and interregional travel, including much freight movement. Conditions in 1999 showed substantial deterioration, with 19.3% of these pavements rated poor, and just over 61% rated good-excellent. This situation was improved substantially by 2005, with only 1.2% rated poor, and nearly 77% rated good-excellent. In 2009, there had been a bit of slippage, with 72.5% rated good-excellent, and 25.1% rated fair. As stated earlier, having the resources to focus on fair pavements is important, when

cost-effective measures can improve them, and when neglect will move them into the poor category. To have fully one-quarter of the Interstate pavements rated fair is of concern.

**PERCENT MILEAGE FOR NYSDOT REGION 9 INTERSTATES AND NYS 17**

	Under Const'n	POOR [1-5]	FAIR [6]	GOOD [7-8]	EXCELLENT [9-10]
1999	3.4%	19.3%	16.0%	46.7%	14.6%
2005	0.0%	1.2%	21.9%	67.3%	9.6%
2006	0.0%	3.9%	24.8%	70.7%	0.6%
2007	0.0%	3.6%	23.2%	72.7%	0.5%
2008	0.0%	0.0%	25.1%	67.7%	7.2%
2009	0.0%	2.4%	25.1%	65.3%	7.2%

**PERCENT MILEAGE FOR NYSDOT REGION 9 INTERSTATES AND NYS 17**



## BMTS Local (Off-System) Pavement Sufficiency Scoring

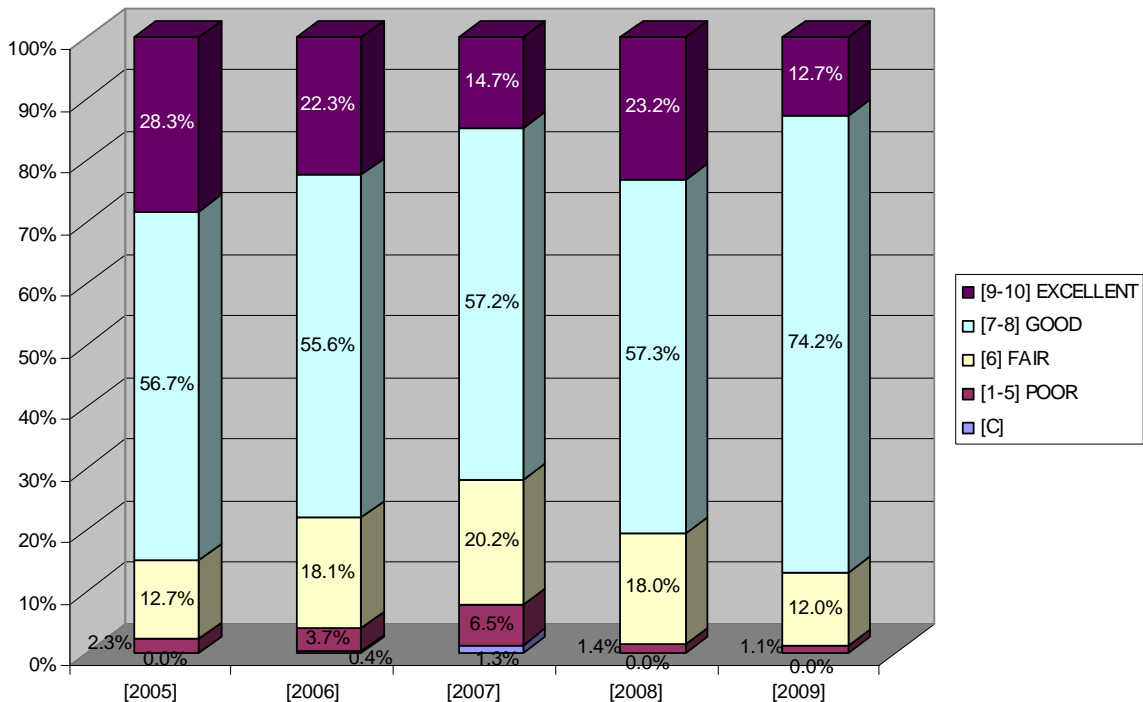
As noted previously, BMTS staff rates all locally owned pavements that are part of the Federal aid system by being functionally classified as either minor arterial or collector streets. The previous BMTS long range plan notes that in 1999, 25.4% of minor arterial street miles were rated poor, and an additional 35.9% fair. Since then the percentage of minor arterial miles rated poor steadily decreased to 2.3% in 2005, and 1.4% in 2009. Minor arterial miles rated fair peaked in 2007, then decreased to 12.0%, just below the 2005 level. This is very positive, since fair pavements are of concern as noted earlier.

### PERCENT MILEAGE FOR MINOR ARTERIAL SEGMENTS

	[C]	[1-5] POOR	[6] FAIR	[7-8] GOOD	[9-10] EXCELLENT
1999	1.1%	25.4%	35.9%	28.1%	9.4%
2005	0.0%	2.3%	12.7%	56.7%	28.3%
2006	0.4%	3.7%	18.1%	55.6%	22.3%
2007	1.3%	6.5%	20.2%	57.2%	14.7%
2008	0.0%	1.4%	18.0%	57.3%	23.2%
2009	0.0%	1.4%	12.0%	74.2%	12.7%

[C] = Under Construction

BMTS Urban Area Minor Arterial Pavement Scores - % Mileage



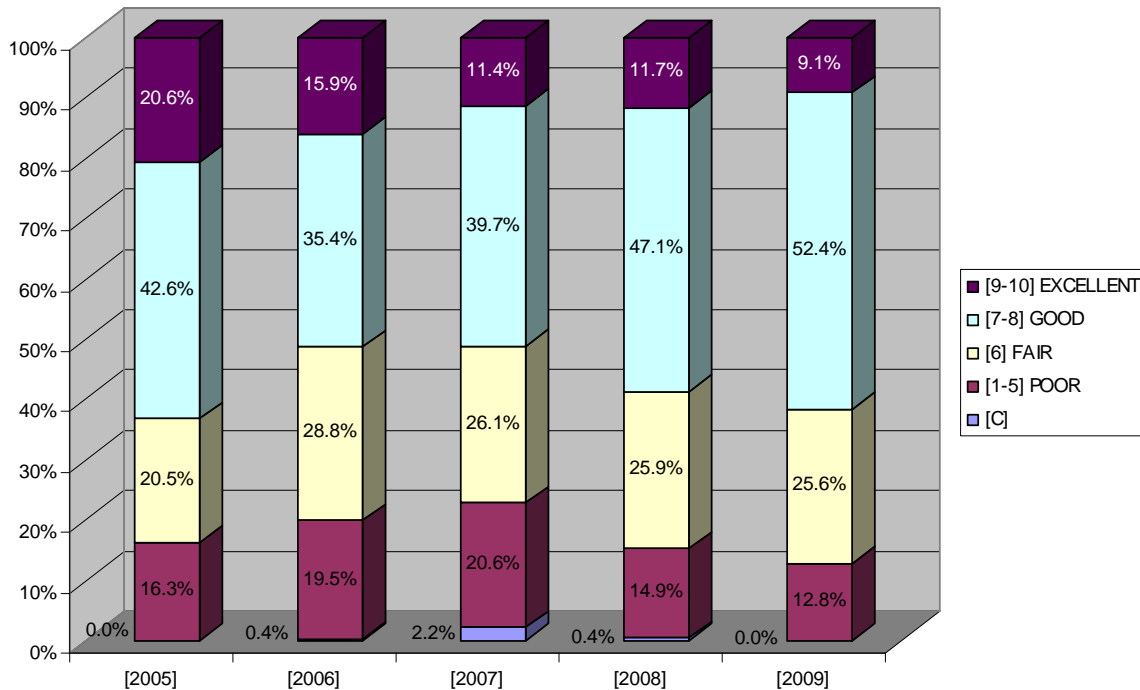
Since 1999, the percent mileage of collector streets rated poor have also decreased, although less steadily, from 26.8% to 16.3% in 2005 to 12.8% in 2009. The percentage of collector miles rated fair increased from 2005 to a more typical historical level of 25.6%. Perhaps most notable is that pavements rated Good increased by nearly 10% since 2005, while those rated Excellent decreased by a similar amount.

**PERCENT MILEAGE FOR COLLECTOR SEGMENTS**

	[C]	[1-5] POOR	[6] FAIR	[7-8] GOOD	[9-10] EXCELLENT
1999	2.0%	26.8%	28.6%	31.0%	11.7%
2005	0.0%	16.3%	20.5%	42.6%	20.6%
2006	0.4%	19.5%	28.8%	35.4%	15.9%
2007	2.2%	20.6%	26.1%	39.7%	11.4%
2008	0.4%	14.9%	25.9%	47.1%	11.7%
2009	0.0%	12.8%	25.6%	52.4%	9.1%

[C] = Under Construction

**BMTS Urba Area Collector Pavement Scores - % Mileage**



The BMTS pavement survey data indicates positive results from investments made over the past several years toward preserving the roadway infrastructure, as well as from the criteria used to select projects to be included in the Transportation Improvement Program. The action statement for system preservation from the previous BMTS long range plan was to

improve arterial pavement sufficiency to no more than 10% poor in ten years and maintain that level. It also called to improve collector street pavement sufficiency to no more than 25% poor in ten years and maintain that level. Thus far, the action item has been fulfilled.

#### *PAVEMENT SUMMARY*

BMTS has been investing substantially in roadway reconstruction and pavement projects over the past decade, primarily on the State highway system. A number of local minor arterials have been rehabilitated as well. However, due to funding constraints, some projects were reduced in scope, opting for simplified treatments over reconstruction, so other projects could be accomplished. One of the issues that local governments confront in developing their own capital street reconstruction programs is that rebuilding major streets carries a substantial cost, often several million dollars. Such projects are often beyond the financial capabilities of local government. New York State has no program to invest State funds in local projects other than the Consolidated Highway Improvement Program (CHIPS), which is oriented to maintenance rather than capital expenditure. As a result, local governments compete for scarce Federal STP money for these major local projects. On the other hand, it is often less costly to mill and resurface streets, which has become the treatment of choice. It is important in managing transportation assets that life cycle costs of alternative strategies be considered. For example, the lower construction cost of a pavement overlay treatment must be balanced against the longer service life of full pavement reconstruction.

New York's Statewide Transportation Master Plan for 2030 identifies asset management as a key strategy in meeting its goals for mobility and reliability.

#### **“Strategy: Managing to Achieve a State of Good Repair**

During the life of this Plan, New York State will continue to give the highest priority for funding to asset preservation in support of system-wide improved mobility and reliability. Irrespective of ownership, the State's transportation operators will be encouraged to restore deficient parts of the transportation system to a good condition and to continually maintain their assets to a state of good repair.”

*Strategies for a New Age: New York State's Transportation Master Plan, p. 36*

The combination of fiscal constraints and rapid expansion of the number of miles of pavements requiring resurfacing have resulted in paving cycles increasing to unacceptable levels in many areas of the State. While a 12 year cycle of pavement renewal is the “state of good repair” standard, the Department has been unable to achieve that. A preventive maintenance strategy, including crack sealing and other low cost strategies, will slow the deterioration process.

NYSDOT has a renewed focus on related infrastructure, especially culverts, both large and small. Proper drainage is critical to pavement quality. If culverts or other drainage structures fail, the underlying foundation of a road can fail as well, requiring reconstruction rather than resurfacing. There is a large challenge in finding adequate funding to replace the number of deficient culverts required to achieve a “state of good repair” life cycle.

#### *BRIDGES*

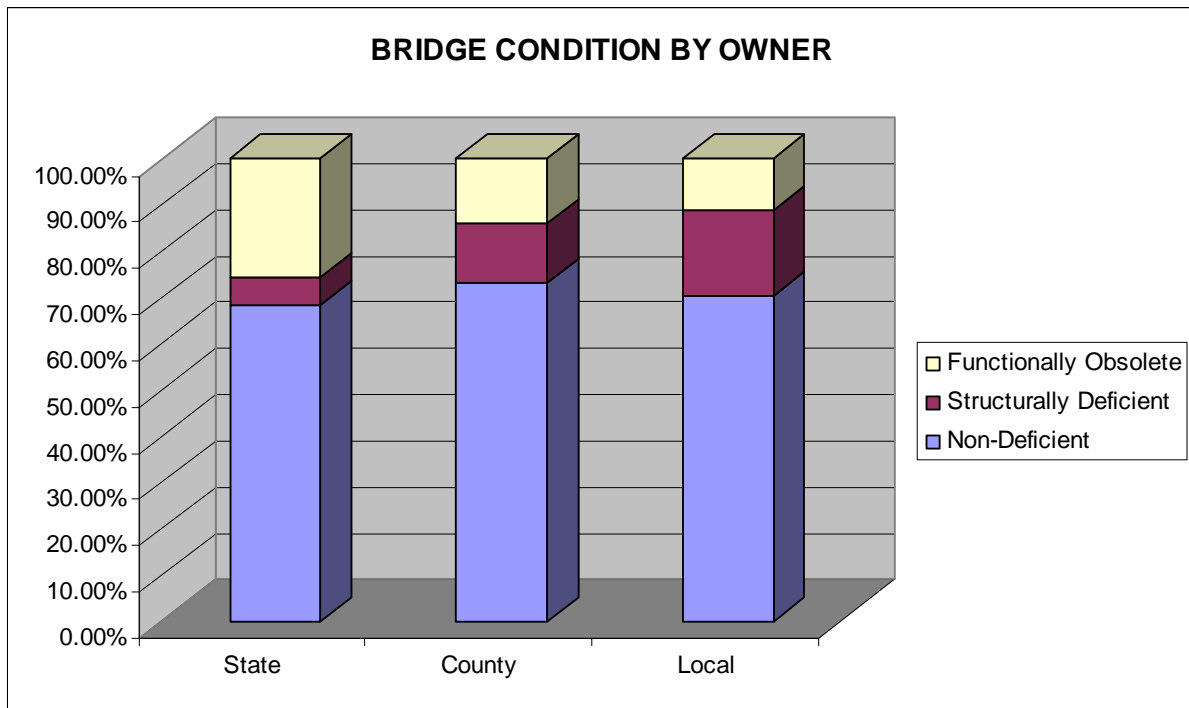
Deficient bridges can have a much greater impact on travel than poor pavements. Closed bridges and those with weight limit postings mean that truck, bus, and emergency vehicle traffic must be diverted. Bridges with substandard vertical clearance also create an obstacle to truck movement. NYSDOT has the legal responsibility to inspect all bridges, regardless of

ownership. Bridge sufficiency rating is complicated, taking many factors other than physical condition into account, including geometry and traffic volume. Deficient bridges are classified into two categories: structurally deficient and functionally obsolete. The latter do not have deterioration issues, but in some way do not meet current design standards, for example by having lanes that are too narrow.

BMTS has traditionally left the recommended selection of bridge projects to the NYSDOT Region 9 Structures unit, as well as information provided by local members. Federal bridge funds can be used on both State and local bridges. Many of the major river crossings in the Binghamton metropolitan area have been rehabilitated in the past decade. For example, since the completion of the last Plan, the Court St. Bridge in Binghamton and Broome County's Bevier Street Bridge have been rehabilitated, and the NY Route 96 over Owego Creek bridge was replaced. BMTS also supports the use of Federal capital funds for demonstrated preventive maintenance techniques that extend the life of bridges. This includes bridge painting and bridge washing. NYSDOT invests substantially in these techniques. While local governments have not generally funded preventive maintenance, Broome County used ARRA funds to paint the Vestal-Endicott bridge. NYSDOT also invests in repairing bridges that have a sufficiency rating greater than 5, which means they are not deficient. These are projects that are determined to be cost effective based on extending the life of the bridge before it becomes deficient and requires more expensive rehabilitation or replacement.

A real challenge in terms of maintaining bridges in a state of good repair is a life cycle issue, and is both a regional and national problem. Much of the Interstate Highway system was constructed forty to fifty years ago. Since bridges are typically designed to have a fifty year life, it means that a large number of bridges that service high volumes of car and truck traffic are reaching the end of their useful life. In the BMTS region, this is true now of most of the bridges along Interstate 81, including those at the I-81/NY 17 (future I-86) overlap over the Chenango River. The same will happen on Interstate 88 over the life of this Plan. This need for a substantial increase in federal bridge funding is something that Congress has not yet addressed.

The chart below shows that in terms of overall bridge deficiency, there is not a lot of variation based on ownership. Overall, about 70% of bridges are non-deficient, regardless of ownership. The difference is that the majority of New York State's (on-system) deficient bridges are functionally obsolete, primarily due to age. Conversely, more of the problem bridges owned by Broome and Tioga County are structurally deficient, as are a majority of those owned by local governments. This is of course more problematic, given the higher cost and urgency of addressing structurally deficient bridges.



**BRIDGES: SUMMARY**

As with pavements, NYSDOT has adopted a strategy of looking at needs, life cycles, and strategic treatments to maximize the investment of resources on bridges. Rather than addressing the very worst bridges first, there is an evaluation of the entire list of bridge needs. Sometimes it is very cost effective to repair a bridge that shows some deterioration but is not yet deficient. Known as its “5-7 bridge repair” program, the purpose is to extend the life of a bridge with required repairs rather than let it continue to deteriorate and require a more costly total rehabilitation or even replacement. This may result in the need to load-post or even close some very deficient bridges. Part of the evaluation is looking at the impact to the travelling public in terms of both traffic volume and detour length.

In sum, in recognition of the importance of infrastructure preservation in the regional transportation system, this Plan includes the following commitments:

1. Preserving the transportation infrastructure is the highest priority of the BMTS in this Plan. There is a commitment over the life of the Plan to spend at least 75% of available resources on a range of system preservation projects including replacement, rehabilitation, and preventive maintenance.
2. Protect core urban area arterial streets. In order to support the development of a sustainable region, attention will necessarily be directed to the infrastructure in the urban core communities. Rehabilitation or reconstruction of key urban arterial streets will be given a higher priority, for example, than that of a highway in an outlying location. Pavement life cycle forecasts in areas where economic development actions result in more heavy truck volume may become a special focus.
3. Maintaining the Broome and Tioga County transit fleets in a state of good repair and meeting life cycle replacement targets. This is equally important to meeting the system preservation goal.

4. To fund preventive maintenance of pavements, bridges, and buses when such techniques are demonstrated to reduce life-cycle costs.
5. Maintain arterial pavement sufficiency at no more than 10% poor.
6. Maintain collector street pavement sufficiency at no more than 25% poor as funding permits, once arterial goals are met.
7. Reduce the number of deficient bridges by 10%, then maintain that level.

## ***ELEMENT: TRANSPORTATION SAFETY AND SECURITY***

As we look to the future of the Binghamton regional transportation system, one constant remains both in the present and during the next 25 years. “How can we guarantee the safety and security of the traveling public?” The goal of BMTS is to improve and enhance the safety and security of all users. The bicyclist, pedestrian, transit rider, motor vehicle operator, and truck driver all rely on the transportation professionals to maintain and improve the transportation systems for them. The BMTS Policy Committee has assigned a high priority to safe and secure travel.

One way to examine safety is to understand the costs of crashes. Transportation plans typically consider the cost to the highway user in terms of dollars spent on delays and congestion, but do not evaluate the cost of crashes to both the user and the public. In order to understand the relative magnitude of these issues, we analyzed data from a three year period from June 1999 to May 2002. The use of such a time period is standard practice, in that it corrects for random variations in crash occurrence.

During the analysis period, there were 21,008 crashes in Broome County, The Town of Owego and the Village of Owego. Fifty-five of these crashes were fatalities and another 4,865 resulted in injuries; the remainder was classified as property damage only (PDO). The New York State Department of Transportation has developed a range of average costs for the period 2000-2002 associated with the three categories of accidents. These costs are inclusive of immediate crash costs including medical care and property damage to vehicles; but also long term costs including lost worker productivity and long term medical care, and legal costs. The NYSDOT costs are:

- Fatality: \$3.2 - \$4.3 million per person killed
- Personal Injury: \$92,700 - \$115,100 per person injured
- PDO/NR: \$3,800 – \$5,200 per damaged vehicle

When applied to the crashes that occurred during the analysis period, this can be looked at as a cost to the public of \$690 - \$880 million over the three year period, or an average of approximately \$250 million per year. This is a significant cost, particularly compared to the cost of travel delay, which is not substantial in the Binghamton metropolitan area. Safety mitigation projects are often less expensive than projects to add capacity and carry large amounts of benefits. It is also significant when compared to the amount of state and Federal funds that are spent annually on transportation improvements, which is on the order of \$25 million, or one-tenth the amount of crash costs.

With the identification of growth in the urban core as the foundation for the BMTS long range plan, three major safety actions need to be addressed in the region both on a project by project basis and also by incorporating safety as a key component in the project development process: (1) Improve Roadway Safety, (2) Improve Pedestrian Safety, and (3) Address the Needs of an Aging Population

### ***Improve Roadway Safety***

A high priority is placed on reducing the number and severity of crashes that occur on highways throughout the urban area. NYSDOT addresses this on the State highway system through their established practices of identifying and evaluating High Accident Locations (HAL) and Priority Investigation Locations (PIL). The methodology relies on statistical analysis of crash record data for similar types of roadway facilities throughout the state. Data quality is based on the accuracy of police crash records and subsequent coding. The State Highway reference marker system yields a reasonably accurate basis for recording crash

locations. While crash record data on locally owned roads and streets is not Always as accurate, it is becoming more so. BMTS is participating in a project with other MPOs in New York State to develop average crash rates for various local facility types, similar to what is available for State highways. This is critical to identifying HALs.

As locations are identified, safety studies determine whether there are crash types that are susceptible to correction through specific countermeasures, which often but not always involve capital construction. The methodology also provides for the calculation of safety benefits and benefit/cost ratio.

BMTS is also committed to take a proactive approach to identify areas of concern before they become a high accident location. The New York State MPOs have developed a Road Safety Assessment process, modeled after federally supported road safety audits. The practice involves use of a multidisciplinary team to evaluate street segments. This involves municipal engineers and public works officials, transit operators, police and public safety officials working together to create safety plans for these streets. There are numerous techniques and strategies that can improve the safety of urban arterial streets. These may include access management plans to reduce the number of driveways, since each creates conflict points; improving signal operations to reduce delay and driver frustration; improved sign and pavement marking plans to reduce driver confusion; consideration of automated enforcement to reduce the incidence of red light running or speeding; or replacement of signalized intersections with roundabouts, which have proven safety benefits. Also, as noted in the Plan Element that discusses regional transportation system management and operations and the use of Intelligent Transportation Systems techniques, the availability of new technology under the umbrella of "IntelliDrive" will allow for numerous safety improvements that cannot currently even be identified.

### ***Improve Pedestrian Safety***

With the focus of the Plan on sustaining the region, it is important to ensure that all of our communities and neighborhoods are safe and walkable. Walkability contributes to a positive image of the quality of life in a community. Because the BMTS Pedestrian and Bicycle Plan has become outdated, this Plan calls for the development of a new Pedestrian Plan this year, followed by a new Bicycle Plan. While the recommendations of the Pedestrian Plan are not yet known, the construction of a continuous sidewalk system that serves the urban core, and schools and transit routes is a basic high priority action.

In order to meet the needs of pedestrians in terms of both safety and convenience, a sidewalk network must be continuous. If people are expected to walk in the street, or along side a road, even for a small part of their trip, they are less likely to make that trip on foot. This is especially true for individuals with mobility or vision impairments, for whom a gap in the sidewalk network can become an absolute barrier to travel. The same is true of inaccessible or poorly designed intersections, which are equally part of the pedestrian travel network. While most attention is focused on signalized intersections, safety must be addressed at intersections with signals by making sure there is adequate sight distance for both pedestrians and drivers. All sidewalks and intersections must be brought into compliance with the design requirements of the Americans with Disabilities Act.

BMTS is committed to using appropriate technology to improve pedestrian safety, particularly at signalized intersections. This includes the use of pedestrian countdown

signals to inform people of how much time they have to complete a safe crossing; and accessible (audible) pedestrian signals to communicate with visually impaired pedestrians.

Greater Binghamton should become known as a safe and convenient place to walk, for children and senior citizens, and for those with either mobility or visual impairments. The design of urban core arterial streets will include a focus on walkability. In some locations, decisions may be made that favor pedestrians over vehicular traffic. Great progress has been made during the last ten years including pedestrian and bicycle accommodations in all projects that are constructed with federal funds. BMTS will continue working with the local governments to ensure that these same accommodations are made on local projects when streets are reconstructed. This will provide a safe seamless network for pedestrian and bicycles.

### ***Address the Needs of an Aging Population***

The population of Greater Binghamton is aging, with more than 20% being over age of 60 in the 2000 Census. In addition, the age cohort over 75 is identified as the most rapidly growing. This trend will continue, and must be addressed in the Plan. Elderly people have special needs as drivers, as pedestrians, and as transit users. Providing a good quality of life in urban core neighborhoods means providing for these needs.

First, it is important to consider the impacts that aging has on drivers. The reality is that people continue to drive as they grow older, and that nearly the entire population of those who will be senior citizens during the time period of the Plan are licensed drivers, and that most associate being able to drive with an acceptable quality of life. But as people age, reflexes slow, sight and hearing diminish, and physical movement is diminished. All of these things can result in greater potential for crashes. Older drivers are least able to survive crashes. Older people tend to compensate by driving less, driving only during less busy midday hours, and avoiding nighttime driving. But they still have a disproportionate crash rate. National statistics (2008) compiled by the National Highway Traffic Safety Administration are telling. People older than 65 accounted for 12.8% of the population, 14.8% of traffic fatalities, and 18.3% of pedestrian fatalities. When looking just at the senior population, drivers over 80 years of age accounted for 27.6% of those who were involved in fatal crashes; 36.7% of the 803 pedestrian fatalities were people over 80.

Significant research has been completed on the impacts of aging on drivers and possible mitigations that can be completed to offset these inevitable consequences. Older drivers need less confusing intersections and interchanges, and need to be able to easily see the signs they need to find their way. Increased visibility and retroreflectivity of signs, lighted and larger wayfinding signs, enlarged edge markings, increased use of rumble strips and maintenance of pavement markings can all improve safety. Something as simple as larger lettering on a street sign improves the safety and mobility of an elder driver. BMTS will make it a priority to consider the needs of this segment of the elderly population, not only when planning reconstruction and construction projects, but also by investing in regional programs of sign replacements.

Older people also begin to rely on alternate means of transportation to replace or supplement their personal automobile. As noted in the section on pedestrian safety, walking must be encouraged and facilitated for all age groups. Even when using public transportation, every trip begins as a pedestrian trip. Sidewalk construction is key, but it is also important that sidewalks be well maintained to prevent accidents. It also is important to

have well marked crosswalks and accessible pedestrian signals at all heavily traveled intersections. Streets need to be well lit to make people feel safe when walking at night. Older people often see signalized intersections as a barrier to walking, because they feel the signal does not stay green long enough for them to safely cross. Signal timing plans throughout the urban core will be reviewed to ensure that walk times accommodate the slower walking pace of the elderly.

In sum, in recognition of the importance of safety in the regional transportation system, this Plan includes the following actions:

8. Improve roadway safety through routine use of traffic engineering methods to identify high crash locations and implement appropriate countermeasures.
9. Continue to use the Road Safety Assessment process to identify safety deficiencies on urban arterial and collector streets.
10. Improve pedestrian safety by committing to construction of continuous sidewalk systems in key locations, including urban core neighborhoods, and in the vicinity of school and bus routes. Favor walkability on urban core arterial streets.
11. Invest in projects and programs that respond to the special needs of elderly drivers, including appropriate signing, wayfinding, and intersection design.
12. Invest in projects and programs that respond to the special needs of elderly pedestrians, including sidewalk construction, maintenance, and lighting; and accessible intersection design.

## ***ELEMENT: PUBLIC TRANSIT SERVICE***

Public transit is a vital element of Greater Binghamton's transportation system. It provides personal mobility to those who do not have access to a car due to affordability, physical limitations, or choice. Providing public transit options helps BMTS achieve our commitment to sustainability by offering a mode that consumes less fuel and creates fewer GHG emissions per person. It is important not only to maintain public transit services, but to recognize existing and future demand for enhanced services and the financial commitment necessary to make that happen.

Given the recommended scenario of creating a sustainable region, public transit service becomes a key component. A vital community will not only offer safe convenient transportation by various modes, but also consider the relationship of service delivery models to the needs of users. Public transit services may well grow beyond those that are offered today. It may be that a key to making downtown Binghamton attractive is a free shuttle bus that circulates around the shopping streets and neighboring residential blocks. Part of the rebuilding of Main Street may be the development of bus rapid transit system that provides quick convenient service to key locations. As noted on the previous Plan, part of rationalizing transit service across the region is the creation of a single new operating entity that replaces separate county operated services.

As noted in the demographic baseline and population forecast information, the population of Greater Binghamton is aging. Over 16% of the population is over age 65. That proportion tends to be even higher in the urban core; In the City of Binghamton for example, 17.6% of the population is older than 65. In addition, the oldest population groups keep growing as people live longer, Between 1990 and 2000, the proportion of people older than 75 grew from 6.4% to 8.3%. The current trend is that nearly all senior citizens except the very old are licensed drivers, and the large majority continues to own a car and drive late into life. Nonetheless, the demand for public transportation among this demographic will grow over time. In order to be responsive, public transit services must be responsive to the needs of this group.

The other group that relies substantially on public transportation is young people who are not yet licensed to drive, or if licensed are less likely to have a car available for their travel needs. The Binghamton City School District relies on BC Transit for transporting high school students rather than using school buses. Students at Binghamton University, especially those that live off-campus, also create substantial demand for transit service.

In order to have a significant impact on sustainability through reduction of GHG emissions, transit must do more than serve its captive population of young, elderly, and zero car households. To become a mode of choice for people with travel options, transit must have a high level of convenience, and be perceived as safe and secure. While the current transit operations are adequate for a smaller metropolitan area, they do not rise to the level of service necessary to attract choice riders. Specific deficiencies include:

- ♦ **BC Transit.** The urban fixed-route bus service is the backbone of the region's public transit service. It is designed primarily as a hub-and-spoke system, with most routes converging at the Greater Binghamton Transportation Center. There are other transfer points at Binghamton University, and in Endicott and Johnson City. This design forces many passengers to transfer, taking two buses to their destination. While a pulse scheduling system has all buses converging at the same time, which facilitates transfers, cross-town trips are lengthy. This is compounded by the fact that headways (time

between consecutive buses) is 30 minutes on most routes, but 60 minutes on some. This also extends the time involved on making a transit trip.

Another deficiency is that bus shelters are installed at only a few locations. Given the potential for a long wait, shelters are a positive element. Maintenance responsibility for shelters has been an issue for Broome County, as has the incidence of vandalism. But these should not be a barrier to passenger convenience. While there need not be shelters at every bus stop, they should be constructed throughout the urban core.

- ♦ **BC Lift.** This paratransit service meets the requirements of the Americans with Disabilities Act as it applies to public transit by providing transportation within the BC Transit service area to individuals with disabilities who cannot utilize fixed route service. The only deficiency is the challenge of providing sufficient capacity to meet the travel demand of approved users. This is likely to grow significantly over the life of this Plan, given the aging demographic of the region.
- ♦ **BC Country.** This paratransit service serves the area of Broome County beyond the urbanized area boundary. Much of the service area lies within the BMTS Metropolitan Planning Area. As highlighted in a recent analysis by BMTS, the primary deficiency of this operation stems from its original design. It was designed to take over the transport of seniors to the Office for Aging's rural senior centers, and also to provide transport into the urban core. The hours of operation and zone structure mean that it cannot be used by rural residents to travel to work or school, or meet many other regular needs.
- ♦ **Ride Tioga Public Transit.** This service comprises both fixed route and dial-a-ride operations. It operates primarily within Tioga County, but through intermunicipal agreements travels to specific locations in Broome County, and also to Ithaca and Cornell University. Ride Tioga's challenge is having to cover long distances while not having a substantial population base. A deficiency from the BMTS perspective is the limited number of transfer opportunities in Broome County compounded by long headways. While Broome Community College is a destination, riders can only transfer or be picked up at Washington Avenue, Endicott; and at the Town Square Mall in Vestal. Five buses leaving Owego each day stop in Endicott, while four stop at Town Square. For the return trip, there are five buses from Town Square Mall and three from Endicott. The consequence is that traveling from Owego to the Triple Cities is likely an all day event. This will clearly discourage people from using the bus unless it is their only choice and the trip is important.

This plan recognizes the importance of addressing these deficiencies if public transit is to meet its sustainability objectives.

We note these special issues and concerns of the elderly (*Source: Broome County Office for the Aging*)

- ♦ According to the 2000 Census, 18.7% of age 65+ households in Broome County do not have a vehicle available.
- ♦ A local survey found that 7.5% of vulnerable respondents are sometimes unable to get where they want to go, and 4% were often unable to get where they wanted to go because of lack of transportation options..
- ♦ The senior population is becoming increasingly diverse, which necessitates offering a variety of transportation options.
- ♦ The Administration on Aging states that "For people of all ages, adequate transportation is necessary for the fulfillment of the most basic needs. Housing, medical, financial and social services are useful only to the extent that transportation can make them accessible to those in need."
- ♦ Transit demand among the elderly is expected to increase in the future (Transit

- ♦ Cooperative Research Program, 2003).

#### **Local Trends**

- ♦ Use of the Office for Aging paratransit service has grown steadily over the past few years.
- ♦ Several volunteer programs provide transportation for seniors. Some of these services have been so inundated with requests that at times they are unable to take on any new clients.
- ♦ The seniors who live in rural areas need more “on demand” transportation service.

#### **Community Needs**

- ♦ Seniors who are no longer physically, financially or mentally able to drive need transportation to remain independent. Seniors need access to services that provide meaningful activities and social interactions to reduce isolation and prevent loneliness.
- ♦ Seniors report needing longer hours of dial-a-ride services in both the urban and rural areas and they would like transportation to be available for emergency situations.
- ♦ Door-to-door service is needed for people requiring assistance to get to and from the car or minibus. Currently medi-vans, which are costly to use, or volunteer drivers offer the only escorted door-to-door transportation.
- ♦ Having staff or volunteers offer “travel training” to those who are unfamiliar with using fixed route buses may increase the confidence of elderly riders in using this service.
- ♦ Seniors residing in rural areas have expressed a need for expanded transportation services so that they can shop, get to appointments, and remain socially connected. These seniors are often underserved and need special assistance to connect to community services.
- ♦ Seniors have expressed a need for a more simple method to set up paratransit rides.

Despite declining population among the younger age groups, public transit services remain vital in meeting their needs. Binghamton University (BU), with a growing enrollment of close to 14,000 students, represents a significant segment of transit ridership. With BU’s physical expansion on and off its main campus, with the Downtown Binghamton Center, and the Engineering Research facility on Murray Hill Rd., demand for transit services to access BU facilities will increase.

BMTS’ *Coordinated Public Transit-Human Services Transportation Plan*. completed in 2007, identifies opportunities to improve transportation for human service agency clients and the general public. It enumerates both gaps and duplications in existing service. It serves as the basis for applying for FTA’s Job Access-Reverse Commute and New Freedom programs.

Regarding environmental justice, three core principles must be considered to ensure that it has been properly integrated into the transportation planning process.

1. To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects on low income and minority populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent denial of, reduction in, or significant delay in the receipt of benefits by low income and minority populations. – *BMTS Environmental Justice Analysis (2001)*

Additional, rather than minimal, investment in public transit will continue to meet BMTS’ environmental justice goals. This needs to be considered in determining criteria for the future selection of transportation projects.

There are other variables that affect the attractiveness and success of transit service in metropolitan areas. One is the fact that traffic congestion can discourage people from using their own car if there are more convenient transit alternatives. Greater Binghamton's relative lack of traffic congestion will work against the growth in non-captive ridership. The convenience of driving a personal vehicle out-competes option to use transit. Most current transit riders do not have other transportation options and must use transit.

Conversely, higher gasoline prices may be an incentive for more residents to choose public transportation over a personal automobile. It may also lead to more use of the Park-and-Ride lots, and create a need for new lots to serve the suburban area. Park-and-Ride lots can also serve as a base for rideshare and carpool programs that can be initiated through the private sector by employers using incentives, such as a Transit Benefits Program that permits employees to set aside up to \$230 per month of their pre-tax income to pay for transit and vanpool commuting costs. Since a monthly pass on BC Transit costs \$52.50, employers can facilitate transit use through this benefit.

Several transit service enhancement recommendations were made in BMTS' *Transportation Tomorrow:2025 (March 2000)*, and *Transportation Tomorrow: 2030 ~ Placemaking for Prosperity*. Extending BC Transit service hours has been accomplished using FTA Job Access-Reverse Commute funding. Late night service increases employment opportunities in terms of access to 2<sup>nd</sup> and 3<sup>rd</sup> shift jobs, and late evening retail. A first step has been taken toward consolidation into a single regional transit system with the completion of the *BC Transit – Off Campus College Transport Consolidation Study*. While initial decisions are pending by both Broome County and Binghamton University, the report finds that even partial consolidation creates opportunities for improved service and reduced cost.

Broome County's public transit services need to be safe and secure as well as convenient to sustain and attract new ridership. Installing transit shelters that are well lit, surveillance cameras on buses, and emergency call boxes are examples of safety improvement measures that should be considered. Investments to enhance transit regarding homeland security need to be considered. The Greater Binghamton Transportation Center has been identified for many years as a key improvement. The Center has been completed in 2010, and will serve as the BC Junction transfer point as well as the terminal for Coach USA Shortline and Greyhound Bus Lines. The BC Transit area is on a platform away from traffic and sheltered from the weather. There is also an indoor waiting area for both local and intercity bus patrons, a security presence, and various amenities.

The transit route structure is unlikely to need significant changes in the next 25 years, given that the recommended scenario will tend to concentrate population in the urban core communities that have the best service. Smaller changes based on development patterns and population needs may better serve the area. It will also be appropriate to revisit the pulse scheduling system periodically. It provides a good deal of convenience for riders in terms of timely transfer, but creates operational constraints by requiring all routes to arrive at the same time.

### *PARATRANSIT SERVICE*

Paratransit is inherently more expensive to deliver on a per-trip basis because of the 'many to many' trip ends model. This model is manageable in the relatively compact size of our metropolitan area. As noted in the introduction of this element, with Greater Binghamton's elderly population forecasted to grow significantly, the demand for urban paratransit service

will continue to increase. This may create opportunities for increased matching of trip ends and greater scheduling efficiency. Service delivery models need to be periodically reexamined to determine if there is a more efficient and cost-effective means of meeting the transportation needs of elderly and disabled people. This work may range from the use of ITS technology for improved operations to entirely new services. Paratransit fleet management should also reevaluate the appropriate vehicle mix needed to best deliver the service.

Demand for BC Country service is also likely to increase due to the aging population outside the urban area. BMTS' *Broome County Rural Paratransit Analysis (2002)* proposed three alternatives to improve BC Country services:

- ♦ Minor changes to existing services, such as starting at 6:00 AM
- ♦ Addressing unmet needs by adding buses and drivers and creating demand-response zones in areas of highest demand
- ♦ Creating fixed route express bus service to more remote areas in the region and relying on demand response feeder service to provide connections.

This analysis also recognizes the fact that a separate rural paratransit service is in a sense an artifact, resulting from federal transit legislation that created separate funding programs within and beyond the urbanized area boundary. For part rural counties like Broome and Tioga, the boundary makes little sense to residents, and creates barriers to meeting everyone's transportation needs efficiently. In the long term, it is appropriate to rethink this issue and understand how best to provide transportation services to all of the region's residents.

## *TIOGA COUNTY*

Tioga County Public Transit, now also known as "RIDE TIOGA", is a service for Tioga County residents. The bus service is privately operated under contract to Tioga County. The system is funded through State and Federal transportation dollars as well as Medicaid. Currently, no County funds are contributed toward the public transportation system. The service has three primary components: (1) fixed route local bus service within Tioga County, with express operations to Ithaca and Cornell University, and into Broome County, with complementary demand responsive (i.e. paratransit) services mandated by the Americans with Disabilities Act; (2) Non Emergency Medicaid Transportation which transports eligible clients to medical visits in Tioga and adjacent counties, as well as more distant medical facilities; and (3) Pre-School transportation for children receiving various early intervention therapies.

As noted in BMTS' *Binghamton Job Access Transportation Plan Evaluation (August 2004)*, the original intermunicipal agreement for a transfer site at Washington Ave. was inadequate in providing for work trip needs. It was also inefficient at meeting other transportation needs such as medical appointments, shopping, and travel for social purposes. Although the latest intermunicipal agreement enhances the Broome-Tioga transit connection, the service still does not effectively meet the needs for job access for residents of either county who may seek employment in the other.

Against the backdrop of creating a sustainable region, it is important to offer transit choices to residents throughout the metropolitan area who want to take advantage of the employment opportunities, services, and shopping and entertainment in the core

communities. Fully integrating public transportation across the area becomes more important. While the county boundary is meaningful for funding and legal issues, it is transparent to the needs of the customers.

Issues that would need to be considered in developing an integrated service include:

- Cost and funding sources. Broome County has historically provided the minimum local investment required for its public transportation system. And although Tioga County favors any future expansion of service that would benefit the residents of both counties, it has successfully run a rural transit system with no direct expenditure of county funds.
- Provision of complimentary paratransit service to individuals with disabilities that are 3/4 of a mile from the fixed route and unable to reach the fixed route stops, as required by the Americans with Disabilities Act (ADA).
- Viability of the remaining Tioga County public transportation system outside of the Town of Owego.

### ***SUMMATION: PUBLIC TRANSIT IN THE LONG TERM***

Based on the above analysis of current public transit services operating in Greater Binghamton, and the needs of their respective existing and potential riders, it is recognized that cooperation between the transit operations is essential for adequately meeting those needs in an efficient, fiscally constrained, and sustainable manner. It is important to consider another option that may, in the long term, best meet the public transit needs of Greater Binghamton and contribute to the achievement of the recommended scenario of revitalizing the urban core.

This begins by moving toward having a single transit operator in the metropolitan area. The current arrangement of three operators in this small area creates obvious inefficiencies in the use of public funding, and also creates barriers to providing convenient service to riders. The single operator metropolitan model has to be balanced by the fact that only the Town of Owego, a small part of Tioga County, is in the metropolitan area. The need then would be to evaluate at a minimum a two county operation, and the eventual dissolution of OCCT fixed route service. While Broome and Tioga Counties operate substantially different service, a consolidated operation will benefit not only urban residents, but also rural residents. Operating decision can be made without the artificial constraints of county lines or urban boundaries.

Since there are close similarities in population trends and public transit needs between the counties surrounding the Binghamton Urban Area, and realizing that desired travel destinations can often cross county borders, a next step for meeting public transit needs could be the creation of a unified multi-county public system transportation. This could extend to Tompkins, Chemung, Chenango, and Delaware counties.

Such an arrangement offers the opportunity to take an even larger regional, and more comprehensive, look at the public transportation needs of its residents. It also offers the opportunity to pool resources and possibly create new funding sources for service operations. Such an operation may be able to be conducted independently of, yet cooperatively with, the involved counties. Extensive study is necessary before making a decision to move in this direction. There are also legal aspects of how such a public transportation system could operate that would have to be determined.

Given that public transit funds are limited at federal, state, and local levels, it is important to be accountable by investigating and considering options such as this to look at how available public funds can have the greatest impact.

The private sector will also need to consider the role it has in providing needed transportation services to the public to support regional sustainability. Private sector employers should be informed of the transportation needs of their employees and the options available to meet them. Businesses can individually or cooperatively fund transportation services for their employees and the community, such as a free shuttle bus that circulates around the shopping streets and neighboring residential blocks, or vanpool or shuttle service to Park-and-Ride lots. They can also use incentive programs to encourage employees to use public transit and shuttle services. Additionally, municipalities can encourage economic development through reductions in land use requirements for parking spaces, for companies that discourage employee use single occupant automobile commuting alternatives. This would be particularly true for the scenario of slow population growth and revitalization of urban cores. Public-private partnerships to provide transportation services should also be encouraged.

The Plan recommends the following actions with respect to the region's public transit services:

- Enhance fixed route bus service. BC Transit should evolve to 15 minute headways on all routes, which will greatly enhance convenience and make transit a more attractive mode to choice riders. Ride Tioga Public Transit should evolve its fixed route schedule to hourly service, and serve more transfer locations in Broome County including the Greater Binghamton Transportation Center. Ultimately the need to modify the intermunicipal agreement between the counties will be superseded by the previously recommended consolidation into a single transit operation. Consolidation will also facilitate schedule coordination.
  - Transit amenities. A relatively low cost improvement that creates a significant benefit in terms of making transit more attractive is the construction of bus shelters and information kiosks. Shelters should be placed at higher volume bus stops first, but also considered for more isolated locations. Kiosks may be considered for high traffic locations like shopping malls.
- Enhance regional paratransit services. ADA complementary paratransit service must grow to meet demand, which is forecasted to increase throughout the Plan period, as the population ages. A robust rural transportation service promotes the goal of sustainability by allowing people to conveniently travel to the metropolitan area for jobs and services without relying on a car. BC Country and Ride Tioga services must be redeveloped over the life of the Plan to provide for safe and convenient travel by public transit throughout Greater Binghamton. Further evaluation is necessary to determine the value of retaining a separate rural paratransit service, or to providing service with a combination of paratransit feeder service to rural villages and express bus service from those locations to the metropolitan area.
- Support travel demand management strategies. Construction of park & ride lots is of value to all shared ride modes, including transit, and carpool/vanpool. Opportunities must be identified for the construction of new lots in outlying areas of the region not currently served.
- Consolidation. Develop a fully integrated Broome and Tioga County transit service, which would allow people to more easily use transit to travel throughout the region, creating a positive impact on GHG emissions and broader regional sustainability.

## ***ELEMENT: REGIONAL TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS ~ INTELLIGENT TRANSPORTATION SYSTEMS DEPLOYMENT***

Active management of transportation systems is becoming more commonplace, as the public demands greater reliability and safety, and as technology has enabled strategies that were not previously possible. Operation of freeways and arterial recognizes that a substantial proportion of delay results from non-recurring causes; this is particularly true in Binghamton, where there is little congestion even in peak travel periods. These causes include incidents, work zones, weather conditions, and special events. Reliability is enhanced by detecting and clearing incidents quickly; by limiting the number, duration, and exposure of work zones; by responding well to treatable weather conditions, especially snow and ice; and by planning for the traffic impact of special events. This is not only about car travel: operation of fixed-route transit service can be impacted by similar events on bus routes; hence reliability of transit on-time performance can depend on managing arterial travel.

An important facet of a robust operations strategy is the provision of information to travelers that is accurate, reliable, useful, and realtime. There is ample evidence that people will adjust their route, mode choice, or travel time to avoid congestion and delay.

Enabling active management and operation is intelligent transportation systems (ITS). ITS encompasses a set of technology-based tools that help us actively manage our transportation system from minute to minute in response to changing conditions. Instead of traffic signals operating on a pre-set timing plan, a central computer may control an arterial or an entire regional signal system that responds to demand. When a bus is running behind schedule on Main Street, a green signal can be held long enough for the bus to get through. When a crash occurs on Interstate 81, travelers can be quickly diverted to a pre-planned detour rather than become part of an inevitable traffic jam with the chance for additional crashes in the queue. A commuter may look at an Internet site before leaving for work and choose an alternate route or mode based on the information. Trucks can be weighed without stopping and have their credentials checked electronically, increasing the productivity of both drivers and inspectors. Snowplows can be dispatched based on automated weather and pavement information.

ITS elements include:

- ♦ Detection technology, to provide real time information on how the system is operating. This may include sensors in the pavement that measure vehicle speed, sensors at traffic signals that measure vehicle presence, sensors in vehicles like buses or snowplows that report location, closed-circuit television cameras to provide visual detection/verification of highway incidents, or sensors that provide information on weather conditions. In recent projects, electronic toll tags (like EZ Pass) or cellular telephones have been used as traffic probes to measure travel time and speed.
- ♦ Control technology, to allow for real time response to traffic conditions. This may include control of traffic signals, either individually or in systems, to respond to changing traffic volumes, preemption by emergency vehicles, priority for transit vehicles; control of variable message signs or emergency highway advisory radio to communicate to travelers; even control of automated deicing systems on critical bridges.
- ♦ Communications technology, to allow everything to work together. This may include communications from detection devices to traffic management centers, which then communicate to control systems; communications to emergency dispatch centers when incidents are detected; communications to highway maintenance centers in response to

weather conditions; and direct communications to travelers via everything from internet sites, to radio traffic report services, to in-vehicle devices and 511 traveler information telephone service, to kiosks at workplaces or visitor centers.

In response to Federal regulation, BMTS developed and approved the ITS Architecture for the Binghamton Metropolitan Region in March 2004; and the companion ITS Strategic Plan and Implementation Strategy in April, 2005. The architecture follows a logical process to define transportation needs and the ITS functions that can address them, and how those ITS elements link together to build a working system. By following this process, we avoid wasting money by deploying individual ITS projects without understanding how they fit into an overall system. The implementation plan takes the next step by laying out the appropriate sequence of projects, to avoid spending money prematurely, for example on ITS devices that have nothing to communicate to. The Strategic Plan also references the Federal requirement that ITS projects be based on a systems engineering process that is very different from the standard project development process. This process requires that project elements be evaluated to ensure that adopted standards are being used, and interoperability of devices and systems is guaranteed.

Based on the ITS Strategic Plan and Implementation Strategy, the highest priority is the instrumentation and control of the Interstate highways in the metropolitan area. This includes the development of a regional traffic management and operations center. NYSDOT Region 9 now has an operations center. Currently, the only traffic functions are control of variable message and highway advisory radio. As more ITS elements are deployed, the center will be required to become more robust in its traffic management functions. It is also important that the center not be limited to NYSDOT regional geography on a functional level. Coordination of travel management on future I-86 and on I-81 and I-88 cannot be constrained by county or state lines. The center will have to communicate and function into Tioga, Delaware, and Cortland counties; and also coordinate with PennDOT management functions on the I-81 corridor. All of this functionality is detailed in the ITS Regional Architecture, which must be followed.

The upcoming project known as I-86 Designation – I-81/NY 17 Overlap Prospect Mountain, includes all of the ITS deployments that are the highest priority of the Strategic Implementation Plan. Similarly, 511NY is now in place, providing an Internet and telephone based travel information system on a statewide basis. Travelers can check on road conditions, work zones, weather, congestion, and other factors that may influence their travel decision. They can also acquire information about transit systems, and be linked to sites for ridesharing, car sharing, and bicycle maps.

The second priority is deployment of advanced traffic signal control on arterial streets. This will ease congestion, and signals can adjust in real time to vehicular demand. Further out in the Plan implementation will be considered ITS elements related to what has become known as “vehicle-infrastructure integration” or IntelliDrive. Research and development is underway on devices that allow for direct communication between vehicles (and drivers) and infrastructure elements, with the primary benefit being safety. This can include devices that sense a vehicle’s position in the lane and use either warning or control technology to prevent running off the road; or others that communicate with a traffic signal to warn against or actively prevent the driver from running a red light. There is an ever expanding range of applications being developed by researchers.

Recommended actions in the Plan are:

- ♦ Traffic signal improvement. Using ITS Advanced Traffic Signal System technology to optimize traffic signal timing and operations. Over the life of the Plan, this is expected to evolve from time based coordination and closed-loop systems to fully traffic adaptive systems that can optimize signal operations in realtime.
- ♦ Additional ITS deployment. In the context of reviewing and updating the ITS Regional Architecture, new functions like IntelliDrive applications may be determined that have a positive benefit in the Binghamton region. Others may be deployed on a statewide basis, like commercial vehicle operations applications. BMTS should be prepared to implement appropriate management and operations strategies.

## ***ELEMENT: FREIGHT TRANSPORTATION***

The movement of freight requires different services and different performance measures than the movement of people, although it often relies on the same infrastructure. Freight movement is complex, and both problems and solutions often lie well beyond the scope of an individual metropolitan area and its transportation plans and programs. Freight movement involves many modes: highway, rail, air, water, and pipeline. While the popular view is that more freight should move by rail, the reality is that the vast majority moves by truck. This is the result of highway's 'many-to-many' geography versus rail's 'few-to-few' service model. According to data from the Federal Highway Administration, about 76% of freight movement in New York State is by truck; when the water mode is removed to better reflect the situation in Upstate New York, truck share is 84%. Air cargo service is not a meaningful option in Binghamton.

New York is a state that freight moves through as well as a place of origins and destinations. Goods flow to and from our ports, especially the Port of New York and New Jersey; and through our international gateways on the Canadian border. Because of the importance of freight movement to the state's economy, New York State DOT has adopted 'trade corridor' model of evaluating freight flow. Greater Binghamton is in a key location, at the junction of three Interstate highways (I-81, NY 17/future I-86, and I-88). It also served by four freight railroads: two Class 1 national railroads (Norfolk Southern and Canadian Pacific/CP Rail), one regional (New York, Susquehanna & Western), and one short line (Owego & Harford). While much of the freight movement is through movement, local businesses have access to these networks. That can provide a positive incentive for the regional economy. Different business types require different freight services. A manufacturer requires raw materials to be shipped in and finished products to be shipped out (acknowledging that either the input or output may be subassemblies of a final product). This may involve international as well as domestic shipping. A warehouse/distribution business receives items in large quantity and processes them for movement to individual stores. Retail establishments depend on deliveries that may range from truckloads to individual parcels. Package delivery services, especially those that provide overnight delivery, have pervasive logistics networks.

Regardless of the business type, management of the supply chain has become a focus for increasing efficiency and profit. In an automated supply chain, a consumer good that is purchased at a cash register that is actually a data terminal may order its replacement all the way back up the supply chain, through the warehouse distribution network and the manufacturing network.

This kind of management requires reliability in travel time for freight movement. Storing inventory at any point is costly; keeping inventory in motion is less so. Manufacturers may often keep less than a one day supply of parts or material on hand. Predictable arrival becomes paramount. The absolute travel time through an urban area or across the country is less an issue. For certain businesses, especially those that ship bulk commodities, presence of truck and rail modes helps establish competitive shipping rates.

### ***TRUCK TRANSPORTATION***

Given the focus on reliability of performance, freight planning includes the use of regional transportation system management and operations strategies [see the Regional Transportation System Management and Operations/Intelligent Transportation Systems Element]. By addressing the unexpected delays that result from incidents, work zones, and weather, reliability of the principle arterial system is improved. Using the same traveler

information system that provides realtime status of the transportation network to travelers can help truck drivers make the best choices. The deployment of 511NY, a statewide traveler information telephone and web service, has improved the availability of useful information. A caveat for incident management plans with respect to the establishment of pre-planned or immediate incident response detours is to make sure there are no barriers to large tractor trailers. There are also special items in the ITS toolbox to aid truck movement, under the umbrella of 'commercial vehicle operations'. These include techniques like weigh-in-motion and electronic credentialing that minimize or eliminate delays for trucks crossing state borders. It is anticipated that all of these strategies will be deployed at a statewide level, and will necessarily involve partnership with Pennsylvania DOT. They will not directly involve BMTS other than as a stakeholder to be consulted in implementation plans.

There are also specific regional issues in the movement of freight. The *Binghamton Regional Freight Study*, completed in 2008, provides a thorough analysis of these issues. The study found that there are few highway capacity issues affecting truck movement in or through the region. There are some spot improvements of value, particularly in relation to development off specific industrial/commercial sites. This is often referred to as 'the last mile', providing good access between the Interstate system and the origin/destination point. This can mean developing alternate routes to avoid having trucks travel through residential neighborhoods. It also means addressing the infrastructure to eliminate load-posted bridges or overpasses with sub-standard vertical clearance on truck routes. It is important to have the resources to address such projects as they are identified, particularly if they hold a key to economic development.

Another local issue is competition for curbside parking in downtowns and other commercial districts. As businesses prosper, they receive more deliveries. In downtown Binghamton, Johnson City, and Endicott, few businesses have off-street loading docks or delivery areas. The establishment of curbside loading zones can provide something of a guarantee for parking for delivery trucks, but reduces the amount of parking for cars. This may reduce the actual or perceived convenience for customers. Sustainable communities must address goods movement as part of Complete Streets design. This is an issue that will have to be addressed by local governments in partnership with BMTS and in some locations NYSDOT. The issue of on-street parking and loading zones will be of particular note in the scope and design of the recommended rebuilding of Main Street.

## *RAIL TRANSPORTATION*

As noted in the *Binghamton Regional Freight Study*, despite Binghamton's access to three freight railroads, the region has only a handful of companies that utilized rail shipping. Nearly all of those did so because of bulk commodities: coal, agricultural feed products, plastic resins, crushed stone, and the like. It was also determined that the likelihood of either Norfolk Southern or CP Rail establishing a truck-rail intermodal terminal was small, because of inadequate current and forecasted demand. While these conditions are not likely to in the near future, it is important that the rail infrastructure be maintained and improved to support local rail shippers and attract new companies.

The *New York State Rail Plan*, completed in 2009, identifies the importance of sound freight rail infrastructure to the state's economy. This is the Plan's vision:

"The rail system of the future would be "green" and support sustainable economic growth throughout New York and strengthen its premier position in the rapidly changing global economy. The vision for the freight rail system is an energy

efficient transporter of long distance cargo with intermodal connections that function seamlessly for local deliveries and reduce the cost of freight movement. Short line railroads provide efficient service to the state's industries and shippers by providing connections to national and international markets and by supporting an expanding state economy."

*New York State Rail Plan, p.vi*

The *Rail Plan* commits to a freight rail system...

"That serves business upstate as well as downstate via integrated rail network that is restored to good condition and maintained in a state of good repair."

*New York State Rail Plan, p.vii*

At this time, there are two areas of critical need. One is the Portageville Bridge on the Norfolk Southern RR's Southern Tier line, connecting Binghamton to Buffalo. This viaduct over the Genesee River at Letchworth Gorge has six towers that were built in 1875 and a superstructure that dates to 1903. Structural concerns may lead to its closure with little notice. It is currently limited to 273,000 pound freight cars, rather than the current standard to 286,000 pounds; and has a 10 mph speed limit imposed. A design has been developed for a replacement, and the railroad is working with NYSDOT to identify funding. If the bridge closes, the Southern Tier line will lose its viability, which will certainly have an impact on the Greater Binghamton region.

The second concern is the NYS&W's track infrastructure. Its Syracuse branch connects with the CSX railroad in Syracuse, and with trackage rights on the NS Southern Tier line to Port Jervis and its own track to terminals in the Port of NY & NJ – New Jersey. This allows service to local customers, and also through movement of freight. At this time, portions of the Syracuse branch track are in poor repair, requiring slow speeds. That in turn makes service less competitive, and takes away a connection for local businesses to CSX.

The NYS&W's Utica branch experienced a number of track washouts during the 2006 flood. As a result of a successful petition to the US Surface Transportation Board, the segment has been taken out of service between Chenango Forks and Sherburne. Restoration of this service is seen as less important to Binghamton than the Syracuse branch.

Recommended freight related actions in the Plan:

1. Identify and prioritize for project development connections from the National Highway System principle arterial highways to significant local freight destinations that require infrastructure upgrades to facilitate truck movement; including those that support specific development proposals.
2. Collaborate with local governments to resolve issue of curbside delivery and truck parking in key areas including the core community downtowns and Main Street. Do so creatively in the context of Complete Streets design.
3. Cooperate with New York State and Pennsylvania in the implementation of ITS commercial vehicle operation initiatives.
4. Support public-private partnerships for the development of rail projects only when the public benefit can support the public investment. Initial focus is on the Norfolk Southern Portageville Bridge replacement project, and on the NYS&W Syracuse Branch.

## ***ELEMENT: INTERCITY PASSENGER TRAVEL***

While a metropolitan transportation plan typically addresses only surface transportation facilities and services within the metropolitan area, in the course of developing this plan the public expressed the sentiment that intercity passenger travel is important to accomplishing the goal of creating a sustainable region. Therefore, this element is included in the Plan.

The caveat for this element is that unlike the recommended actions of the Plan, BMTS cannot play a direct role in project selection, development, funding or implementation for intercity modes.

Just as an attractive and vital region offers accessibility to many destinations by many modes within the region, the same measure applies to travel beyond the region. Being able to travel to and from Greater Binghamton safely and conveniently by bus, rail, and air as well as automobile contributes to positive decisions about personal and business location.

### ***BUS SERVICE***

Greater Binghamton is served by two intercity bus companies, Coach USA/Shortline Bus and Greyhound Bus Lines. They now both operate from the Greater Binghamton Transportation Center in downtown Binghamton. Coach USA provides a great deal of service, with up to ten daily trips to New York City; and also west to Elmira/Corning/Olean; and along I-88 to Oneonta and Albany. They also have a special college campus service, with buses leaving from Binghamton University to destinations in the New York metro area. Greyhound serves such destinations as Ithaca, Syracuse, and Philadelphia.

While intercity bus service is often seen as comparable to local bus service in terms of appealing only to captive riders, surveys taken as part of the passenger rail feasibility study referenced below indicated people using Coach USA for business travel to New York City. The buses are comfortable and the travel time of three hours/forty minutes to mid-Town Manhattan is comparable to that of driving.

There is a clear link between intercity bus service and sustainability goals in terms of reducing per capita GHG emissions and energy consumption. The Greater Binghamton Transportation Center promotes use of intercity buses by providing an attractive, safe, and convenient location.

### ***PASSENGER RAIL SERVICE***

While Binghamton has a rich history of railroad travel, and is still served by three freight railroads, passenger service was terminated more than thirty years ago. This was the consequence of a variety of factors including railroad cost structures and inability to compete well with the convenience of automobile travel. In fact, intercity passenger rail service has greatly diminished across the nation, with Amtrak requiring continual Federal subsidies to operate.

Nonetheless, because of interest in restoring passenger rail service, primarily between Binghamton and New York City, the New York State DOT retained a consultant to perform a feasibility study. The "Binghamton Based Intercity Rail Passenger Service Feasibility Study" was completed in 2002. Based on market and cost analyses, examination of rail infrastructure and operating protocols, the study determined that scheduled service between Binghamton and New York City may prove feasible. The only feasible route was determined to be via Scranton, and depends on the restoration of service between there and New York

City. The alternative of using the Southern Tier Line to Port Jervis was determined not feasible because of the rail infrastructure and travel time. This line is now single track with periodic passing sidings, and is in use for regular freight service. Track conditions and schedule constraints, as well the necessity to transfer either in Port Jervis or Hoboken NJ would result in a travel time approaching five hours. This is far greater than travel by car or bus, making train service non-competitive.

The creation of scheduled service between Scranton and New York City is the subject of a Federal Transit Administration "New Starts" grant process. The primary capital project need is the restoration of a thirty-three mile segment of track known as the Lackawanna Cutoff.

## LACKAWANNA CUTOFF

*[From NJ TRANSIT website]*

### **Background**

In the early part of the 20th century, the Delaware Lackawanna and Western Railroad constructed a level-graded route from Roxbury, NJ to just over the Delaware River to serve as a faster, more direct route between existing rail lines in Pennsylvania and New Jersey. The Lackawanna Cutoff, as this route came to be known, includes a series of unique structural features, viaducts and massive fill embankments through the deep valleys of this region. In the 1970s, Conrail, the eventual receiver of this property, abandoned the right of way and the track was removed. The objective of the Lackawanna Cutoff project is to reinstitute passenger rail service on the abandoned rail right of way of the Lackawanna Cutoff and over existing freight right of way in Pennsylvania. The reinstated rail line would provide service from Scranton to Hoboken and New York Penn Station via transfer to MidTown Direct service by connecting to the existing NJ TRANSIT Montclair-Boonton and Morris & Essex Lines.

### **Project Scope**

The project includes complete reconstruction of the line including track and signal improvements to approximately 60 miles of right of way, new stations, parking facilities, a train storage yard and additional rail rolling stock. It is assumed that NJ TRANSIT would operate the new service. Proposed stations would serve Blairstown and Andover in New Jersey and Scranton, Mount Pocono, Analomink and East Stroudsburg in Pennsylvania.

### **Project Cost**

\$551 million (2006 Estimate). This estimate does not include property acquisition costs.

### **Project Status**

The Federal Transit Administration responded to an Environmental Assessment by approving a Finding of No Significant Impact (FONSI) in 2008 for the first phase, described as the "minimal operating segment", which would extend existing NJ Transit rail service to one additional station at Andover NJ. A Supplemental EA was then submitted for the remaining project through the Lackawanna Cutoff to Scranton. The FTA issued a FONSI for that assessment in 2009, clearing the way for completion of the entire project and restoration of passenger rail service between Scranton and Hoboken. Funding for the project has not been identified, and NJ Transit at this time is committed only to the Andover extension.

The Canadian Pacific Railway owns the track between Binghamton and Scranton, and has indicated the rail infrastructure on that segment is in good condition, and may only need modest capital investment to accommodate passenger service. The benefit for Greater Binghamton of this route choice is that the market feasibility calculation need only account for the incremental cost of the Binghamton-Scranton operation.

In 2008, Amtrak initiated a passenger rail feasibility study at the request of NYSDOT. The scope covers an operational evaluation of passenger service connections both to Scranton/ NYC as described above, and to Syracuse. While the latter does not provide for a connection with New York City, it does link to Amtrak's Empire Corridor and primary east-west service. New York State is working with Amtrak to improve travel reliability and move toward high speed rail service on the Empire Corridor. Another benefit is that track improvements to accommodate passenger rail service would boost freight train speed to 55 mph. Results of the Amtrak study have not yet been released.

Unresolved issues with respect to passenger rail service:

- Who will operate the service? This may be influenced by the eventual operator of the Scranton-New York City service, but there is no reason that there could not be a separate operator for Binghamton-Scranton.
- How will the service be financed? As demonstrated by Amtrak and other passenger operations, fare revenue is not sufficient to meet expenses. Subsidies will be required. The expectation is that these would be at the state or regional level.
- How will passenger service be accommodated on the freight rail system? With few exceptions, all passenger service in this country operates on tracks owned by freight railroads. With current demand to ship by rail growing, and limited rail system capacity, it can be a challenge to create passenger train schedules that do not conflict with freight service and provide a margin of safety.

In the context of this Plan, the question is the value of passenger rail service between Binghamton and New York City, or additional locations in New York or surrounding states, for the achievement of the vision of creating a sustainable region. The following factors are noted:

- Rail travel is far more energy efficient than other modes. Compared to intercity travel by car, there can be significant savings in GHG emissions and energy consumption.
- Being able to choose rail mode makes the region more attractive to many people, including those who are older and are unable or prefer not to drive longer distances; and low income individuals for whom the cost of car ownership and operation is a barrier.
- It may make Greater Binghamton more attractive to the young professional/new college graduate demographic. This is particularly true for those living in the New York City metropolitan area, where car ownership is atypical, and commuting by rail is the norm. Since jobs in the "knowledge economy" are not necessarily tied to a geographic location, they may choose to live in a place like Binghamton if it provides the lifestyle they want and convenient travel to desired destinations.

BMTS explicitly supports the efforts to establish passenger rail service between Greater Binghamton and New York City, as well as other potential destinations. The location of a passenger depot will be determined by the final service decision, as CP Rail and NYS&W have access to different Binghamton locations. To the extent that street and public transit improvements are needed to provide access to a train station when a location is determined, BMTS will consider those improvements part of this long range plan.

### *AIR SERVICE*

Improvement to air travel is another positive benefit for the regional economy and regional sustainability, particularly in terms of business location decisions. Currently, the Greater Binghamton Airport is served by three airlines providing commuter flight access to their respective hubs: Delta Air Lines to Detroit, United Airlines to Washington DC, and US

Airways to Philadelphia. This can be considered relatively robust service for a small metropolitan region.

Nonetheless, area residents often travel to airports in Syracuse, Albany, or Scranton in order to find lower fares, non-stop service to their destination, or larger jet aircraft. It has been suggested that it would be beneficial to construct a new Southern Tier Regional Airport that would replace those in Greater Binghamton, Ithaca/Tompkins County, and Elmira-Corning. The idea is that this could be centrally located in Tioga County, providing reasonably convenient access to all three communities.

Of the three airports, Binghamton is the largest, with more service and greater utilization. Elmira-Corning Airport is also served by Delta to Detroit, and US Airways to Philadelphia, but also has service by Allegiant Air. The latter flies only twice a week, no-stop service to Orlando/Sanford FL. Ithaca/Tompkins County Regional Airport is served by Continental to Newark, Delta to Detroit, and US Airways to Philadelphia and NYC/LaGuardia. Total passenger usage, called enplanements, is gathered by the NYSDOT Aviation Division, and shown in the following table.

AIRPORT	ENPLANEMENTS	
	2007	2008
Greater Binghamton	120,162	107,557
Elmira-Corning	99,191	103,852
Ithaca/Tompkins	85,862	89,509
Total Southern Tier	305,215	300,918

There has been interest for many years in constructing a new airport that would service the entire Southern Tier from a single location, replacing the airports in Binghamton, Elmira, and Ithaca. The belief has been that such an airport would attract more airlines, including a national low-cost carrier like Southwest or Jet Blue; more convenient schedules; and larger aircraft. Evidence suggest otherwise. The concern is that the total demand, even with the assumption that there would be less loss to competing larger airports, would not be sufficient to yield a significant change in air service. By way of comparison, in 2008 Syracuse had over 1.1 million passenger boardings, and Albany almost 1.4 million. It is not clear from these comparisons that the substantial investment that a new airport would require would create a justifiable level of benefit.

It is also well understood that decisions on air service are driven entirely by external market forces, and that domestic airlines continue to experience severe financial difficulty. This makes it extremely difficult to forecast the future of the domestic aviation market, much less specific factors like route and fare decisions.

While BMTS finds that intercity air travel is an important issue that merits examination in future long range transportation plans, there is not enough evidence to include in this Plan support for any proposal to consolidate airports in the Southern Tier.

