



CDTC New Visions 2040

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The New Visions 2040 Plan was amended on March 31, 2016 to incorporate the Regional Freight & Goods Movement Plan.

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Chapter 1: Executive Summary

The Capital District Transportation Committee (CDTC) is the designated Metropolitan Planning Organization (MPO) for the Albany-Schenectady-Troy and Saratoga Springs metropolitan areas. Like MPOs nationwide, CDTC produces and regularly updates our region's long-range transportation plan. All federally-funded or federally-approved transportation actions such as highway or transit capital projects must derive from the regional plan. CDTC's regional plan, called New Visions for a Quality Region, considers the future of our region's transportation system in the next 25 years. In 2013, CDTC began a two year effort to update the New Visions 2035 Plan. The updated plan is called New Visions 2040.

CDTC used existing advisory committees and formed new task forces to assess the 2035 Plan against recent events and current circumstances. The following nine subcommittees were charged with developing recommendations for the Plan update:

- Quality Region Task Force
- Freight Advisory Committee
- Regional Operations & Safety Advisory Committee
- Complete Streets Advisory Committee
- Bicycle & Pedestrian Advisory Committee
- Environment & Technology Task Force
- Infrastructure Task Force
- Regional Transportation Coordination Committee (Human Services Transport)
- Transit Task Force

The subcommittees included Planning Committee and Policy Board members, as well as a variety of stakeholders and subject experts. Each subcommittee prepared a draft white paper which made recommendations for public review and Planning Committee approval. The final approved white papers are included in the New Visions 2040 Plan as appendices.

The CDTC New Visions 2040 Plan includes a set of principles to guide transportation planning and investment in the region for coming years. It also articulates a series of short-range and long-range recommendations and actions to help achieve broad regional goals, and provided an innovative budget approach to ensure implementation of the plan. Listed below are some of the highlights of the Plan.

Transportation Safety

New Visions offers an integrated and effective approach to reduce risk and enable safe access for all users of the transportation system — especially bicyclists, pedestrians, children, and the elderly. CDTC will examine traffic safety data, identify high crash locations, and characteristics across roadway systems that are common to locations with a crash history, analyze potential mitigation measures and solutions, and develop a competitive funding process to make these improvements. Where the data may not be available, CDTC will work to educate all users to “coexist” and to develop strategies to improve safety.

Transit Service

New Visions works with our regional transit provider, CDTA, and incorporates CDTA's 5-year Transit Development Plan. Beyond the 5 year period, CDTC will examine future population growth trends, forecast transit ridership, and identify future needs. This will improve and grow a variety of transit services for the Capital District, increasing mobility and supporting economic development and smart regional growth. Transit should accomplish multiple objectives besides transportation, including transit-oriented and urban development, neighborhood revitalization, connecting communities and cities, and others.

Highways and Bridges

New Visions makes a strong commitment to keeping the region's highway and bridge system in good condition, providing billions of dollars for highway rehabilitation, reconstruction, and design and for bridge maintenance, repair, and replacement by 2040. Maintaining and replacing our existing infrastructure will be our highest priority, and will require most of our existing resources. New highways and bridges will need to compete for funding which is becoming less and less available.

Traffic Congestion

New Visions explores ways to manage congestion and to ease daily commutes by using existing technology such as incident and traffic information systems, and new technology such as traffic routing systems, new traffic signal monitoring technology and someday automated vehicles. The Plan also encourages support for more transit, pedestrian and bicycle travel, carpooling, vanpooling, carsharing and bikesharing, which can all reduce the number of vehicles on our roads.

Complete Streets

New Visions endorses local Complete Street policies and resolutions which encourage streets that are designed and operated for all users of all ages and abilities, including pedestrians, bicyclists, motorists, transit users, freight deliveries, children, elderly and people with disabilities. A properly designed “Complete Street” will improve safety, encourage walking and biking, slow traffic, improve air quality, promote local business, and even encourage social interaction.

Bicycle and Pedestrian Transportation

New Visions encourages development that incorporates bicycle and pedestrian accommodations into highway and bridge construction and city, village, and town plans. It also provides for recreational opportunities through creation of bike/hike trails. The health and recreational benefits of bicycle and pedestrian facilities are well documented.

Environmental Quality

New Visions supports energy conservation and air quality in the region by advocating sustainable development patterns and site design, urban reinvestment, and community-based land use planning. New Visions also encourages transit, bicycle, & pedestrian, carpooling, carsharing, and bikesharing investments & strong participation in the U.S. Department of Energy Clean Cities program.

Freight Movement

New Visions advocates congestion management and infrastructure investments that will support the movement of goods throughout the Capital District. Freight movement is about how goods get to your doorstep and to the stores’ shelves, but it is also about freight’s positive impact on the regional economy, growth, and employment.

Environmental Justice

New Visions ensures that both the positive and negative impacts of transportation planning conducted by CDTC and its members are fairly distributed and that defined Environmental Justice populations do not bear disproportionately high and adverse effects. Eliminating, reducing and mitigating conflicts between land use, development and transportation are critical strategies to promoting environmental justice.

Human Services Transportation

New Visions works with the many human services transportation providers in our area to identify the transportation needs of individuals with disabilities, older adults, and people with low income. CDTC then works to improve services for these transportation disadvantaged populations by identifying gaps and overlaps in services, and providing recommendations and funding for improvements.

Local Communities

New Visions acknowledges the importance of land use & development, and of reducing conflicts between land use, development and transportation. CDTC sponsors the Community and Transportation Linkage Planning Program, which provides funding for cities, towns, & villages to prepare & implement community-based transportation & land use plans consistent with New Visions principles.

Public Participation

New Visions seeks public participation and input in every stage of the planning process. It is one of the primary objectives of this plan because without public participation and input, the plan will not have public support. And without public support the other plan goals and objectives will never be implemented. CDTC receives public input from the 9 New Visions committees and their members, from the public meetings held in each of the 4 Counties, from meetings with stakeholder groups, from our website, surveys, and polls, from social media, and from other CDTC projects’ meetings.

Big Idea/Big Ticket Initiatives

The New Visions 2040 Plan reaffirms support for consideration of potential “big ticket” initiatives. These initiatives would be supported by higher growth scenarios, yet they could be pursued with trend growth as well. Funding is not identified, yet the plan puts forward the vision of bold investments that could be feasible if the public supports the vision and funding can be found.

Key Recommendations

Listed below are key New Visions 2040 recommendations in summary form. (The full list of recommendations is presented in detail in Chapter 14).

Quality Region

- **Continue to seek adequate funding to fully implement the plan** – CDTC should program adequate funding to maintain the existing infrastructure and to make small improvements as our population and our needs grow. The current flat funding will lead to serious, unacceptable declines in physical and service conditions and make even modest improvements difficult to accomplish.
- **Increase funding for transit, travel demand management, bicycle/pedestrian, complete streets, traffic operations, freight, and human services transportation** – Our country and our region are changing. We are moving to the cities, driving less, buying fewer vehicles and homes, using more transit and bicycles, becoming older and more disabled, and buying more goods from all over the world. In order to address the issues that evolve from these trends, we need to increase funding in the above programs.
- **Explore the use of innovative funding sources** – Because federal funding is not keeping up with transportation needs, other sources of funding should be explored, including impact or mitigation fees, user fees, dedicated transportation fees, public/private partnerships, time-based (higher for congested times) and impact-based (higher for heavy vehicles) fee structures, etc.
- **Improve CDTC public outreach and marketing efforts** – Too many transportation users, municipalities, businesses, etc. are not aware of the scope and impact of New Visions 2040. CDTC should improve and increase efforts to engage all users, to educate them and to obtain their input.
- **Update and upgrade project selection criteria** – The existing project selection criteria is relatively technical, relies too heavily on the benefit/cost ratio, does not reflect current priorities or recently emphasized criteria (e.g. economic development, freight, environmental justice, etc.), and is not easily understood by all our members. It also needs to be more directly related to the implementation of the current New Visions principles and performance measures.
- **Develop a training program that specifically targets local planners, local planning board members and other local stakeholders** – CDTC should provide training to local decision makers so that they can make informed and educated planning decisions. Potential training topics should include:
 - a. Bicycle and Pedestrian Planning & Strategies
 - b. Transportation Safety Planning & Strategies
 - c. Smart Growth
 - d. Complete Streets
 - e. Road Diets
 - f. Traffic Safety
 - g. Transportation and Land Use
 - h. Transportation Economic Development
 - i. Environmental Justice
- **Complete the I-87 Exit 4 Airport Connector Project Phase II**– Albany International Airport is a regional facility, and Phase II of this project would significantly improve access to the airport. CDTC has a long history of supporting this very important project.

Environment & Technology

- **Focus on greenhouse gas emissions** – CDTC should consider expanding its project review process to further evaluate greenhouse gas emission impacts during TIP project selection.
- **Consider the significant impacts of totally automated vehicles** – Totally automated vehicles (connected and self-driving) have the potential to increase road capacity and reduce traffic congestion without constructing

new lanes, significantly reduce traffic crashes, increase mobility for people with disabilities and seniors, decrease parking needs, reduce the number of cars, etc. These changes will have a dramatic impact on transportation and transportation planning in the future.

Bicycle/Pedestrian

- **Promote the development of dedicated bicycle and protected bicycle lanes** – Many bicycle riders do not feel safe in a shared use travel lane, and many vehicle drivers are not considerate of bicycle riders in a shared use travel lane. In order to provide a safer environment to ride and to encourage more bicycle riders, we need to construct more of these bicycles lanes.
- **Measure the economic impacts of bicycling, walking, and transit infrastructure** – The beneficial impacts of bicycling, walking, and transit to businesses and public health are well understood, but not well quantified. We will use the latest analytical techniques to better measure and consider these benefits.
- **Complete the following trail/greenway projects:**
 - a. Uncle Sam Bikeway
 - b. Patroon Creek Greenway
 - c. Mickey Mahar Trail
 - d. Zim Smith Trail
 - e. Albany County Rail Trail with a connection to the Corning Preserve trail
 - f. Livingston Avenue Bridge bicycle/pedestrian facility
 - g. The Watervliet connection to the Mohawk Hudson Bike Hike Trail/Canalway Trail
 - h. A connection from the western end of the Mohawk Hudson Bike Hike Trail/Canalway Trail in Rotterdam Junction (at the RR tracks) to the continued trail in Amsterdam

Complete Streets

- **Promote the use of Complete Streets design and implementation guidelines** – The number of entities developing and adopting complete streets design standards and guidance continues to grow across the US. Some of these standards and guidelines include:
 - a. National Association of City Transportation Officials (NACTO) Urban Street Design Guide
 - b. FHWA Guide for Maintaining Pedestrian Facilities for Enhanced Safety
 - c. AASHTO Bicycle Facilities Design Guide, 2012
 - d. NACTO Urban Bikeway Design Guide
 - e. Cornell Local Roads Program Complete Streets Manual

Transit

- **Investigate new funding mechanisms to support CDTA transit operations**
 - a. Novel sales tax concepts such as an alcoholic beverage pouring fee.
 - b. Appropriate level of fare increase for the base fare on fixed route services to increase the share of revenue provided by transit customers.
 - c. New and expanded transit access agreements for employees in the technology, casino, and non-profit sectors.
- **Expand BusPlus** to include the Washington/Western and River corridors and continue to enhance the Route 5 corridor to improve reliability and efficiency.
- **Promote bus/transit only travel lanes** – Beyond those already planned for the Washington/Western BRT Corridor, encourage road owners to consider these lanes in various locations throughout the region. Particular attention should be paid to roadways included in the 40 miles of Bus Rapid Transit (Bus Plus).
- **Use established national criteria to identify transit corridors** that may have the potential to support streetcar or light rail transit. Monitor and re-evaluate these corridors at regular intervals.
- **Encourage improved intermodal connections** among transit providers including Amtrak, intercity bus carriers, and the Albany International Airport as well as connections to walking, bicycling, and driving. Work with CDTA and regional transit carriers, including Amtrak, on the development of shared intermodal stations and transit centers.

Human Services Transit

- **Organize and hold a workshop** within 6 months focused on Tools to Improve Human Service Agency Transportation Service Quality and Efficiency. Conduct a day-long workshop with multiple sessions to support providers of human services transportation in providing quality and efficient services.
- **Improve coordination of services by all providers** – In many cases human service transportation providers have no incentive to cooperate or coordinate their services, and in many cases they do not. We need to develop a system which encourages these providers to cooperate and coordinate and not to just compete. Explore opportunities for coordination for other federal programs that are not funded through FTA or FHWA.
- **Assist communities with ADA compliance requirements:** Facilitate completion of ADA Transition Plans and associated physical improvements to continue to work toward an accessible regional transportation system. Include a method to incentivize and prioritize inclusion of accessible features in federally funded transportation projects through changes to CDTC's Transportation Improvement Program (TIP) project selection criteria.

Operations, Safety, and Security

- **Not Support increasing road capacity by constructing new lanes** – Americans are driving less, not obtaining drivers licenses, not buying cars, moving to urban areas, and biking and using transit more. These trends along with the deployment of totally automated vehicles will decrease traffic congestion and decrease the need for more road capacity.
- **Right-size our existing roadways** – Because some of the roads in our region were built years ago based on higher-than-actual forecasted traffic, some of these roads have unused capacity. These roads should be right-sized so that underutilized right-of-way can be used to improve access for other modes of transportation, such as pedestrian, bicycling, and transit.
- **Encourage use of Intelligent Transportation Systems (ITS) and Active Traffic Management Strategies (ATM) to address congestion** - These systems and strategies can reduce traffic congestion without constructing new lanes. CDTC should further evaluate and eventually recommend ITS and ATM strategies, including speed harmonization and Dynamic Lane Assignment (DLA) for local interstate highways as national experience increases.
- **Establish a Community Traffic Engineering and Safety Evaluation Services Program** – CDTC would partner with a municipality to hire a traffic engineering consultant to provide intersection signal analysis, traffic counts, or analysis of potential operational improvements or ITS improvements. CDTC would also partner with a municipality to hire an engineering consultant to provide safety evaluations for potential problem locations identified in the municipality.
- **Develop a Regional Safety Plan**- Other leading MPOs in the country have instituted Safety Task Forces/Advisory Committees and prepared Regional Safety Reports and Action Plans. This plan would present goals, emphasis areas, statistics, and initiatives, and identify the depth and breadth of safety issues in our area.
- **Increase Security Technical Support and Information Dissemination**- CDTC's regional role and technical strength place it in a unique position to provide technical support to emergency agencies and local communities on transportation system analyses such as vulnerability assessments, evacuation scenario development, data compilation and analyses, and best practices and public information dissemination.

Infrastructure

- **Develop and publish an Infrastructure Report Card for roads, bridges and other assets** – Our citizens, leaders, elected officials, and CDTC members cannot bring about change unless they know change is needed. The report card will provide that knowledge and will highlight individual components of the region's transportation infrastructure (roads, bridges, sidewalks, etc.), their physical condition, infrastructure TIP and local projects completed during the previous one or two years, and how well individual goals are being met.
- **Regularly publish transportation summary sheets (bullets)** – Transportation needs advocates and advocates need tools. These transportation summary sheets can be used by our citizens, leaders, elected officials, and CDTC members when they advocate for transportation projects and funding for the various transportation programs described in this document, such as infrastructure, bike/ped, transit, freight, etc.

Freight

The Freight Plan recommendations break out into two general categories: **(1) Projects**; and **(2) Programs, Policies and Studies**:

- **Projects** involve construction, reconstruction and/or changes to physical transportation infrastructure. Typically, the State of New York and/or a county or municipality will be the lead for project development and implementation.
 - **Early Action Projects**: The Freight Plan includes a subset of projects that are appropriate for “early action” by CDTC and its members. An Early Action Project typically has an estimated implementation cost of \$1-2 million or less and faces only minimal permitting or right-of-way requirements, meaning the project sponsor should be able to advance the project within 2-5 years from programming in the CDTC Transportation Improvement Program (TIP).
 - **Long-Range Projects** - projects that will generally require more than five years to implement due to planning, engineering and design, right-of-way and/or permitting requirements. Several of these Long-Range projects also require collaboration among multiple jurisdictions and/or levels of government, which may also require substantial time to achieve.
- **Programs, Policies and Studies** are non-capital initiatives that seek to employ regulatory, guidance and/or planning tools to facilitate more cost-effective and efficient use of existing and planned transportation infrastructure. Such initiatives may encompass operations (e.g., speed limits, signal timing), engineering and construction (e.g., intersection geometry, truck route standards), and/or land use and design (e.g., buffer vegetation requirements for residential developers). All levels of government may have some role in each of these, although land use and design is usually controlled at the municipal level.

Chapter 2: Planning and Investment Principles

The New Visions planning and investment principles guide decision-making at CDTC. As statements of principle, they provide a framework for funding decisions, project selection criteria, corridor-level planning and project implementation. The principles state when and how CDTC believes transportation investment is warranted, and when it believes such investment is not warranted.

1. Investing in a Quality Region – A great transportation system with great choices will help make our region a Quality Region.

Transportation investments will help preserve and enhance the Capital Region's existing urban form, infrastructure, and quality of place. Neighborhood-based local planning efforts are important to the success of an overall regional plan that emphasizes livable communities and smart growth.

Transportation investments will:

- Plan and build for all modes of transportation, including pedestrian, bicycle, public transit, cars, trucks, marine, aviation, and rail;
- Support healthy urban, suburban, and rural communities;
- Encourage concentrated development patterns and smart economic growth;
- Link transportation planning and land use planning in order to reduce conflicts and improve both;
- Protect sensitive environmental resources.

2. Economic Development – Transportation is critical to our region's economy.

New Visions articulates the transportation investment needed for sustainable regional economic growth. All indications are that the region's quality assets are becoming apparent to decision makers outside the region. Transportation choices, strong urban areas, affordable and diverse housing locations, good schools, colleges and universities, ease of mobility, modern air and rail transportation facilities, cultural and recreational opportunities and a clean environment are significant criteria in location decisions of advanced technology firms. These factors support Tech Valley and the region's economic development and business climate. CDTC will partner with New York State to encourage regional efforts to build a strong, sustainable economy.

3. Regional Equity – Transportation investments will address all needs fairly and equally.

Funding for appropriate repair, replacement and reconstruction will be based on the function and condition of the facility -- not ownership. Investments should meet the needs of all users of the transportation system, in a manner that increases access to transportation or does not disproportionately impact people with disabilities, and minority and low-income populations.

4. Complete Streets – Street design will serve all users including pedestrians, bicyclists, transit riders, freight, and drivers.

Transportation investments are made based on a complete streets framework which supports the convenient and safe travel of all people — of all ages and abilities as appropriate to a facility's community context.

Utilizing a complete streets framework ensures that transportation investments are consistently planned, programmed, designed, operated and maintained with all users in mind – including bicyclists, public transportation vehicles and riders, pedestrians of all ages and abilities, and local delivery needs.

Successful implementation of a complete streets framework will be achieved by working with municipalities to improve communication and coordination, training and education, and design standards and other resources.

5. Bicycle and Pedestrian Transportation – Bicycle and pedestrian travel is vital to the region's public health, transportation, and the economy.

Encouraging bicycle and pedestrian travel is a socially, economically, and environmentally responsible and healthy approach to improving the performance of our transportation system. Possible bicycle/pedestrian related improvements will be considered from the perspective of developing a system – not just based on whether a particular facility is currently used. That system of sidewalks, bike lanes, and trails will encourage safe bicycle and pedestrian use and will increase accessibility.

6. Transit – Our transit services will provide modern, innovative, and viable travel options.

Because transit facilities and services are an essential element of the social, economic, and cultural fabric, sufficient operating and capital funding and supportive policies must be in place. Innovative services and transit supportive investment are critical to developing a high quality transit system. The future transit system will:

- Promote transit supportive land use patterns and infrastructure;
- Contribute to congestion management, air quality, and energy savings;
- Form the backbone for managing travel demand;
- Provide essential mobility for those who do not

operate a private vehicle;

- Capitalize on market trends and attract choice riders.

7. Infrastructure – Transportation funding must be sufficient to both repair and sometimes replace our highway, bridge, and transit infrastructure.

New Visions remains committed to the maintenance, repair, replacement, reconstruction and right-sizing of the existing freight and passenger transportation facilities in a cost-effective manner that protects and enhances rideability, public safety, accessibility, and serviceability.

Currently the needs for replacing bridges, reconstructing pavement, and investing in transit and port facilities outweigh available funding. Renewing existing infrastructure in our communities is fiscally responsible and consistent with smart growth.

CDTC needs to ensure that system preservation and system reconstruction are balanced, and that roads and bridges in our cities and rural communities are equitably considered. Continued capital investment in our transit system, ports, and airport and their connections to other surface transportation will remain a priority.

8. Safety and Security – We can significantly save lives and reduce injuries when we decrease traffic crashes and better respond to traffic emergencies.

CDTC and its members need to improve the safety of the regional transportation system by creating a travel environment that is consistent with the community context and reduces risk. Safety considerations will be integrated into all investment decisions.

Roundabouts and road diets will be considered in proposed highway and intersection projects to address safety concerns as well as low cost safety improvements.

Examination of security issues and incorporation of security actions using computer modeling and scenario planning will be considered in transportation planning and investment decisions.

9. Travel Reliability – Reliable traffic flow is more important than reducing congestion – traffic congestion is often a sign of an area’s economic vitality.

Managing traffic flows on the Capital Region expressway and arterial system is critical for both economic and social reasons.

- Congestion Management is much more cost effective than highway capacity increases or new lanes. Congestion alone does not justify increasing highway

capacity or adding new lanes.

- Congestion management actions will include traffic management center improvements, incident management, managed lanes, managed tolls, traffic information technology, traffic signal coordination, parking management, and travel demand management strategies such as supporting more transit, pedestrian, and bicycle travel, carpooling, vanpooling, carsharing, bikesharing, and flexible work hours.
- Some congestion is acceptable when the community deems it acceptable, or when it results from balancing the needs of other transportation modes such as pedestrian, bicycle, and transit.

10. Freight – Our freight system is crucial to the economy; it will be efficient and automated, and will minimize its impact to communities.

CDTC’s freight planning efforts will be comprehensive enough to encompass all modes, including air, water, rail, and highway. Maintaining the health and improving the efficiency of freight facilities in the region through public/private partnerships is a high priority. CDTC’s planning efforts will embrace freight’s key contributions to regional prosperity, while also trying to mitigate the negative impacts of all modes of freight movement on local communities.

11. Environment – Transportation choices should improve our environment, not harm it.

Environmental stewardship is crucial to the success of and quality of life in this region. Transportation investments must improve or preserve the region’s cultural and natural environment. Transportation investments will not encourage development in environmentally sensitive areas and will help to preserve rural character. Transportation investments will support alternative fuel vehicles and greenhouse gas reduction. Environmental best practices will be incorporated into all projects.

12. Technology – We must plan for new, smarter, better, and rapidly-changing transportation technology.

Advancements in technology, such as self-driving cars, self-adjusting traffic signals, smart phone apps, ridesharing, carsharing, and bikesharing will have tremendous and wide-reaching impacts on future transportation. These impacts include, but are not limited to, decreasing congestion, providing transportation to more seniors and people with disabilities, reducing traffic crashes, and more.

Chapter 3: Quality Region

What is a Quality Region?

New Visions reflects a regional consensus of residents, businesses, state and local government representatives and transportation providers to use transportation and public policy to:

- Promote sustainable economic growth with good-paying jobs
- Revitalize urban areas
- Help build community structure in growing suburbs
- Preserve open space and agricultural land
- Make communities more walkable and livable
- Provide meaningful transit options
- Connect all residents with job opportunities
- Manage increasing traffic congestion and maintain reasonable mobility on the highway system
- Encourage land use and transportation planning

A quality region considers health, the economy, and the environment within an overall framework of land use planning and transportation policies. Creating and sustaining a quality region in the Capital District is central to the direction of New Visions toward urban investment, concentrated development patterns, and smart economic growth.

People agree that a quality region:

- Develops and sustains healthy urban, suburban, and rural communities that function interdependently and readily adapt to change
- Creates economic, educational, social, cultural and recreational opportunities
- Provides safe neighborhood environments and housing choices for all
- Protects sensitive environmental resources
- Fosters community identity and "a sense of place" in all parts of the region

New Visions principles follow four themes:

- Preserve and manage the existing investment in the region's transportation system.
- Develop the region's potential to grow into a uniquely attractive, vibrant, and diverse metropolitan area.
- Link transportation and land use planning to meet the Plan's goals for urban investment, concentrated development patterns, and smart economic growth.
- Plan and build for all modes of transportation, including pedestrian, bicycle, public transit, cars, and trucks.

Fostering Community Quality of Life

Investing in a Quality Region – A great transportation system with great choices will help make our region a Quality Region.

Transportation investments will help preserve and enhance the Capital Region's existing urban form, infrastructure, and quality of place. Neighborhood-based local planning efforts are important to the success of an overall regional plan that emphasizes livable communities and smart growth.

Transportation investments will:

- *Plan and build for all modes of transportation, including pedestrian, bicycle, public transit, cars, trucks, marine, aviation, and rail;*
- *Support healthy urban, suburban, and rural communities;*
- *Encourage concentrated development patterns and smart economic growth;*
- *Link transportation planning and land use planning in order to reduce conflicts and improve both;*
- *Protect sensitive environmental resources.*

A Quality Region must have a good transportation system, but should have a great transportation system. While

we may be able to live without other forms of basic infrastructure such as water and sewer lines (with wells and septic systems), power and natural gas lines (with solar panels, electric generators, propane and heating oil tanks), and telephone and cable lines (with cell phones and satellite systems), we cannot live without transportation. We rely on our transportation infrastructure to go to work, to the grocery store, to school, to entertainment, to exercise and recreate, etc. And there is no substitute for a road, a bridge, a sidewalk, or a bus, unless it's another mode of transportation.

New Visions and transportation planning impacts everyone's quality of life, whether it is the congestion or lack of congestion on your way to work, the repairs to the bumpy road which damages your vehicle, your ability to walk or bike safely, your need for quick and efficient freight (product) deliveries, your ability to take transit, and more. By developing this long-range transportation plan and the strategies to implement it, New Visions can either improve or worsen your quality of life (hopefully the former).

Forecasting Regional Growth and Transportation Needs

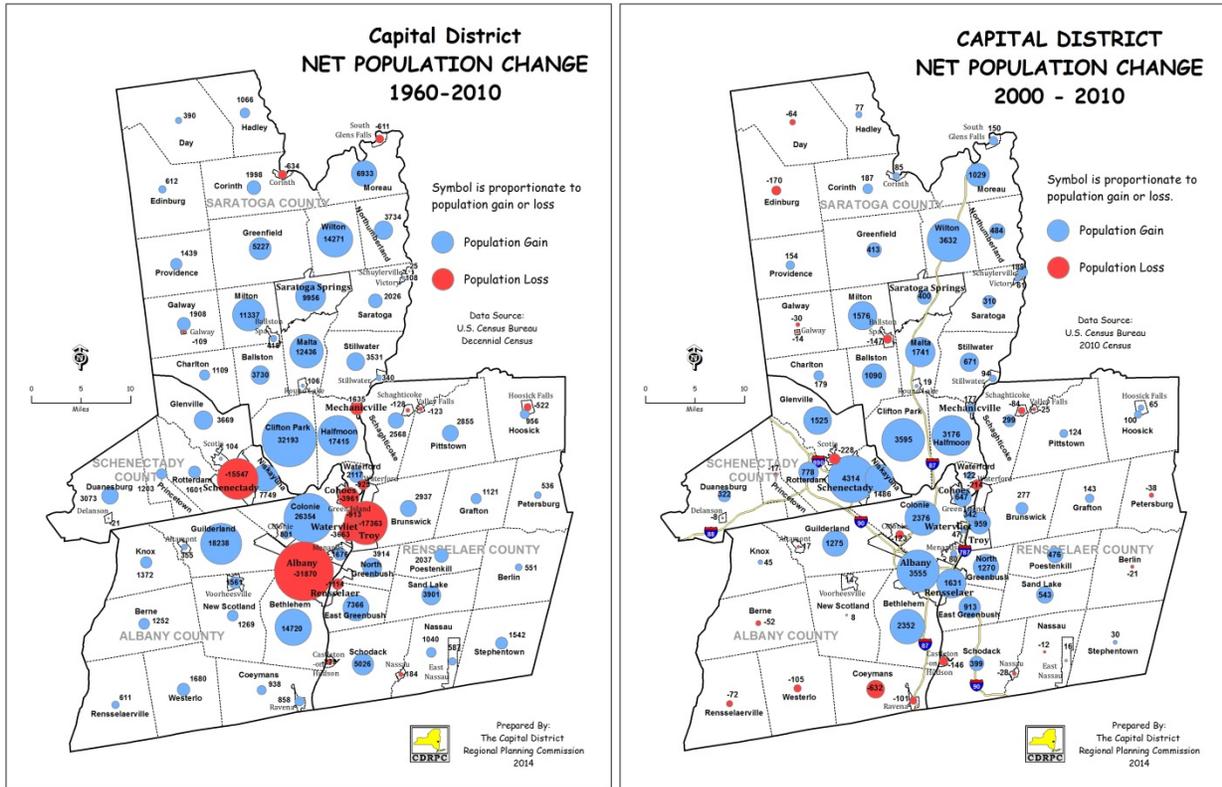
Transportation has a huge impact on growth, and growth has a huge impact on transportation. Look at the following maps showing the number of developed single family parcels in the 4-County area. In 1945-1954 there were few developed single family parcels in the Towns between the City of Albany and the City of Saratoga. And then in the early 1960's came the Northway or I-87, and things began to change. In the 1945-1964 map, a few more parcels are developed in that area. In the 1945-1974 map a pattern has developed so that most of the developed parcels are adjacent to the Northway. The pattern becomes clearer in the 1945-1984 map, and the 1945-1994 map the pattern extends north and south of the City of Saratoga Springs. By the 1945-2006 map the entire I-87 corridor is filled in with developed parcels. As we said, growth follows transportation improvements.



On the other hand, transportation will also follow growth. Many new roads needed to be constructed in the

Towns of Malta and Stillwater because of the growth at the Luther Forest Technology Campus and the growth of Global Foundries. Even now we are considering other transportation improvements because of future growth projections in the area. Another example is the growth in commuting patterns between the City of Schenectady and the City of Albany. Because of it, the NYS Thruway added 2 lanes between their Exits 23 and 24. The new “Rexford Bridge” (Balltown Road over the Mohawk River) between Rexford in Saratoga County and Niskayuna in Schenectady County will be built with 4 travel lanes instead of 2 lanes, because transportation will follow growth.

So what does our future growth mean for our future transportation and vice versa? One way to look at future growth is to look at the change in population in the last few decades. Below are maps showing populations changes in 1960-2010 and 2000-2010. The first map (1960-2010) shows population growth in our suburban towns and population losses in the Cities of Albany, Schenectady, and Troy. It shows the “move to the suburbs” – a well understood and documented trend nationwide.

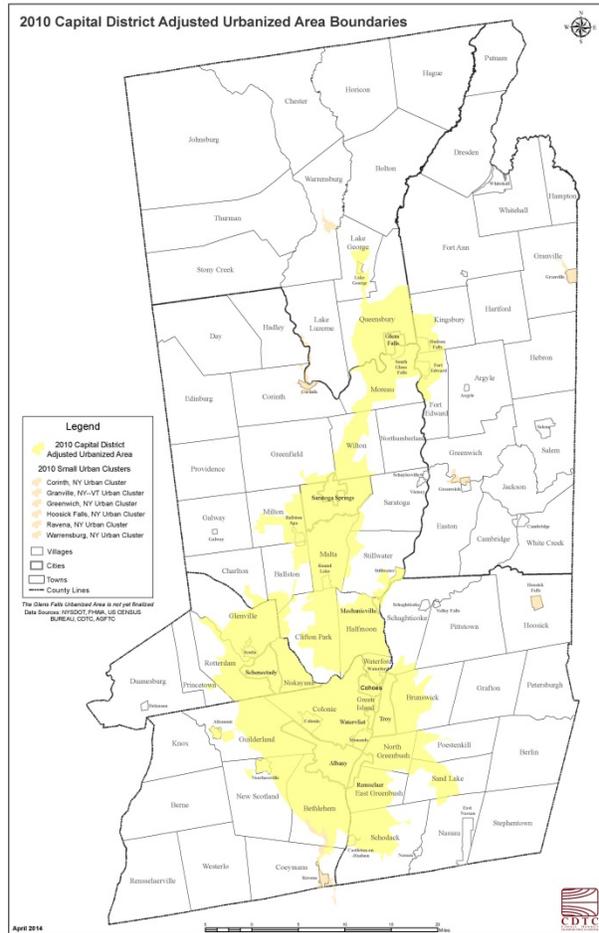
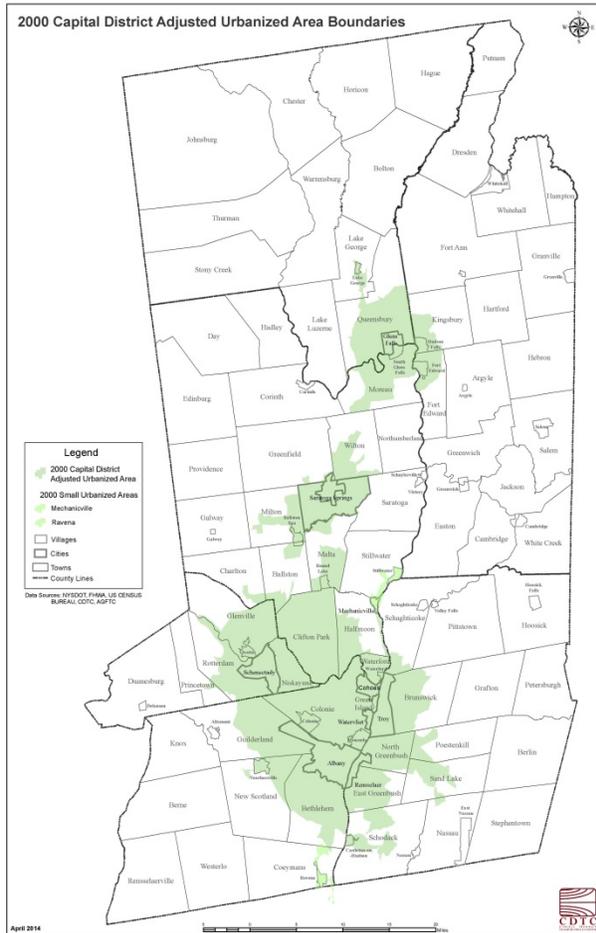


But look at the second map (2000-2010) and the growth in the last decade. For the first time in 50 years our cities are growing, and people are moving back into them. Developers understand this trend, and are building more and more rental and condominium units in the downtown areas of these cities. Young professionals are moving into these units to be closer to their work places and closer to entertainment, and retired people are moving into these units to simplify their lives and to live near parks, trails, and entertainment, and in walkable communities.

There is no question that this urban growth is happening. The question is, “Will this trend of growth in the cities continue like it has in many other metropolitan areas in the U.S.?” And if this trend continues, how will our transportation needs change?

A second way to examine growth is by looking at the U.S. Census “urban area boundaries” from the last 2 censuses. Every 10 years after the national census, the U.S. Census Bureau designates the urban area boundaries for metropolitan areas with a population of more than 50,000 people. These metropolitan areas are broken down into census tracts and blocks, and each tract and block is examined. The U.S. Census applies several criteria, including population, population density, impervious land cover, etc. and each tract and block that meet the criteria are designated as part of the urban area.

In our area of upstate New York there are 3 metropolitan areas - Albany-Schenectady-Troy, Saratoga Springs, and Glens Falls. In the maps below are the urban area boundaries for our area after the 2000 census (green highlighted area) and the 2010 census (yellow highlighted area).

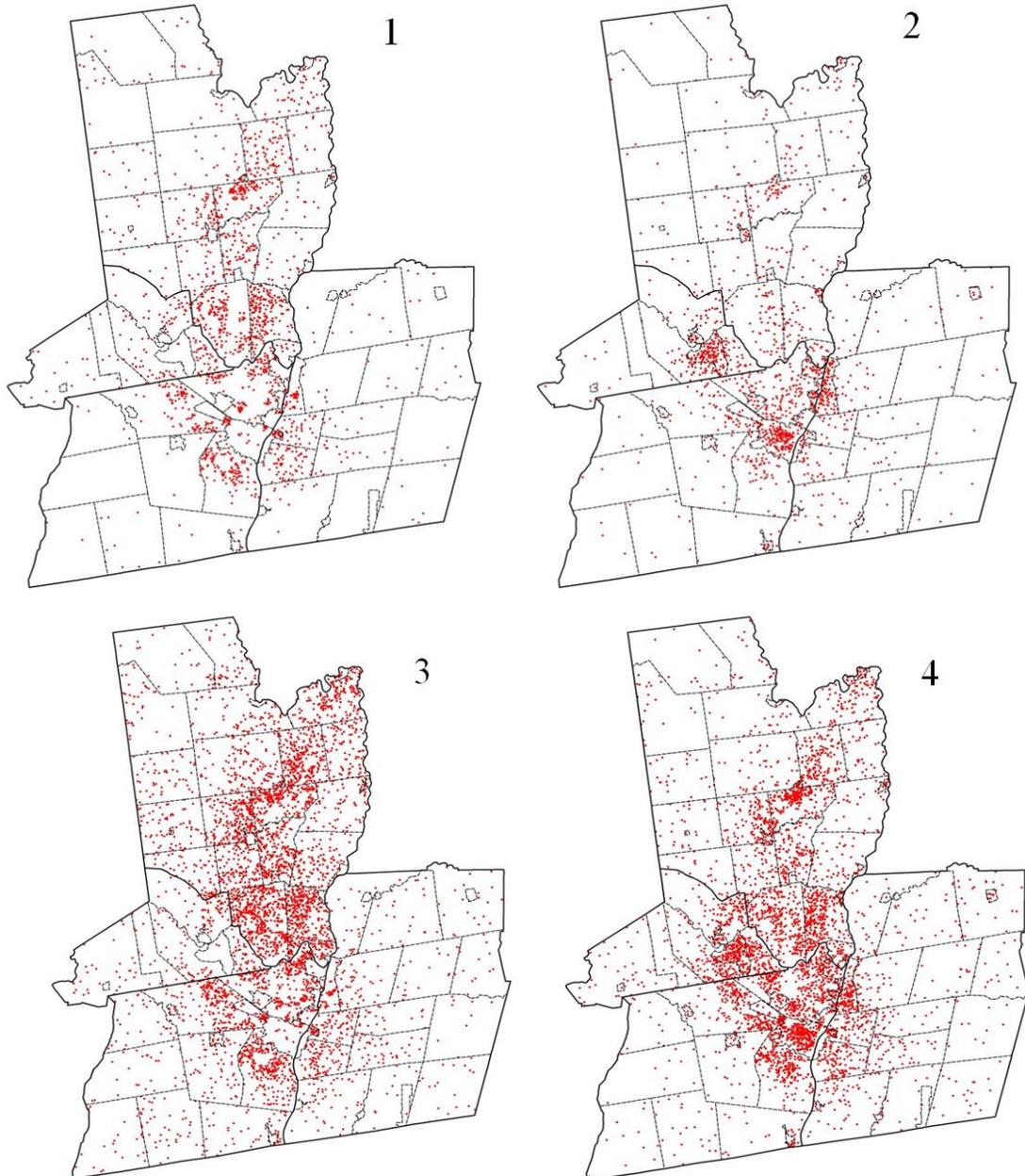


In 2000 the 3 local urban areas (Albany-Schenectady-Troy, Saratoga Springs, and Glens Falls) were expanding out from their centers, but they were not connected. But in a relatively short period of time (only 10 years), in 2010 the urban areas are connected. Our urban areas are continuing to expand outward, but in 2010 they have bumped into each other. If you ignore the geographical boundary lines of the villages, cities, towns, and counties, you see ONE urban area stretching from the Village of Lake George to the Village of Ravena!

It is safe to say that in the next 10 years by the next federal census, the areas between the Albany-Schenectady-Troy and the Glens Falls urban areas will continue to expand and fill-in. By 2020 our area will really be one metropolitan area with Interstate 87 and Interstate 90 running through its centers.

A third and final way to examine growth is by looking at the data produced by the Capital District Regional Planning Commission (CDRPC). In 2007 CDRPC conducted an in depth analysis of the demographic distributions and land use patterns for four scenarios to test the impacts of growth:

1. Status Quo Trend: CDRPC's baseline forecast (9% growth in population, 15% growth in households by 2030, current development patterns continuing); this was the official Plan forecast;
2. Concentrated Growth: the baseline growth rate with more concentrated development patterns resulting from urban reinvestment and suburban planning;
3. Trend Hyper-Growth: hyper-growth (29% population growth and 35% household growth by 2030), with status quo trend patterns of dispersed development;
4. Concentrated Hyper-Growth: hyper-growth occurring in a concentrated pattern resulting from more urban reinvestment and suburban planning.



Under any growth scenario, the benefits of concentrated development patterns for the transportation system and for regional quality of life are significant and greater than those for dispersed development patterns. Those benefits include fewer roads, sidewalks, etc. that are closer, and easier and less costly to maintain. The costs for infrastructure are less, but more people benefit from the existing infrastructure, so the benefits are greater. More

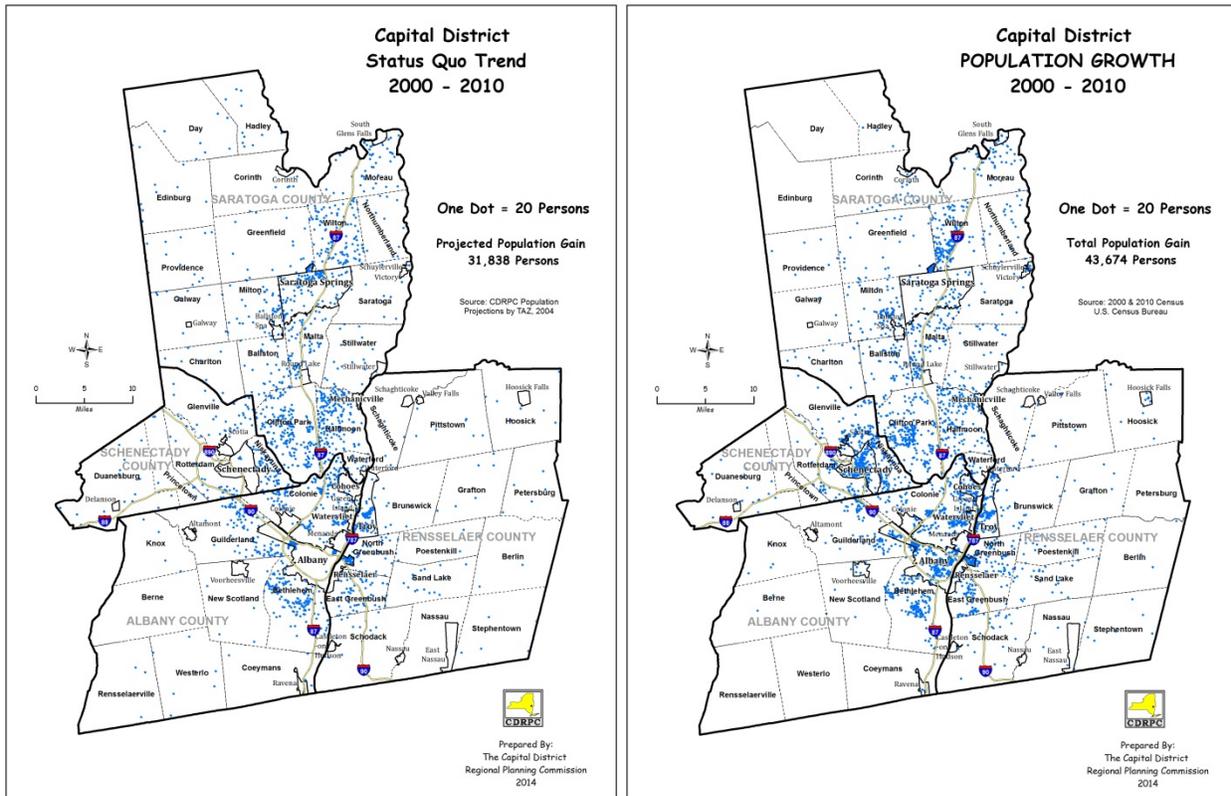
people will have access to better infrastructure, including transportation.

The New Visions Plan supports and encourages concentrated development in the Capital District. The urgency for concentrated development and coordinated, high quality planning is even greater under a scenario of high growth. This urgency would be necessary because the impacts of a high growth scenario with dispersed development patterns would threaten to make the region’s quality of life worse and unsustainable.

Seven years since the above analysis, it is now time to take a measure of our growth since the above forecasts, and below is that measure. On the left is the “Status Quo” forecast of the Capital District’s growth between 2000 – 2010, and on the right is the actual growth in those same years. We need to compare the growth and the distribution of that growth in the 10 year period.

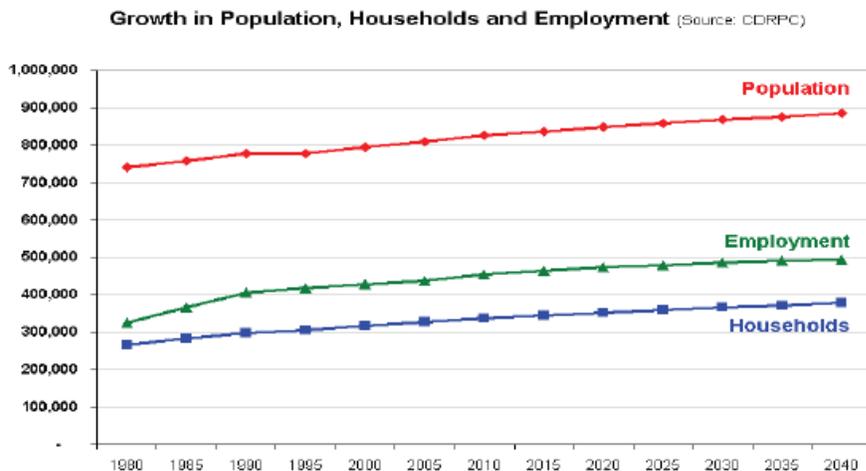
Regarding this growth, notice that the actual growth between 2000 – 2010 (43,674) is about 37% higher than the projected growth (31,838) for the same period. Instead of a projected growth of about 4%, the actual growth is about 5.5% over the 10 year period. This is certainly a positive trend with slightly more than the modest growth forecasted in 2004.

The other positive news is the distribution of that growth. Instead of the “Status Quo” forecast of dispersed development, our actual growth looks much more like the Concentrated Growth scenario (no. 2) above in the 2007 CDRPC analysis, which results from urban reinvestment and suburban planning. Obviously this is a positive trend that benefits both our suburbs and our cities, and that results in more efficient use of our transportation resources, more people have access to transportation, and a higher quality of life for our region.



This is the best way to grow!

So, we have looked at our region’s population growth from 3 different perspectives, and it’s time to draw some conclusions regarding our population growth and its distribution. As we noted above, from 2000 – 2010 our population grew at a rate 37% higher than projected. If our population was able to continue to grow at this rate, it would certainly grow at a rate much higher (about 10%) than the 7% currently forecasted by CDRPC for 2010 – 2040. However over the last 35 years as demonstrated by the table below, our population has grown at a very modest, but very consistent rate. So with only one census indicating a higher growth and without a few more decades of higher growth data, we believe it is more reasonable to assume the consistent but modest trend below, and look to the next census before we draw any new conclusions.



For the purpose of this planning period, we will use the CDRPC rate of about 7% growth in the next 30 years, and we will apply that rate to the latest 2010 census population number. This results in Capital District population increase in the years between 2010 – 2040 of approximately 58,658 and a population in 2040 of approximately 896,625 people.

Regarding the distribution of this population growth in the 4-County region, once again it is difficult to forecast concentrated growth based on one comparison of the 2000 and 2010 census numbers. However, plenty of information exists that describes young professionals and retired “baby boomers” moving back into other American cities. It is possible even though this trend of population moving back into cities has been recognized for several years in other cities, that this trend has been delayed or just begun more recently in our cities. We also know from existing new construction and projected future construction that developers are building more rental units in our city’s downtowns. For example the City of Albany is forecasting that 200 new rental units per year will be built in their city in the next decade. So there is strong quantitative and qualitative evidence that this growth will occur in our urban areas.

However, our analysis of our changing urban area boundaries in the above paragraphs indicates there is also a strong trend to develop our suburban areas between Albany and Glens Falls along the Northway (I-87) corridor. Referring back to our “bubble” map of the Capital District Net Population Change 2000 – 2010 on page 12, we think that the distribution of our growth will be centered in the communities which have seen the largest growth in the last 10 years. This includes the Cities of Albany and Schenectady, and the Towns of Clifton Park, Halfmoon, and Wilton, with similar but less growth in the Towns of Bethlehem, Colonie and Malta. With that in mind, we believe that about 57% of the 2010 – 2040 population increase of 58,658 will be distributed throughout these 8 communities.

For CDTC our next step is now to include this population growth in our planning efforts, and specifically in our travel demand computer model of the Capital District. We will distribute this population in our model, and examine the changes that occur in travel patterns, road and intersection levels of services, traffic congestion, etc. With these findings, we will be able to develop better conceptual, long-range strategies and transportation projects to address this growth.

Financial Plan

Developing a Financial Plan involves answering 2 distinct sets of questions.

1. How much spending will Congress authorize for federal surface transportation?
 - A. What are the prospects for a new federal surface transportation law to re-authorize the current Moving Ahead for Progress in the 21st Century (MAP-21) law which expired on September 30, 2014 and has been extended to May 31, 2015?
 - B. How will Congress divide the spending among the different fund sources, i.e. National Highway Performance Program, Surface Transportation Program, Transportation Alternatives Program, Highway Safety Improvement Program, etc.?

- C. Will the next surface transportation spending authorization be another extension, a 2-year bill like MAP-21, or a 5-year bill like its predecessor, SAFETEA-LU (which was extended 9 times)?
 - D. How will the federal surface transportation program be financed?
 - E. What are the long-term prospects for federal surface transportation funding?
2. How should our region's federal surface transportation funding be spent?
 - A. How has CDTC spent transportation funding in the past?
 - B. How should transportation funding be spent in the future? In other words, on what programs (highway, transit, bicycle/pedestrian, etc.) should the funding be spent?
 - C. How will our region's funding needs change?

Before we address the above questions, we need to provide some background and some history of federal transportation financing. Below is a timeline:

- | | |
|------|--|
| 1916 | The Federal-Aid Road Act of 1916 was passed and the federal government began financing surface transportation. Since then Congress has passed many multi-year funding laws to build and repair the interstate road system. |
| 1944 | The Federal-Aid Highway Act of 1944 created the "National System of Interstate and Defense Highways." |
| 1956 | The Federal-Aid Highway Act of 1956 appropriated \$25 billion (about \$197 billion in 2009 dollars) to build 41,000 miles of interstate highways. It also established the Highway Trust Fund (HTF) to fund transportation improvements by directing that all new and existing fuel and vehicle tax revenues be deposited into the HTF. |
| 1964 | The Urban Mass Transportation Act of 1964 established federal capital aid for transit. |
| 1972 | The HTF was made permanent, and the federal transportation program was expanded beyond construction of interstate highways to include other highways, transit, bicycle and pedestrian projects, etc. |
| 1982 | The Surface Transportation Assistance Act of 1982 raised the gasoline tax from 4 to 9 cents per gallon, and created the Mass Transit Account. |
| 1991 | The Intermodal Surface Transportation Efficiency Act (ISTEA) allowed greater flexibility in project selection and expanded the number of transportation programs. |
| 1993 | The gasoline tax was increased to 18.4 cents per gallon. The gasoline tax has not been increased since then. |
| 1998 | Transportation Equity Act for the 21st Century (TEA-21) authorized funding and transportation programs for a 6-year period. |
| 2005 | Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized funding and transportation programs for a 5-year period, and created 2 separate national commissions to study future options for transportation funding and programs. |
| 2012 | After 9 SAFETEA-LU extensions, the Moving Ahead for Progress in the 21 st Century (MAP-21) law authorized funding and transportation programs for a 2-year period until September 30, 2014 after which the HTF was forecasted to run out of funds. |
| 2014 | In August the Highway and Transportation Funding Act of 2014 extended federal surface transportation programs and funding to May 31, 2015. |

As can be seen above, the federal government has funded surface transportation programs for almost 100 years. In the last 40 years or so, those federal transportation programs included funding for more than just the interstate system, and included other highways, transit, bicycle/pedestrian projects and more. In addition in the past, critical federal transportation funding legislation was passed by both Democrat-controlled and Republican-controlled Congresses and approved by Presidents from both major political parties. Transportation programs such as Highway and Bridge, Bicycle/Pedestrian, Transit, and others usually received bipartisan support.

Current Federal Transportation Funding Authorization

Like many issues today, it all comes down to money. And despite all these surface transportation laws and reauthorizations, and 2 national commission reports, the funding (the HTF predominantly) has not kept pace with the expenditures. There are 3 primary reasons for this:

1. The federal gasoline tax has not been increased since 1993. It also has not been indexed to increase with

inflation.

2. Increased vehicle fuel efficiency has resulted in less gasoline used and less taxes. Fuel efficiency will continue to increase because new federal Corporate Average Fuel Efficiency (CAFE) standards will require cars and trucks to average 54.5 miles per gallon by 2025.
3. Decreased vehicle miles traveled has also resulted in less gasoline used. Americans are driving less (not more, as in the past) and many younger Americans are not even obtaining drivers licenses.

These are not new trends. They are the reasons why in 2005 SAFETEA-LU created 2 separate national commissions to study future options for transportation funding and programs. So despite these trends and these commissions, the federal government has not addressed the problem of not enough funding and too many transportation needs.

This transportation funding shortfall has been and continues to be documented by many national professional and advocacy organizations. In December 2014 the American Association of State Highway and Transportation Officials and the American Public Transportation Association issued the following news release estimating a nationwide shortfall of \$63 billion annually:

“AASHTO and APTA’s 2015 Bottom Line Report Estimates \$163 Billion Needed Annually to Fix Nation’s Aging Surface Transportation System

WASHINGTON – The “2015 Bottom Line Report” on transportation investment needs, released today by the American Association of State Highway and Transportation Officials and the American Public Transportation Association, estimates that to meet current demand it will require an annual capital investment over six years by all levels of government in the amount of \$120 billion in the nation’s highway and bridge network and \$43 billion in America’s public transportation infrastructure. To meet the combined surface transportation needs, it would require an investment of \$163 billion investment per year in surface transportation over a six year period. Despite those dramatic investment needs, currently only \$83 billion is invested in roads and bridges, while just \$17.1 billion is invested in public transit.” See the following presentation for an AASHTO presentation discussing the latest trends in transportation, <http://www.transportation.org/SiteAssets/Pages/Presentations/Lee-2013-09-24.pdf>.

So with this background and history, what are the prospects for a new federal surface transportation law to re-authorize MAP-21? Here are some of the negative and positive factors.

Negative Factors:

1. State funding continues to decline - the majority of dedicated state funding goes to debt service for previous borrowing, and a substantial amount will go to the Tappan Zee Bridge project. This increases the need for federal transportation funding for State roads, and leaves less federal transportation funding available for local roads.
2. There is a history of federal funding legislation surviving on short term extensions.
3. HTF revenues from the gasoline tax, etc. continue to decline and the federal surface transportation program continues to rely on General Fund revenue to make up the difference.
4. Operating funds for transit and our own Capital District Transportation Authority have been reduced.
5. Pavement and bridge conditions have worsened.
6. Some members of Congress now believe that federal surface transportation funding should be spent only on the National Highway system (interstates and principal arterials) and that the States and local governments should pay for all other road and bridge repairs and replacements. This is sometimes called “devolution” since this was the federal program before 1972.
7. In MAP-21 the federal government increased the amount of National Highway Performance Program (NHPP) funding which can only be expended on the National Highway System roads, and decreased the amount of Surface Transportation Program (STP-Flex) funding which can be used to fund many different types of projects. Funding for bicycle and pedestrian projects in the Transportation Alternatives Program (TAP) was also reduced.
8. The federal government’s ability to pass legislation continues to shrink because of partisan politics, lack of political will, and “gridlock.”

Positive Factors:

1. Construction cost inflation is low.
2. Bridge preservation (repair) program has saved millions of dollars fixing bridges and extending their useful life, instead of completely replacing them.
3. Reducing or restricting the number of new bridges and roads has not added substantially to our overall

- transportation operating and maintenance budgets.
4. Capital District residents are still very interested in multi-modal projects, including bicycle and pedestrian, transit, complete streets, road diets, carshare, bikeshare, etc.
 5. Big idea, big ticket initiatives are still supported.
 6. Nationwide traffic congestion is getting worse, and the costs of this congestion and the costs of not repairing and replacing transportation infrastructure continue to increase.
 7. Federal and state discussions of funding needs continue.
 8. There is substantial support for a new federal surface transportation law which increases funding and includes 5 – 6 years’ funding from the public, state and local governments, private sector businesses, the construction industry, etc.
 9. New systems for charging user fees for vehicle miles traveled (VMT) which could replace the gasoline and diesel taxes, are being successfully tested and implemented.

Conclusions

With so many uncertainties and so many unknowns, it is reasonable to assume that federal surface transportation funding will neither increase nor decrease in the near future, and probably for the next several years (5-6 years). In fact the last several federal funding extensions just kept funding at its current levels with small increases for inflation. This is mostly likely the course for federal transportation funding, and these extensions may actually be the course until the next presidential election in 2016. The next Presidential election along with its Congressional elections will have a significant impact on the future of federal transportation funding.

The history of federal transportation funding has had its peaks and valleys, and in the past increases and decreases in federal transportation funding were directly related to our Country’s economic condition. That is, during good economic times we spent more on transportation, and during bad economic times we spent less. So there is certainly a much smaller chance that transportation funding will see substantial decreases or increases in the future. Both Houses of a U.S. Congress controlled by one national political party and a President from the same political party would certainly increase the chances of a major change in transportation funding.

However planning for these substantial decreases or increases or even other, more modest scenarios would only make planning more difficult, raise or lower public expectations, and program transportation projects that could not be funded. As we have seen in the past for the ARRA (American Recovery and Reinvestment Act of 2009) funding and the NY Works Program, if there is an infusion of transportation funding, the system can react quickly to generate and progress projects.

That said, the future of transportation planning and funding is not completely bleak. There are other competitive fund sources such as the Federal Transit Administration’s Small Starts Program and the U.S. DOT TIGER (Transportation Investment Generating Economic Recovery) Program, for which our region has successfully competed, and will compete in the future. There are also innovative sources of funding such as private sector funding from major traffic generators and local utilities (such as the National Grid Economic Development Grants) which are sometimes available for transportation improvements and studies.

And of course there is some State and local funding. Municipalities may need to use New York State CHIPS (Consolidated Local Street and Highway Improvement Program) for more capital projects and fewer repair or pavement projects. Municipalities may also, if possible, need to borrow to make major transportation repairs or replacements. All these sources of funding will need to be explored more and more as our transportation needs continue to increase.

How Should Federal Transportation Funding Be Spent?

Before we consider how this federal transportation funding should be spent in the future, we need to examine how this funding has been spent in our region in the past. To do this, we can look at the funding programmed in the last 3 Transportation Improvement Programs (TIPs).

The TIP shows funding for all federal-aid projects in the 5-year period in addition to funding in 2 previous committed years. The following tables and their corresponding pie charts include all the funding in all 7 years for the 2007-2012, 2010-2015, and the 2013-2018 TIPs. The Transportation Categories are defined below:

“Congestion Relief” includes projects which increase bridge, road, and intersection capacity by adding lanes, reconfiguring geometry, replacing traffic signals, etc.

“Bridge and Pavement Repairs” includes both bridge and pavement repairs and bridge and pavement replacements.

"Supplemental Actions" includes stand-alone bicycle and pedestrian accommodations, safety improvements, and goods movement actions, beyond those improvements incorporated into other projects.

“Intermodal” includes projects which deal with several modes of transportation such as Albany International Airport, Port of Albany and Rensselaer, Amtrak Stations, and freight intermodal facilities.

“Transit” includes bus rapid transit, bus replacements, transit signal projects, transit stop and bus shelter construction, commuter bus projects, human services transportation, etc.

“Demand Management” includes HOV (high occupancy vehicle) and HOT (high occupancy toll) lanes, ramp metering, 511 and commuter information services, carpooling, vanpooling, carshare, bikeshare, etc.

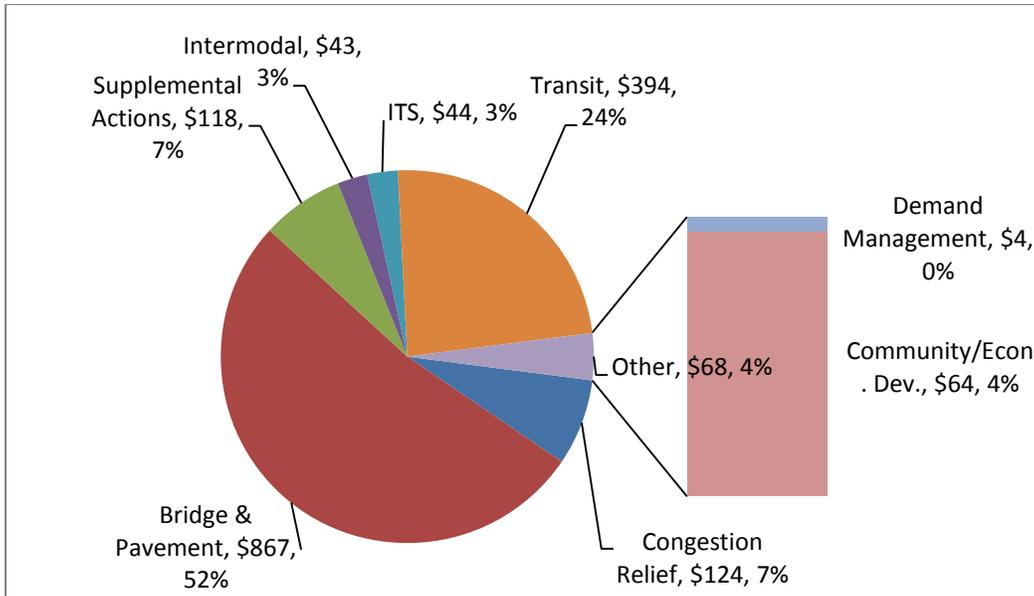
“Community/Economic Development” includes projects which improve community and economic development such as certain road relocations, service road construction, road diets, town and hamlet center development, road by-passes, etc.

“ITS” includes the application and construction of intelligent transportation systems such as variable message electronic signs, detection and travel time monitoring, close circuit television, adaptive traffic signal control, speed harmonization equipment, traffic center improvements, etc.

Transportation Category	2007-2012 TIP		2010-2015 TIP		2013-2018 TIP		Average Percent
Congestion Relief	7%	\$123.542	8%	\$142.143	6%	\$52.589	7%
Bridge and Pavement Repairs	52%	\$867.899	56%	\$1061.374	62%	\$508.746	56.6%
Supplemental Actions	7%	\$117.997	7%	\$123.044	8%	\$63.582	7.3%
Intermodal	3%	\$42.873	2%	\$45.731	3%	\$26.376	2.6%
Transit	24%	\$394.647	19%	\$359.515	15%	\$125.535	19.3%
Demand Management	0%	\$3.726	0%	\$2.676	0%	\$3.752	0.2%
Community/Econ. Dev.	4%	\$64.485	6%	\$114.705	1%	\$5.395	3.6%
ITS	3%	\$44.349	2%	\$45.947	5%	\$40.042	3.3%
No Applicable Category	0%	\$2.264	0%	\$0.00	0%	\$0.00	0.1%
Total		\$1661.781		\$1895.135		\$826.018	

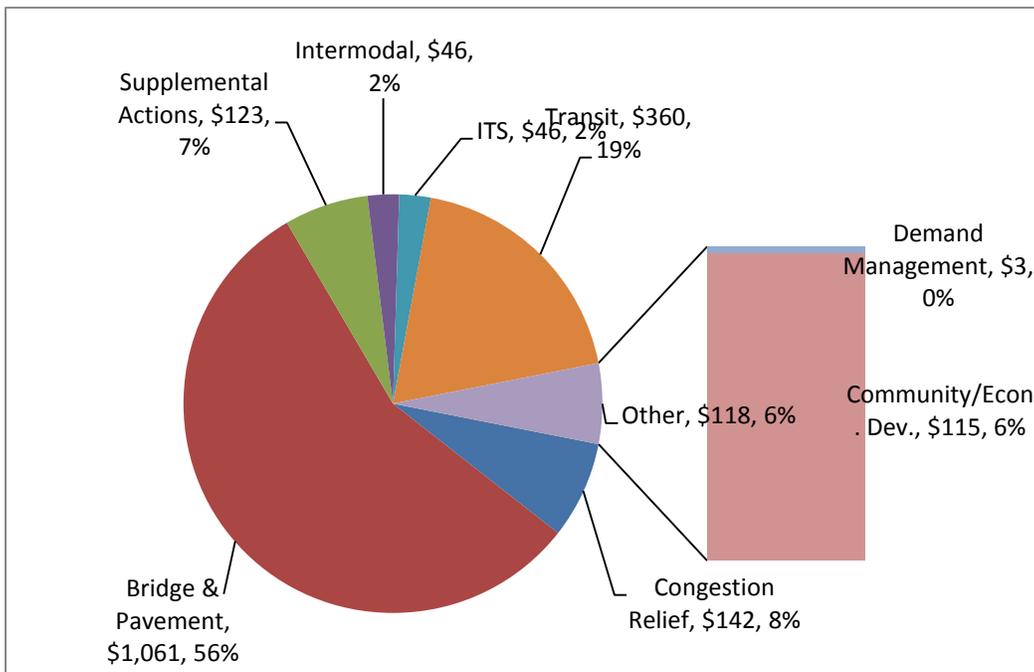
* The dollar amounts for each TIP are shown in “millions of dollars.”

2007-2012 TIP



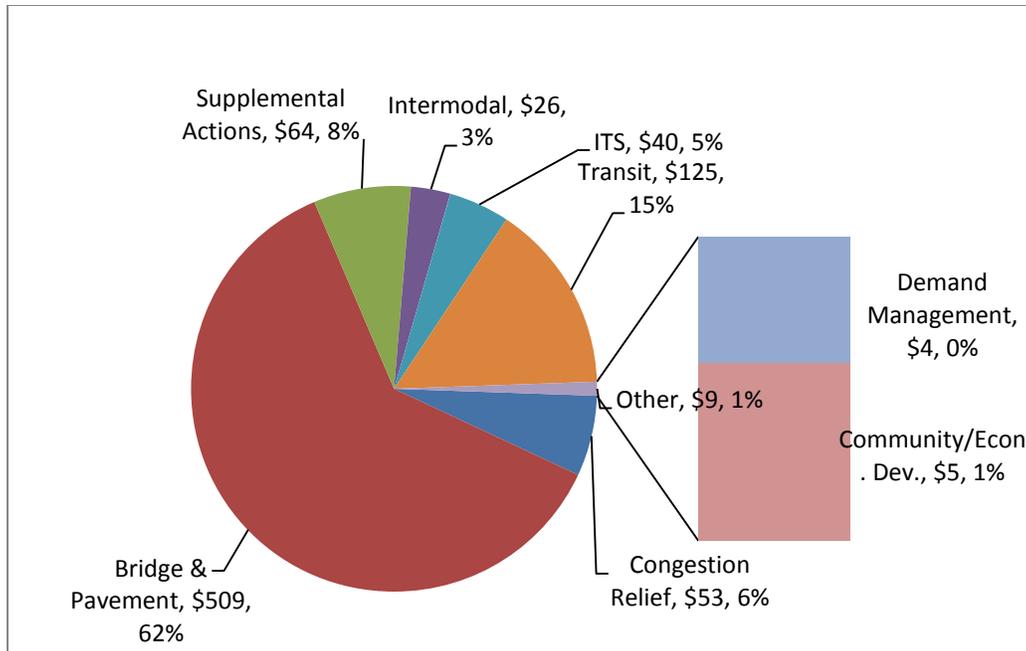
* The dollar amounts for each category are shown in "millions of dollars."

2010-2015 TIP



* The dollar amounts for each category are shown in "millions of dollars."

2013-2018 TIP



* The dollar amounts for each category are shown in “millions of dollars.”

Examining the above funding data from the last 3 TIPs, we can draw the following conclusions:

- The “Bridge and Pavement Repairs” spending (56.6%) has been significantly higher than spending for any other transportation category, and the trend for the percentage of this spending is actually increasing.
- Though the “Bridge and Pavement Repairs” percentage is increasing, the actual spending in dollars decreased by more than 50% from the 2010-2015 TIP to the 2013-2018 TIP.

Conclusion: Bridge and Pavement Repairs remain a very high priority. Despite this high priority and the increasing needs as our bridges and roads continue to age, the funding amounts have decreased significantly.

- The “Transit” spending (19.3%) is the 2nd highest, and the trend for the percentage of this spending is decreasing.
- The “Transit” spending in dollars decreased by 68% from the 2007-2012 TIP to the 2013-2018 TIP.

Conclusion: Transit is also a high priority, but once again funding amounts have decreased significantly.

- The trends for the percentages of the other transportation categories have been relatively stable and have remained relatively unchanged in all 3 TIPs, with the exception of the “Community/Econ. Dev.” category which has varied significantly.
- The “Demand Management” spending in dollars and “ITS” spending in dollars were the only 2 that remained relatively unchanged in all 3 TIPs.

Conclusion: All spending categories have decreased since the 2007-2012 TIP. However, since Demand Management and ITS are cost effective strategies to address traffic congestion without building new capacity, we continue to spend about the same amounts for these categories in each of the last 3 TIPs.

- The total spending for the 3 TIPs has also varied significantly, and is decreasing.

Conclusion: Like other infrastructure, transportation infrastructure is aging and needs additional funding just to preserve and maintain the current system. Either the federal government provides more transportation funding, the private sector and local governments provide additional funding, or our transportation infrastructure worsens. (See the Infrastructure Task Force White Paper for more

information.)

That summarizes our past transportation spending, but what about the future. This is an opportunity for us to look to public input for some guidance.

It is appropriate, necessary, and required that CDTC obtain public input regarding the development of our New Visions Plan. We do this by conducting public meetings and workshops, surveys, targeted and focused group meetings; by utilizing social media and the internet; by developing flyers, brochures, and videos, etc. In order to obtain public input into the question, “How Should Federal Transportation Funding Be Spent?” we developed the below funding ballot. The ballot is meant to be completed at all meetings scheduled by CDTC including our Policy and Planning Committee meetings; our advisory committee meetings such as our Bicycle/Pedestrian Advisory Committee, and Freight Advisory Committee; our project public meetings such as the I-787 Livable Corridor Study meetings; our Linkage Study public meetings; our New Visions meetings, etc.

NEW VISIONS *(Regional Transportation Plan)*

Federal Transportation Funding Priorities-
If you had \$100.00 how would you spend it on transportation?

 <p>Alternative Fuel Technology</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>Bicycle & Pedestrian</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>Freight</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>Intelligent Transportation Systems</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>Road & Bridge Repairs</p> <input style="width: 60px; height: 20px;" type="text"/>
 <p>Transit-Buses</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>Transit-Light Rail</p> <input style="width: 60px; height: 20px;" type="text"/>	 <p>ipool2 RIDE TOGETHER Travel Demand Management CAPITAL CARSHARE</p> <input style="width: 60px; height: 20px;" type="text"/>	=	
			<p>TOTAL \$ 100.00</p>	

Meeting attendees were given the ballot, the funding categories were briefly explained, and attendees were asked to fill in the funding amounts so that the total added up to \$100.00. In many ways the ballot exercise was analogous to the funding decisions made by transportation planners at all MPOs (more than 400 MPOs in the U.S.) in their TIPS and in their long range plan updates. That is, “Given limited, finite federal transportation funding and many worthy and effective transportation programs, how should the funding be spent?” Ballots were collected at the meeting from the meeting attendees, and staff calculated the percent of funding for each transportation program.

The ballot results from these meetings are shown below.

NEW VISIONS (Regional Transportation Plan)

Federal Transportation Funding Priorities-

If you had \$100.00 how would you spend it on transportation?

Mode of Transportation	CDRPC Workshop 5/1/14 % dollars	CDTC Policy Board 6/5/14 % dollars	Freight Advisory 7/6/14 % dollars	CDTC Planning Committee 8/6/14 % dollars	Saratoga Traffic Study 9/10/14 % dollars	Albany Torch Club 10/6/14 % dollars	Bicycle & Pedestrian Task Force 11/25/14 % dollars	AVERAGE OF ALL SURVEYS
 Alternative Fuel Technology 	8%	6%	10%	7%	10%	10%	6%	8.2%
 Bicycle & Pedestrian 	12%	12%	6%	12%	8%	11%	21%	11.7%
 Freight 	9%	10%	27%	8%	11%	12%	8%	12.4%
 Intelligent Transportation Systems 	10%	7%	7%	7%	14%	11%	8%	9.1%
 Road & Bridge Repair 	38%	38%	30%	42%	33%	25%	24%	32.9%
 Transit - Buses 	9%	15%	9%	15%	7%	15%	19%	12.7%
 Transit - Light Rail 	10%	8%	9%	5%	10%	10%	7%	8.4%
 Travel Demand Management 	4%	4%	2%	4%	5%	6%	7%	4.6%

A comparison of “How we have spent federal transportation funding” from our TIP analysis and “How we should spend federal transportation funding in the future” from the analysis of the ballot results is found in the table below.

Transportation Category	TIP Average Percent	Ballot Average Percent
Alternative Fuel Technology		8.2%
Congestion Relief	7%	
Bridge and Pavement Repairs	56.6%	32.9%
Supplemental Actions/Bike & Pedestrian	7.3%	11.7%
Intermodal/Freight	2.6%	12.4%
Transit	19.3%	21.1%
Demand Management	0.2%	4.6%
Community/Econ. Dev.	3.6%	
ITS	3.3%	9.1%
No Applicable Category	0.1%	
Total	100%	100%

Though the categories do not match perfectly, once again we can draw a few conclusions.

- The public completing the funding ballots would prefer a more balanced program. Instead of spending a majority of the funding on bridge and pavement repairs, the funding is spread out among the 8 programs in the ballot relatively fairly.
- Bridge and pavement repairs and Transit are still the programs receiving the most and second-most funding.
- Significantly more funding is recommended in the ballots for Bicycle & Pedestrian projects and Freight projects than is spent in the previous TIPs.
- The public thought a good portion of the transportation funding should be spent on alternative fuel technology/vehicles.

Knowing that fewer young people are obtaining their vehicle driving licenses and that young people want more public transit, that vehicle miles traveled in the entire Country are decreasing, that people from young professionals to retirees are moving back into our cities, that the demand for freight is increasing significantly and will continue to increase, and knowing that most people want transportation choices like transit and bicycle/pedestrian facilities, the preferences expressed in our ballot exercises are very reasonable.

CDTC recommends that these ballot funding preferences be used along with other sources of input to guide New Visions funding preferences, and preferences in our TIP and our other planning documents. Because of the above trends, we also recommend that future regional transportation funding be programmed, as close as reasonably possible, in the portions or percentages found in the funding ballot exercises above.

CDTC Funding Needs

CDTC follows a funding, programming, and spending process in the development of our Transportation Improvement Program (TIP) that is similar, if not identical, to the process followed by other MPOs in New York State. That process begins with the development of “planning targets” by the NYS Department of Transportation (NYSDOT) and the MPOs, and results in the amount of federal funding distributed by the Federal Highway Administration (FHWA) to the NYSDOT, and then the amount of federal funding distributed by the NYSDOT to the MPOs. This amount is always broken down into the many different federal fund sources, each with their own

spending eligibility rules.

The regional NYSDOT offices and the MPOs then use the planning targets to program project funding in the 5-year TIP. Sponsors of projects programmed on the TIP decide when and how to finance their projects (TIP funds are not grants, and sponsors are reimbursed for their actual expenses.). When sponsors have completed an approved and reviewed federal-aid design process, the project funding is then obligated to that project by the FHWA, and the sponsor can begin project construction. During the preliminary design, right-of-way, final design, construction inspection, and construction phases of the project, funding changes are sometimes made to include more or less funding to each phase. The final project cost is never exactly the same as the funds originally obligated to the project.

In order to develop estimates for federal funding needed in the future, we need fully examine the past funding at all 4 stages of the federal-aid process, i.e. planning targets, TIP programmed funding, obligated funding, and expended funding.

Because TIP programmed funding is 5-year funding (actually 5 current years and 2 previous years) and because planning targets, obligated funding, and expended funding are annual funding, we will examine the TIP programmed funding first. Below are the levels of TIP funding programmed in our last 6 TIPs. In the first 3 TIPs listed, the level of programmed funding (mostly federal funding with very small amounts of state funding) was generally consistent, in the \$810 – \$868 million range, and averaged \$841.13 million per year.

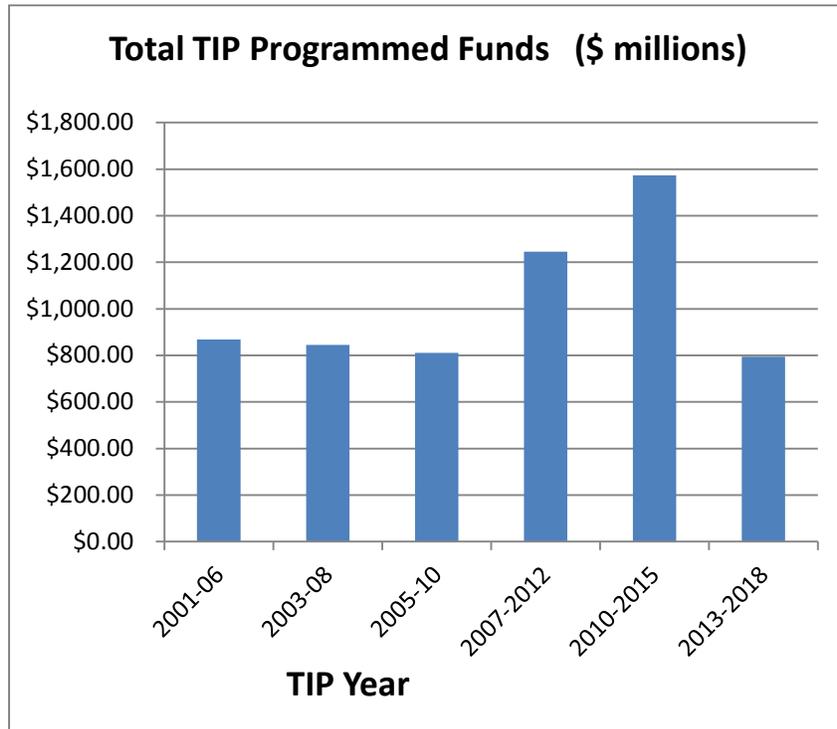
In the next 2 TIPs (the 2007-2012 and 2010-2015 TIPs) the levels of programmed funding are anomalies (exceptions or outliers). These 2 TIPs were significantly higher than the other TIPs because they included the following:

- A backlog of old TIP projects carried forward from older TIPS
- An over-programming of new TIP projects without funding commitments in the future years of these TIPs
- Projects funded with stimulus funding from the American Recovery and Reinvestment Act of 2009 (ARRA) and the New York Works Program in 2012
- Very large projects such as the Patroon Island Bridge repair and the regional Passenger Rail projects

These 2 TIPs (the 2007-2012 and 2010-2015 TIPs) actually defy previous funding trends. In the past a strong national economy would result in more transportation spending, and a poor national economy would result in less transportation spending. During these 2 TIP years our Country was experiencing the “Great Recession”, the national economy was very poor, and we should have seen less spending. However in 2009 and 2012, our national and state leaders decided to use proven economic strategies and to increase transportation spending in order to stimulate or boost our economy.

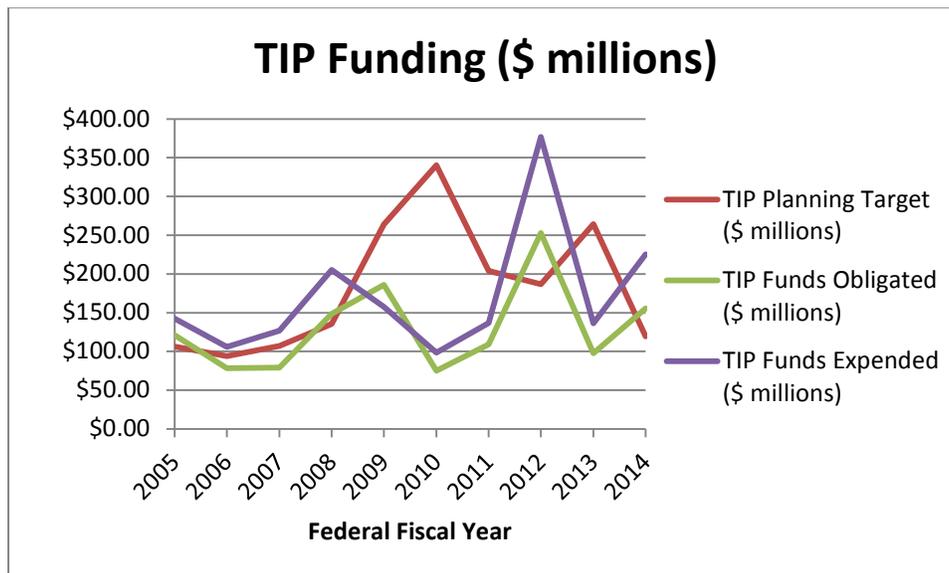
In the current TIP (2013-2018) the level of funding is lower because the federal transportation funding did not keep pace with the needs and because of the lower State planning targets allotted to MPOs.

TIP	Total TIP Programmed Funds (\$ millions)
2001-06	\$868.19
2003-08	\$844.61
2005-10	\$810.59
2007-2012	\$1,246.00
2010-2015	\$1,574.00
2013-2018	\$795.00



These significant changes in TIP programmed funding levels make it more difficult to forecast the future funding need. Therefore we will continue our examination of funding levels by reviewing the past planning targets, obligated funds and expended funds. Below are the annual funding levels for those funds, and one chart showing those 3 levels of funding for the past 10 years.

Federal Fiscal Year	TIP Planning Target (\$ millions)	TIP Funds Obligated (\$ millions)	TIP Funds Expended (\$ millions)
2005	\$106.15	\$121.02	\$142.44
2006	\$93.95	\$78.23	\$105.90
2007	\$106.93	\$79.19	\$126.99
2008	\$135.32	\$148.39	\$205.26
2009	\$263.83	\$186.00	\$157.60
2010	\$340.43	\$75.14	\$98.54
2011	\$204.17	\$109.11	\$136.75
2012	\$186.58	\$252.67	\$376.94
2013	\$264.17	\$97.76	\$136.44
2014	\$119.54	\$155.42	\$225.34



In the above chart, 2 dominant peaks occur in 2010 (red line) and 2012 (purple line). Once again we see the effects of the projects funded with stimulus funding from the American Recovery and Reinvestment Act of 2009 (ARRA) and the New York Works Program in 2012. In the case of the stimulus funding there is a 2 year lag between the planning target peak and the expended funding peak, because it took project sponsors that long to obligate and spend their funding. There is no lag or delay in obligating or spending New York Works Program funds because this program consisted mostly of State funding and required that the funds be expended within one year.

We see a 2nd peak in the planning target (red line) for 2013 and a sharp decline in 2014. Since these funds are predominantly federal funds, we should see a following delayed peak in obligated and expended funds 2 years later in 2015, and a sharp decline after that.

If we do not consider the 2 dominant peaks in 2010 and 2012, we see an average annual funding of approximately \$150 million for planning targets, obligated funds, and expended funds. However once again as in our examination of the TIP programmed funds, these funding trends and lack of any strong correlations do not allow us to forecast funding trends for the long term (10-15 years).

In the meantime, we will examine previous estimates of our region's funding deficit (i.e. total funding need – actual funding). In 2004 CDTC's 2030 New Visions Plan determined that the level of funding fell short of the levels needed to meet basic infrastructure requirements by nearly \$200 million annually. This included all transportation funds sources in the CDTC area including local, state, and federal funds.

If we assumed a "steady state", i.e. that the past 10 years of TIP funding has been sufficient to maintain the current bridge and pavement conditions (and there is evidence for the opposite); and knowing that the 2013-2018 TIP funding was more than \$46 million below the average funding in the first 3 TIP periods, and that annual inflation was approximately 2% in the previous 10 years, then we can calculate an updated estimate of the funding deficit or shortfall of approximately \$250 million annually.

The public must realize that these and the many other estimates of transportation infrastructure shortfalls are realistic, and are not the "boy crying wolf." These shortfalls have been researched, agreed upon by many divergent groups, reported upon by the news media and many professional associations, and even discussed in government. The longer we take to fund transportation projects which reconstruct and renew our current infrastructure, the higher the cost and longer it will take to rebuild. Transportation infrastructure like all other "hard" infrastructure will not last forever.

CDTC will have a better estimate of this funding shortfall once we have collected the necessary data to run our Highway Condition Projection Model. We will have this estimate in the coming year.

Big Idea/Big Ticket Initiatives

CDTC first examined “Big Ideas/Big Initiatives” in July 2006 during the development of the 2030 New Visions Plan. A working group was formed to review 16 big initiatives in other metro areas as cases studies to determine what they had in common. See the table below for a list of these 16 “Big Initiatives.”

To understand how these “big initiatives” developed, the working group selected six of the case studies for more in-depth examination by staff. These six initiatives were selected because they were considered the most probable for serious consideration in the Capital District. The working group concluded that though our region was not yet ready to consider serious implementation of these initiatives, a sense of urgency for action could emerge quickly and unexpectedly, and that we should be prepared to respond.

The review of the 16 big initiatives resulted in the following conclusions regarding the pre-requisites for the implementation of these initiatives:

- A sense of urgency is typically present.
- The initiative reflects the sensibilities and community values of the region, producing a strong community consensus.
- A champion is typically a critical element as catalyst and sustainer of the initiative.
- Commitment to a major initiative is as much related to a subjective rationale as to objective analysis.
- Funding is achieved through a combination of local sources and state or federal funds – reflecting a willingness to pay.
- In the absence of the conditions to support big initiatives, it is difficult to attain comparable impact through incremental changes.

Fourteen regional long range plans from other metro areas were also reviewed leading to the following conclusions:

- System expansion plans in growing areas are very substantial and expensive.
- Major expansion plans rely on substantial revenue programs beyond federal aid.
- Most rapidly growing areas expect to lose ground in terms of overall system quality and performance, despite significant system expansion.

The working group and staff concluded that not all the pre-requisites for big initiatives are present in the Capital District, but this could change in the future. They developed a list of 16 potential Capital District big initiatives (see table below) and concluded that CDTC in our long range planning and public outreach efforts would:

- Continue to clarify, document and secure a broad consensus for community values and regional objectives.
- Explore in other CDTC regional plans potential Capital District application of those hypothetical “big initiative” concepts outlined in table below that are consistent with community values and standing a good chance of achieving a regional consensus for implementation. CDTC’s Regional Greenway Concept Plan which is found on our website is an example of this effort.
- Monitor the emergence of a sense of urgency and of potential champions that are necessary to generate support and financial resources for implementation of the consensus concepts.
- Be prepared to initiate serious consideration of the consensus concepts as soon as warranted by urgency and other conditions. Urgency can come from desire as well as need. The region may choose to pursue ideas because they are good, not just because they seem necessary.

In the New Visions 2035 Plan update CDTC once again examined these potential “big ticket” initiatives. Funding was not identified, yet the plan put forward the vision of bold investments that could be feasible if the public supports the vision and funding can be found. The Plan was cautious, because it did not commit to any of the “big ticket” initiatives without the funds to support them. These initiatives still represented a creative approach, since the plan empowers CDTC members and others to continually explore big ideas. This innovative approach ensures that the Capital District maintains vision during periods of financial constraint.

The 2035 Plan recognized that investments in the big ticket initiatives can catalyze a more concentrated development pattern under any growth scenario. The caveat was that the big ticket initiatives were still unfunded, and by themselves would not induce high growth.

Three big ticket initiatives were removed from the 2030 New Visions list in the 2035 New Visions Plan update. They were deemed no longer feasible, needed, or supported by community values or Statewide Plans. Those 3 deleted big ticket initiatives were:

- Major Highway System Construction
- Take-a-lane Program
- Intelligent Traffic Management Program

For Major Highway System Construction, new road construction was deemed unnecessary based on current trends of decreasing vehicle miles traveled, no longer feasible under the current funding, and not consistent with community values. Regarding the Take-a-lane Program, since I-87 is our most heavily traveled interstate highway, this concept was once again explored in the 2014 I-87 Corridor Study, and deemed not feasible. In the case of the Intelligent Management Program, the New York State Department of Transportation (NYS DOT) has steadily progressed this initiative on a smaller scale.

The 2035 Plan Big Ticket Initiatives included:

- Regional Greenway Program
- Riverfront Access and Urban Development Program
- Street Reconstruction and Reconfiguration
- Roadway Widening and Connections Program
- Suburban Town Center Development
- Bus Service Expansion, BRT Program with Transit Oriented Development
- Guideway Transit System with Transit-Oriented Development
- Managed Lane Program
- Highway Noise Program
- Demand Management Program
- Clean, Efficient Vehicle Program Intelligent Traffic Management Program
- Video Surveillance and Enforcement Program
- Comprehensive Traffic Safety program

As with every Plan update, the 2040 New Visions Plan update is our opportunity to review the status of these big idea/big ticket initiatives, and determine if they still belong in our regions list of lofty goals. There are 3 reasons why these initiatives are removed from this list. They can be removed if:

1. Good progress has been made such that the concept has transformed from an initiative to an actual CDTC program. The initiative is integrated into all levels of CDTC's planning efforts.
2. The region (municipalities or transportation users) no longer expresses interest in or support the initiative.
3. The initiative is determined to be not feasible in a statewide or regional study, not supported by current or forecasted population growth, or not supported by current or forecasted funding.

Since the 2035 New Visions Plan development several changes have occurred which effect these big ticket initiatives. They include:

Regional Greenway Program – Portions of the Albany County Rail Trail have been opened as a walking trail, and the last segment connecting Delmar to Downtown Albany will be constructed in 2015. The City of Albany is now looking at ways to connect the Rail Trail to the Hudson Mohawk Bike Trail. Unfortunately bicycle/pedestrian infrastructure funding has not kept up with demand. There is still considerable regional interest in this initiative which is demonstrated by the many applications submitted for state, regional, and federal grant funding programs.

Riverfront Access and Urban Development Program – In August 2012 CDTC, in partnership with NYSDOT and the City of Albany, was awarded a Transportation, Community, and System Preservation (TCSP) Program grant of \$240,000 for the I-787 Livable Corridor Planning Initiative. This integrated transportation and land use planning effort included the I-787 corridor of the City of Albany, the City of Watervliet, the Village of Menands and the Town of Colonie (from Exit 2 to Exit 9), including its related structures and access roads. It will identify future design concepts for I-787 that support downtown economic development efforts,

brownfield redevelopment and improve walking, biking and transit access to the waterfront. The study funding includes state and local matched funds and staff hours bringing the total study effort to approximately \$440,000. The study should be completed by the end of 2015. Regional interest remains high for this initiative.

Street Reconstruction and Reconfiguration – Since the 2035 New Visions Plan the NYS DOT and local governments have pursued a “preservation first” asset management strategy, sometimes referred to as “maintaining a state of good repair.” One of the primary reasons for this strategy has been the growing infrastructure funding needs, the flat federal transportation funding, and the resulting funding deficit. Since this new strategy, there has been very limited funding for infrastructure reconstruction or new infrastructure, and as a result little progress made toward this big ticket initiative. However regional interest and infrastructure needs still exist which support this strategy.

Roadway Widening and Connections Program – For the same reasons above, little progress has been made toward this big ticket initiative. Since the last plan update there has been little regional interest in this type of project. In fact recently there has been more interest in “right-sizing” or road dieting our region’s roads than there has been for widening. Demographic trends such as reduced vehicle miles traveled (VMT) per capita, fewer young people obtaining drivers licenses and purchasing vehicles, increased transit ridership, and the repopulating of our urban centers also discourage these types of projects. All these things considered, CDTC staff is recommending that New Visions no longer include this big ticket initiative.

Suburban Town Center Development – Since 2010 and the development of the 2035 New Visions Plan there has been significant regional interest in this initiative. Since then 6 Town or Hamlet center linkage studies have been completed in Towns of Bethlehem, Clifton Park, Malta, New Scotland, Sand Lake, and Schodack. However the funding has not kept up with the demand and more funding is needed to implement more town center study recommendations.

Bus Service Expansion, BRT Program with Transit Oriented Development – Significant progress has been made towards the implementation of this initiative. In 2012 CDTA began the first Bus Rapid Transit Service in upstate New York, their BusPlus (Red Line) on the Route 5 Corridor between the Cities of Albany and Schenectady. CDTA is currently in the planning and design stages for 2 additional BusPlus lines, the Purple Line on the Washington Ave./Western Ave. corridor in the City of Albany, and the Blue Line River Corridor between the City of Albany and the City of Cohoes with service to the City of Troy. When operational, these 3 BusPlus lines will provide the region with 40 miles of BRT, and we will be well on our way to our goal of 100 miles. Because of this progress, CDTC staff is recommending that BRT Expansion no longer be considered a big ticket initiative in our New Visions Plan.

Guideway Transit System with Transit Oriented Development – CDTC staff continues to study this option and hopes to receive important input from regional transportation users during our current New Visions public outreach efforts. So far in recent New Visions funding surveys completed at public meetings, light rail transit continues to receive significant support. These surveys show that transportation users believe that approximately 9% of our region’s federal funding should be spent on light rail. At some point in the near future (say 2-3 years), we believe it will be time to conduct a more detailed feasibility study.

More and more transportation and transit professionals believe that there is an evolution in transit services from lower level services to higher level services. That is, fixed route bus service evolves into bus rapid transit (BRT) services, and that bus rapid transit service evolves into light rail service. If this is true, we should wait until our existing BRT lines develop the ridership needed to support light rail. At the same time, we should also keep in mind one of the findings (above) found in our first examination of big idea/big ticket initiatives in 2006 that “Commitment to a major initiative is as much related to a subjective rationale as to objective analysis.”

Regarding light rail options, because of the very high costs, most systems are constructed in phases over many years. One suggested phasing would be to connect our intermodal transportation centers first (i.e. our Airport to our Rail Center), then to connect the Cities of Schenectady and Troy, then to connect the City of Saratoga Springs, and finally to connect other suburbs. For more details and recommendations, see Chapter 7, Transit.

Managed Lane Program – This initiative cannot be supported by current or forecasted funding. However a broader, phased, integrated corridor approach, which was explored in the 2014 I-87 Corridor Study, can and should be supported. Acknowledging the existing peak hour congestion on I-87 between Albany and Saratoga Counties southbound in the morning and northbound in the evening, this integrated corridor approach would be part of an incremental approach to addressing this congestion, which would involve the entire I-87/Route 9 corridor and include:

- Freeway and Arterial Management Systems such as adaptive traffic signal control on Route 9, variable speed limits on I-87, and possibly in the future managed lanes
- Better traveler information and other travel demand management strategies such as carpooling and vanpooling
- Improving the existing Northway Express service, and possibly in the future bus rapid transit (BRT) or a fixed guideway transit (or light rail) service.

Highway Noise Program – This initiative was partially implemented on the New York State Thruway during their expansion project between Exits 23 and 24. This project added one travel lane in each direction and constructed noise barriers in 9 separate locations between adjacent residential developments and the highway. The Federal Highway Administration only requires owners of interstate highways to mitigate highway noise impacts when highways are widened. Because of this and because of the funding and demographic trends discussed in the “Roadway Widening” initiative above, CDTC staff is recommending that New Visions no longer support this big ticket initiative.

Demand Management Program – CDTC has implemented several travel demand management (TDM) strategies, including carpooling (ipool2), vanpooling, carsharing, commuter buses, park & ride lots, and guaranteed ride homes. We have also examined bikesharing, and will continue to develop this option. That said TDM strategies are cost effective ways to reduce the number of vehicles on our roads and decrease congestion, and community interest in them continues to increase. CDTC will continue to develop and encourage the use of these strategies.

Clean, Efficient Vehicle Program – CDTC hosts the Capital District Clean Communities coalition for our region. This U.S. Department of Energy program continues to make impressive progress in their campaign to reduce petroleum used in transportation. The Capital District Clean Communities coalition consists of many public agencies and private fleet owners who are committed to changing their fleets to alternative fuel vehicles, and the amount of petroleum fuels displaced in their annual reports continues to increase each year. Significant public and private funding is available to make these improvements. Because of this progress, CDTC staff is recommending that the Clean, Efficient Vehicle Program no longer be considered a big ticket initiative in our New Visions Plan.

Video Surveillance and Enforcement Program – This program has had very limited support and interest from municipalities in our area. In 2014 the City of Albany received New York State Legislature approval for a trial program consisting of red light running cameras at 20 intersections, but no other municipality has expressed interest at this time. Because of its limited application, controversial use, and lack of interest, CDTC staff is recommending that New Visions no longer support this big ticket initiative.

Comprehensive Traffic Safety Program – CDTC continues to work with its members and the NYS DOT to develop these programs on a case-by-case basis. Recently a comprehensive safety program led by the NYS DOT was completed for the Route 5 corridor between the Cities of Albany and Schenectady. The program participants included representatives from all the municipalities along the corridor, and traffic safety enforcement, education, and engineering professionals from throughout the region (including CDTC). The program developed a public relations campaign, a coordinated enforcement effort by all the law enforcement agencies along the corridor, and several engineering improvements. CDTC also continues to work with its members to develop a local road safety improvement program based on the latest traffic crash data. For more information about CDTC safety programs, see the Operations and Safety portion of our New Visions Plan.

Since traffic safety is completely integrated into our programs and our project selection criteria, CDTC staff is recommending that a comprehensive traffic safety program no longer be considered a big ticket initiative in our New Visions Plan.

Based on the above examination, we recommend that the Roadway Widening; BRT Expansion; Highway Noise; Clean, Efficient Vehicle Program; Video Surveillance; and Traffic Safety initiatives be removed from the list of big ticket initiatives and that the following 7 big ticket initiatives be included in the 2040 New Visions Plan:

- Regional Greenway Program
- Riverfront Access and Urban Development Program
- Street Reconstruction and Reconfiguration
- Suburban Town Center Development
- Guideway Transit System with Transit-Oriented Development
- Integrated Corridor Management Program
- Demand Management Program

Land Use

Unfortunately without the proper planning, land uses often come into conflict with transportation, and transportation often conflicts with land uses. Just some examples of land uses conflicting with transportation include:

- Residential developments constructed too close to a highway, airport, or marine port
- Large commercial developments constructed adjacent to roads with insufficient traffic capacity
- Town and hamlet centers developing around 5-lane principal arterial highways
- Small adjacent businesses each with driveway access to the same 5-lane principal arterial highway
- Senior or low-income housing built with little or no transit access

Some examples of transportation conflicting with land uses include:

- Truck access routes near or through residential communities
- Freight facilities such as railroads and intermodal centers constructed too close to residential properties
- New access roads or new traffic lanes constructed too near residential properties
- Roads constructed without needed bicycle, pedestrian, and transit facilities
- Bicycle, pedestrian, and transit facilities built without the appropriate connections

Land use/transportation conflicts always impact quality of life for the people living near the conflict. Conflicts can result in excessive noise, excessive traffic, excessive lighting, excessive air emissions, unsafe conditions, increased traffic crashes, increased transportation costs, and more. These impacts can range from slight impacts which are sometimes ignored to significant impacts which can impact people's daily lives.

The best way to limit or eliminate these conflicts is transportation and land use planning. Planning can identify and forecast these conflicts before they occur. It can develop zoning and building guidelines to prevent conflicts. It can develop multi-modal transportation plans, and develop alternative strategies and mitigation measures. Planning, through public outreach efforts, can even help develop a community identity, consensus, and support which can unite a community behind specific solutions. CDTC encourages and provides funding for transportation and land use planning through our Community and Transportation Linkage Planning Program.

Community and Transportation Linkage Planning Program

CDTC's Community and Transportation Linkage Planning Program (referred to as the Linkage Program) is an integrated land use and transportation planning program created to implement the land use principles in our New Visions Plan. Linkage studies are joint regional-local planning initiatives that represent partnerships with local communities, transportation agencies, and local stakeholders.

The Linkage Program provides financial and technical assistance (from CDTC staff and consultants) to communities undertaking local planning initiatives that integrate land use and transportation. It also assists communities with integrating into local planning the New York State Complete Street and Smart Growth policies, which are consistent with *New Visions* principles.

CDTC has been recognized in four national case studies on incorporating livability into transportation planning and was awarded the 2010 Transportation Planning Excellence Award (TEPA) by FTA/FHWA/APA for our Linkage Program.

The Linkage Program has been used to support 83 land use/transportation community planning studies since its inception in 2000. Linkage studies completed or underway include the following:

Albany County

Albany Bicycle Master Plan
Albany Bike Share/Bike Signage Strategy
Albany Complete Streets Policy Design Manual
Albany County Commercial Transportation Access Study
Albany Education District Enhancement Study
Albany Lawn Avenue Gateway Design Study
Albany Mansion Neighborhood Parking Study
Albany North Swan Street Multimodal Accessibility Study (Albany)
Albany North Waterfront Redevelopment Strategy
Albany Waterfront Bikeway Connection Feasibility Study
Albany/Menands/Watervliet Broadway Commercial Corridor Development
Altamont Bicycle/Pedestrian Master Plan
Bethlehem Delaware Avenue Hamlet Enhancement Study
Bethlehem Delaware Avenue Complete Street Feasibility Study
Bethlehem Route 9W Corridor Study
Cohoes Route 470 Corridor Study
Cohoes Van Schaick Island Transportation and Revitalization Plan
Colonie Route 5 Corridor Design Guidelines
Colonie Route 7/Route 2 Corridor Transportation and Land Use Study
Colonie/Watervliet/Menands Route 32 Linkage Study
East Berne Hamlet Strategic Plan and Design Standards (Berne)
Guilderland Fort Hunter/Carman Road Neighborhood Transportation Plan
Guilderland Hamlet Neighborhood Plan
Guilderland McKownville Corridor Study
Guilderland Neighborhood Master Plan for the Guilderland Center Hamlet
Guilderland Westmere Corridor Study
Guilderland/Princetown Route 20 Land Use and Transportation Plan
Guilderland Westmere Corridor Study
Harriman Campus-University at Albany Transportation Linkage Study (Albany/Guilderland)
Menands Route 32 Transportation Access and Land Use Improvement Study
New Scotland Hamlet Area Master Plan
New Scotland Hamlet Zoning Refinements and Site Design Guidelines
Railroad Avenue Corridor Study (Albany County/Colonie/Guilderland)
Patroon Greenway Trail (Albany)
Pinebush Transportation Study Update (Albany/Guilderland/Colonie)
Watervliet Bicycle Master Plan

Rensselaer County

East Greenbush Route 4 Corridor Study
East Greenbush Route 9 & 20 Corridor Master Plan
East Greenbush Route 151 Corridor Study
East Greenbush Site Design Standards
Hoosick Falls Parking and Pedestrian Study
Rensselaer County Waterfront Trail
Rensselaer Route 20 Corridor Study
Troy Bicycle Facilities Guidelines
Troy Hoosick Street Phase II Corridor Study
Troy Lansingburgh 112th Street Corridor Study
Sand Lake Hamlets Master Plan

Schaghticoke Route 40 Corridor Study
Schodack Town Center Zoning Code Amendments and Site Design Guidelines
Schodack Town Center Plan

Saratoga County

Ballston/Malta Route 67 Corridor Study
Charlton Historic Main Street Improvement Plan
Clifton Park Town Center Plan
Clifton Park Town Center Strategic Zoning Code Revisions
Clifton Park/Halfmoon Exit 9 Land Use and Transportation Study
Hadley Hamlet Pedestrian Linkage Study and Main Street Improvement Plan
Halfmoon Center Master Plan
Malta Downtown Master Plan Implementation
Malta Highway Access Guide and Pedestrian Plan (DISTRICT Plan)
Malta Route 9 Reconfiguration Feasibility Study
Malta Route 9 North and South Corridor Plan
Mechanicville Central Avenue Corridor Linkage Study
Saratoga Springs Bicycle, Pedestrian and Public Transit Master Plan
Saratoga Springs Downtown Parking Study
Saratoga Springs Downtown Transportation Plan
Saratoga Springs Weibel Avenue-Gilbert Road: Lake Avenue Country Gateway
Stillwater Route 4 Corridor Plan
Stillwater Route 4 Zoning and Site Design Standards

Schenectady County

Glenville Freemans Bridge Road Master Plan
Glenville Town Center Master Plan
Rotterdam Burdeck Street Corridor Traffic Study
Rotterdam Five Corners Transportation and Land Use Linkage Study
Rotterdam NY 7 & NY 146 Land Use and Transportation Study
Rotterdam Route 7, I-88, Thruway Exit 25A Land Use & Transportation Study
Rotterdam Thruway Exit 26 & I-890 Land Use and Transportation Study
Schenectady Central State Street Neighborhood Land Use and Transportation Study
Schenectady Gateway Plaza Implementation Plan
Schenectady Nott Terrace Conceptual Plan
Schenectady Route 5 Transit Gateway Study
Schenectady State Street Transit Oriented Development Study
Schenectady Urban Bike Route Master Plan 2001
Schenectady Urban Bike Infrastructure Master Plan 2015
Scotia Waterfront Concept Implementation Plan

A summary of these linkage studies appears below:

Study Type	Albany County	Rensselaer County	Saratoga County	Schenectady County	Total
Corridor	6	7	5	3	21
Transportation/Land Use	8		2	6	16
Bike/Ped	8	3	2	2	15
Town/Hamlet/District Center	4	2	4	1	11
Zoning/Design Guidelines	3	2	2		7
Gateway	1		1	2	4
Parking	1		1		2
Waterfront Redevelopment	1			1	2
Commercial/Multimodal	2				2
Road Diet		1			1
Complete Streets	2				2
Total	36	15	17	15	83

As you can see from above, sixty-three (63) of our 83 linkage studies have been corridor, transportation/land use, bicycle/pedestrian, or town/hamlet/district center studies. More recently CDTC has been emphasizing implementation strategies. This effort has resulted in several studies which have developed zoning and design guidelines which have been adopted by the municipality. Also more recently there has been strong interest from our local communities to explore implementing road diets and developing Complete Streets plans.

Overall several linkage study recommendations have been totally or partially implemented by their municipal sponsor. In 2014 one of our linkage studies completed in the City of Schenectady received a \$400,000 implementation grant from the New York State Economic Development Council.

CDTC reviews the Linkage Study Program annually before each study solicitation to ensure that it complies with new requirements and new interests. We will also conduct regular evaluations and community interviews to determine the program relevancy and the study implementation.

Economic Development

Economic Development – Transportation is critical to our region’s economy.

New Visions articulates the transportation investment needed for sustainable regional economic growth. All indications are that the region's quality assets are becoming apparent to decision makers outside the region. Transportation choices, strong urban areas, affordable and diverse housing locations, good schools, colleges and universities, ease of mobility, modern air and rail transportation facilities, cultural and recreational opportunities and a clean environment are significant criteria in location decisions of advanced technology firms. These factors support Tech Valley and the region’s economic development and business climate. CDTC will partner with New York State to encourage regional efforts to build a strong, sustainable economy.

The link between economic development and transportation is strong. Transportation improvements can stimulate economic development by improving access and mobility, decreasing transportation costs, improving safety, etc. For example, the construction of transit stations and stops increases access and mobility to an area, and results in “transit oriented development.” Restaurants and coffee houses move into the area to provide for the transit users’ food needs. Service businesses move to provide dry cleaning, cell phone services, and even bicycle repair shops for bicycle commuters switching to transit and leaving their bikes at the station. Retailers move into the area to provide pharmaceutical needs, gift shopping, groceries, etc. And housing developers build in

the area for those who want to walk to transit. Other examples of transportation improvements stimulating economic development include new or improved roads which reduce travel time, improve safety, and improve access by including bike/pedestrian facilities; freight intermodal facilities which improve freight efficiency, and airport improvements which improve accessibility.

On the other hand, economic development also stimulates transportation improvements by increasing the number of workers, customers, and freight moving into or out of an area. This type of economic development usually increases the need for more and better roads and more transit services such as park and ride lots, shuttle services, and commuter buses. Economic growth can also create a need for more airport services such as new gates and larger terminals, and more marine port services such as improved rail service and better truck access.

CDTC has programmed and funded many transportation projects which have promoted local economic development. They include:

- Slingerlands By-Pass, Town of Bethlehem – new road which improved capacity and provided access to the new Vista Technology Park.
- South Troy Industrial Park Road, City of Troy – new road which provides access to reclaimed, developable industrial property on the waterfront.
- Albany Shaker Road/Watervliet Shaker Road Airport Improvements, Town of Colonie – new road alignments which improved access to regional airport and provided clear runway safety zones.
- Western Gateway Transportation Center, City of Schenectady – construction of new passenger rail station with improved access, parking, and amenities.
- Round Lake By-Pass, Town of Malta – new road which provided access to the Luther Forest Technology Campus and access to I-87.
- Fuller Road/Washington Avenue Intersection Project, City of Albany – new road alignment which improved the intersection and allowed SUNY Polytechnic Institute to access adjacent property and to expand their facilities.
- Relocation of Maxwell Road Part 2, Town of Colonie – provides a new Wolf Road service road and access to adjacent developable property.
- Bus Rapid Transit Implementation, City of Albany, Town and Village of Colonie, Town of Niskayuna, City of Schenectady – provides new service and improves access and mobility throughout the entire NY 5 corridor.
- I-87 Exit 4 Connector, Town of Colonie – replaces I-87 bridge and improves access to the Airport and adjacent developable property.
- Saratoga County Regional Traffic Study, Towns of Malta and Stillwater – develops a transportation plan to address economic growth in the Luther Forest Technology Campus area.

Recognizing and identifying transportation economic development impacts is only a first step. CDTC will continue to consider the economic impacts of transportation facilities when we evaluate future projects for programming and funding. At the same time we will also develop better ways of measuring these impacts, so that we can assign quantitative values to each transportation project.

CDTC will also continue to work with the Center for Economic Growth, local Chambers of Commerce, and the New York State Economic Development Council to articulate regional economic development needs and the transportation investment needed to support regional economic growth. There is strong support from the business community for urban reinvestment and concentrated growth patterns, and a strong transportation system that will support sustainable economic growth for the region.

Regional Equity

Regional Equity – Transportation investments will address all needs fairly and equally.

Funding for appropriate repair, replacement and reconstruction will be based on the function and condition of the facility -- not ownership. Investments should meet the needs of all users of the transportation system, in a manner that increases access to transportation or does not disproportionately impact people with disabilities, and minority and low-income populations.

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations". This Executive Order is closely related to Title VI of the Civil Rights Act of 1964. As a federally funded agency, CDTC is required to be in compliance with both of these federal requirements.

Executive Order 12898 was created to bring federal attention to the environmental and human health conditions in low-income and minority communities with the goal of achieving Environmental Justice (EJ). The goal of Environmental Justice is to ensure that any adverse human health or environmental effects of any government activities do not disproportionately affect minority or low-income populations. EJ does not intend to provide preferential treatment to these populations, but rather fair treatment to all populations. Specific to transportation, Executive Order 12898 has been issued in order to ensure that all federally funded transportation-related programs, policies, and activities that have the potential to cause adverse effects, specifically consider the effects on minority and low-income populations. EJ is a public policy objective that has the potential to improve the quality of life for those whose interests have traditionally been overlooked.

CDTC's Title VI-Environmental Justice (EJ) initiative is intended to ensure that EJ principles are inherently integrated into the planning process at both the system and project level. The Environmental Justice Analysis Report documents the equitable distribution of transportation projects throughout the region and provides an evaluation of CDTC's plans, programs and processes in relation to EJ issues. A copy of CDTC's recently updated 2014 Environmental Justice Analysis Report can be found on our website.

Policies related to public involvement are addressed in detail in CDTC's Public Involvement Policy. As part of our New Visions public outreach effort, we have scheduled public workshops in the Cities of Albany, Schenectady, and Troy to specifically target underserved populations. Additional transportation concerns with Title VI / Environmental Justice aspects (noise, etc.) have been fairly examined in the "big ticket, big ticket initiative" work. CDTC's approach to Title VI/EJ policy, analysis, and documentation will continue to be updated and enhanced as programs change and as more recent and improved data becomes available.

CDTC will continue to consider the Environmental Justice impacts of transportation projects when we evaluate future projects for programming and funding.

Chapter 4: Environment and Technology

New Visions and the Environment

Environment – Transportation choices should improve our environment, not harm it.

Environmental stewardship is crucial to the success of and quality of life in this region. Transportation investments must improve or preserve the region’s cultural and natural environment. Transportation investments will not encourage development in environmentally sensitive areas and will help to preserve rural character. Transportation investments will support alternative fuel vehicles and greenhouse gas reduction. Environmental best practices will be incorporated into all projects.

The New Visions Plan addresses environmental impacts and sustainability in a number of important ways and provides a framework for improving regional environmental quality. New Visions supports energy conservation, reduction in greenhouse gas emissions and air quality in the region by advocating sustainable development patterns and site design, urban reinvestment, and community-based land use planning, along with transit, bicycle, & pedestrian investments & strong participation in the Clean Cities program. The New Visions Plan has a strong emphasis on smart growth and fostering a safe, multi-modal and well managed system that works well for all users. The plan contributes to urban revitalization, attractive suburban and rural centers, and preservation of open space, while working to reduce vehicle miles of travel and related greenhouse gas emissions; and encouraging use of alternative fuels and advanced technology vehicles. Related beneficial environmental impacts include avoidance of disruption of natural and cultural resources and protection of environmental justice populations. Protecting the environment and creating a more sustainable transportation system is an important New Visions strategy, particularly in light of global climate change.

Strategies and Programs

Capital District Clean Communities- The U.S. Department of Energy's (DOE) [Clean Cities](#) program is a voluntary, locally based government/industry partnership. **Capital District Clean Communities (CDCC)** was formed primarily to take advantage of the environmental, public health, energy, and economic benefits that the Clean Cities program offers. CDCC’s goal is to advance the energy, economic, & environmental security of the U.S. by supporting local actions to reduce petroleum use in transportation. Alternate fuels and advanced technology vehicles can benefit the Capital Region by creating commercial opportunities and by improving the environment.



The CDTC assumed the coordinator role for the CDCC in 2001. CDTC is the only MPO within NYS that supports the coordinator position. CDTC agreed to be the “home” of the Capital District Clean Communities program because the goals of the program fit well with the planning and investment principles that CDTC adopted as part of New Visions. The Capital Region provides substantial opportunities for the expansion of the alternative fuel marketplace, particularly with the large state vehicle fleet that operates in the area. Stakeholders in CDCC recognize the need to provide greater fuel choices in the Capital Region and to reduce its dependence on imported oil.

The CDCC advances the goals of the Clean Cities program through coalition building and networking. Currently, ethanol, bio-diesel, CNG, propane, hydrogen, hybrid and all-electric technologies are all part of the alternative fuel and advanced vehicle technology mix in the Capital Region and are the alternate fuels of choice in the Capital Region. In the last two years, the number of electric vehicle charging stations has grown from just 2 to almost 100, including a Tesla fast-charging station. The CDCC continues to work with large fleets and even transit operators to provide information on transitioning to alternative fuels. In 2013 the CDCC helped displace more than 1.6 million gallons of petroleum and reduce greenhouse gas emissions by 14,000 tons through not only alternative fuels and advanced vehicle technologies but also through idle reduction policies and programs, fuel economy improvements and VMT reduction programs like ridesharing.



Travel Demand Management- Travel demand management (TDM) refers to efforts to reduce auto travel and congestion by improving transit access, bicycle and pedestrian access, providing opportunities for carsharing, bikesharing, carpooling, vanpooling, and telecommuting, and other strategies. TDM reduces congestion, reduces the costs of driving, and it is an important way to reduce greenhouse gas emissions. CDTC strongly supports TDM by investing in transit, bicycle and pedestrian facilities, carpooling and land use planning. CDTC projects and investments that support TDM include:

- Federal funding for **transit** service in the Capital District is a major part of the CDTC TIP. New Visions incorporates CDTA's Transit Development Plan, which will improve and grow a variety of transit services for the Capital District, increasing mobility and supporting economic development and smart regional growth. One example is CDTC's investment in the BusPlus system on the Route 5 corridor.
- New Visions encourages development that incorporates **bicycle and pedestrian** accommodations into highway construction as well as city, village, and town plans and provides for recreational opportunities through creation of bike/hike trails.
- CDTC manages the iPool2, a web-based ridesharing program, in partnership with 511NY.
- CDTC maintains the **Capital Coexist** website, a localized education campaign geared towards encouraging people to bike and educating cyclists and motorists on safely coexisting when using the region's roadways.
- **Capital CarShare-** CDTC sponsors this car-sharing program in Albany, with six cars available. Future expansion could include Troy, Schenectady and Saratoga Springs. Providing the opportunity to rent a car on an as-needed basis makes not owning a car, or only owning one car in a household, more feasible.
- CDTC sponsored four demonstration/trial weeks of **Bike Share** during the summer (2014) in Albany, Schenectady, Troy and Saratoga Springs.
- Investments in **Park and Ride** lots have been supported by CDTC and CDTA and NYSDOT.
- **Guaranteed Ride Home-** this program provides a taxi trip home for a bus rider or carpooler when they need to.

Smart Growth and Land Use Planning- New Visions supports sustainable development patterns and site design, urban reinvestment, and community-based land use planning. The Capital District Regional Planning Commission (CDRPC) conducted an in depth analysis of the demographic distributions and land use patterns for four scenarios to test the impacts of growth:

- Status Quo Trend: CDRPC's baseline forecast (9% growth in population, 15% growth in households by 2030, current development patterns continuing); this is the official Plan forecast;
- Concentrated Growth: the baseline growth rate with more concentrated development patterns resulting from urban reinvestment and suburban planning;
- Trend Hyper-Growth: hyper-growth (29% population growth and 35% household growth by 2030), with status quo trend patterns of dispersed development;
- Concentrated Hyper-Growth: hyper-growth occurring in a concentrated pattern resulting from more urban reinvestment and suburban planning.

Under any growth scenario, it was found that the benefits of concentrated development patterns are significant for the transportation system and for regional quality of life. The New Visions Plan supports and encourages concentrated development in the Capital District. The urgency for coordinated, high quality planning is even greater under a scenario of high growth. This urgency will be necessary because the impacts of a high growth scenario with dispersed development patterns would threaten to make the region's quality of life unsustainable.

In support of urban reinvestment and regional equity, CDTC has programmed significant funding for transportation projects in the cities. One important way that CDTC has supported land use planning is by sponsoring the Transportation and Land Use Linkage Program. The Linkage Program which provides funding for cities, towns, and villages to prepare and implement community-based transportation and land use plans consistent with New Visions principles.

Protecting Environmental Systems- Environmental systems are strongly considered in planning and programming processes at CDTC. Important environmental features reviewed for CDTC TIP Projects and Linkage Studies include:

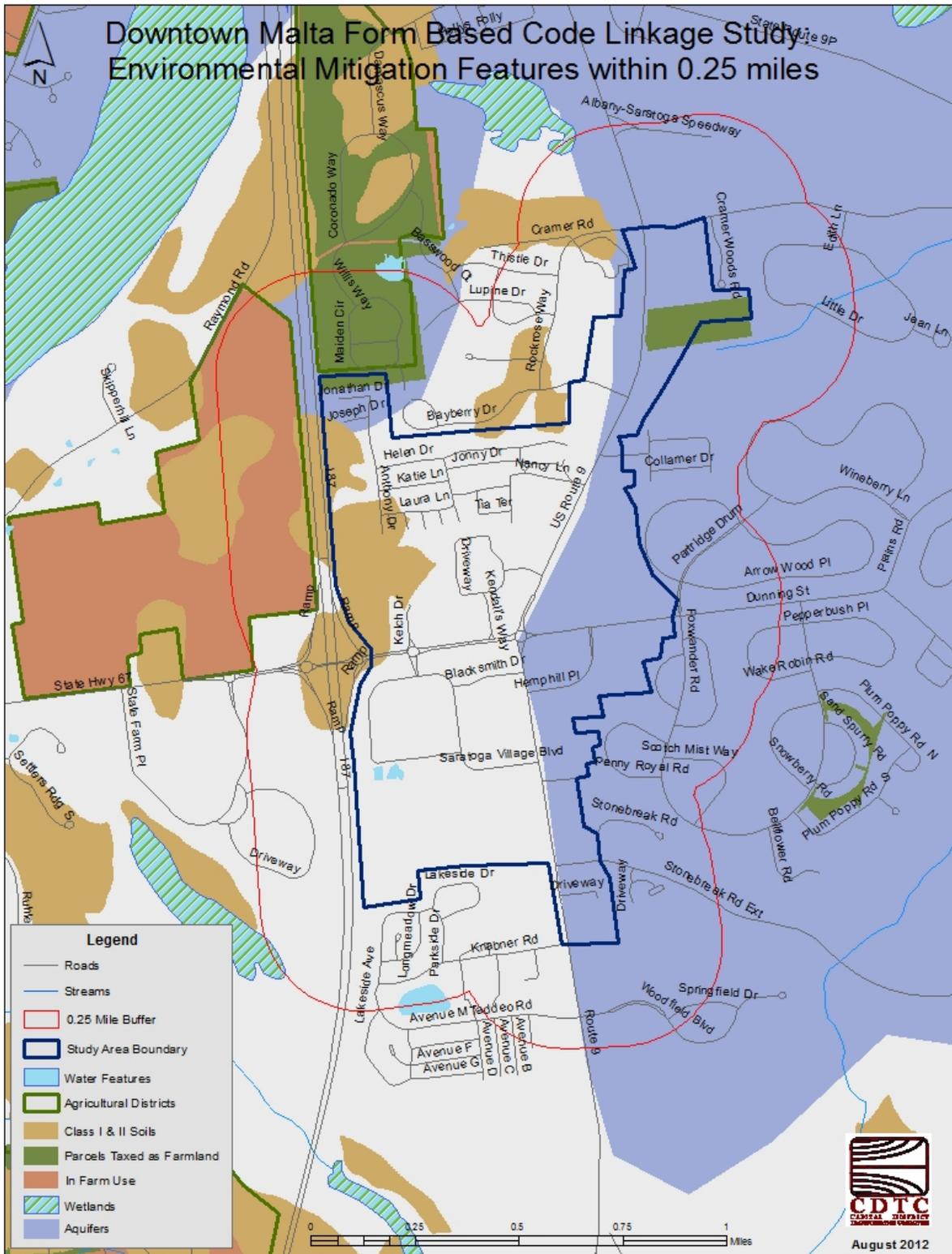
- Sole Source Aquifers
- Aquifers
- Reservoirs
- Water Features - Streams, Lakes, Rivers
- Wetlands
- Watersheds
- 100 Year Flood Plains
- Rare Animal Populations
- Rare Plant Populations
- Significant Ecological Sites
- Significant Ecological Communities
- State Historic Sites
- National Historic Sites
- National Historic Register Districts
- Federal Parks and Lands
- State Parks and Forests
- State Unique Areas
- State Wildlife Management Areas
- County Forests and Preserves
- Municipal Parks and Lands
- Land Trust Sites
- DEC Lands
- Adirondack Park
- Agricultural Districts
- Agriculture Parcels Taxed as Farmland
- Agriculture Parcels In Farm Use
- Soils

CDTC policies that encourage smart growth and investment and development in urban areas serve to protect natural resources. Smart growth policies will also help to protect rural character and open space, and protect quality of life in the Capital region.

In addition, to meet federal metropolitan planning requirements, CDTC has undertaken review of natural and cultural resource mapping, and consults with federal, state and local agencies on environmental issues as an important part of addressing the environmental mitigation discussion and consultation requirement. For the New Visions 2030 Plan CDTC initiated consultation on the draft plan with a wide array of agencies and groups responsible for land use management, natural resources, environmental protection, conservation and historic preservation within the region. Similarly consultation with various agencies was sought on the draft New Visions 2040 Plan and was completed prior to finalizing the plan.

A result of establishing this resource mapping approach, CDTC makes note of potential impacts to environmental systems for TIP project candidates and Linkage Study areas. Map 1 illustrates an analysis of environmental systems for a study area done for a Linkage study in Malta. This represents an illustration of CDTC's ability to use GIS mapping of environmental systems to analyze potential project impacts.

Map 1



Climate Smart Communities- New York State’s Climate Smart Communities program is an interagency effort of NYSERDA, the New York State Department of Environmental Conservation (NYDEC), the New York State Department of State (DOS), New York State Department of Transportation (NYDOT), New York State Department of Health, and the New York State Public Service Commission (PSC). Fifteen local governments in the CDTC planning area are participating:

- City of Albany
- County of Albany
- City of Cohoes
- City of Watervliet
- Town of Bethlehem
- Village of Green Island
- City of Rensselaer
- City of Troy
- Town of East Greenbush
- City of Saratoga Springs
- Town of Clifton Park
- City of Saratoga Springs
- City of Schenectady
- County of Schenectady
- Town of Niskayuna

The Capital District Regional Planning Commission (CDRPC), “as a recipient of a three-year grant (May 2012 through May 2015) from the New York State Energy Research and Development Authority (NYSERDA) to manage the Climate Smart Communities Pilot Program in the Capital District, provides technical support and guidance to the communities within the six-county region that have taken the Climate Smart Communities pledge. CDRPC and its consultant team... serve as strategic planning agents to empower local governments, connecting them with financial and technical programs, and with each other, offering training assistance and consistent tracking and reporting of successes and barriers to addressing the ten CSC pledge elements.” (CDRPC)

Transportation is a significant contributor to greenhouse gas emissions. In the CDTC planning area, 41% of greenhouse gas emissions are from the transportation sector. The New Visions Plan supports reductions in greenhouse gas emissions. CDRPC conducted the *Capital District 2010 Regional GHG Inventory* for eight counties in the larger Capital Region. The inventory was prepared for The New York Energy Development and Research Authority (NYSERDA). The project created a greenhouse gas (GHG) emissions inventory baseline, which is an important component of long term sustainability planning. Greenhouse gas emissions per household to meet transportation needs are shown in Map 2. The map indicates that transportation greenhouse gas emissions per household are lowest in the urbanized areas. This is because the commuting trip in urban areas is shorter, requiring less driving; and because households located in the urban areas are more likely to have the option to walk, bike, or take transit to work. Map 3 shows greenhouse gas emissions per household, including domestic energy use. Map 3 shows the carbon footprint to be lowest in the urban area, with a more pronounced reduction per households in the cities. These maps indicate that New Visions policies encouraging smart growth, mixed use development and urban reinvestment will make an important contribution to reduction of greenhouse gas emissions.

Electric vehicles represent an opportunity to reduce greenhouse gas emissions and to save energy. Ninety-six percent of commuters in the CDTC planning area have a round-trip commute less than 60 miles, which is within the range of an electric vehicle that is charged overnight at home. The CDRPC study reported that because New York’s power grid is one of the cleanest in the nation, switching passenger cars from gasoline to electric will reduce emissions by 75% per mile. The New Visions plan supports investments in electric vehicle charging infrastructure. CDTC also supports investments that encourage alternative fuels such as biofuels and natural gas.

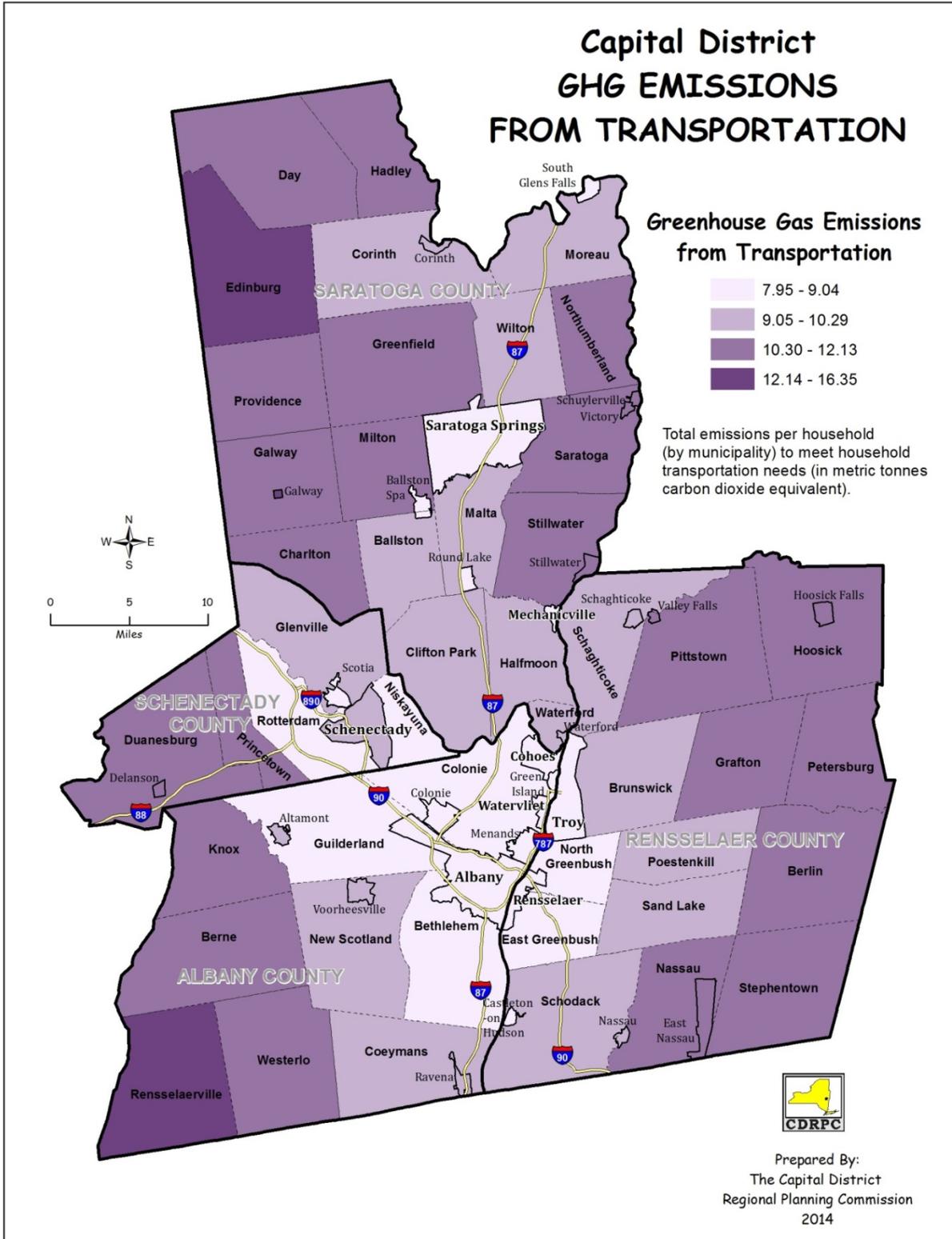
Capital Region Sustainability Plan- This Plan was developed as part of the Cleaner Greener Communities Program. CDTC staff participated on the Transportation Committee and the Land Use and Livable Communities committees. CDTC supports the goals of the Capital Region Sustainability Plan. The Land Use and Livability goals are:

- Preserve, protect and enhance the Capital Region’s natural and cultural resources, sensitive ecosystems and agricultural lands, and effectively provide and manage accessible public space to increase recreational and civic opportunities for all.
- Encourage investment and redevelopment in existing cities, town centers, villages and hamlets, and encourage compact, connected, walkable communities wherever major development occurs in the Capital Region.
- Promote diverse, energy efficient and healthy housing options for all residents of the Capital Region.

The Sustainability Plan Transportation Goals are:

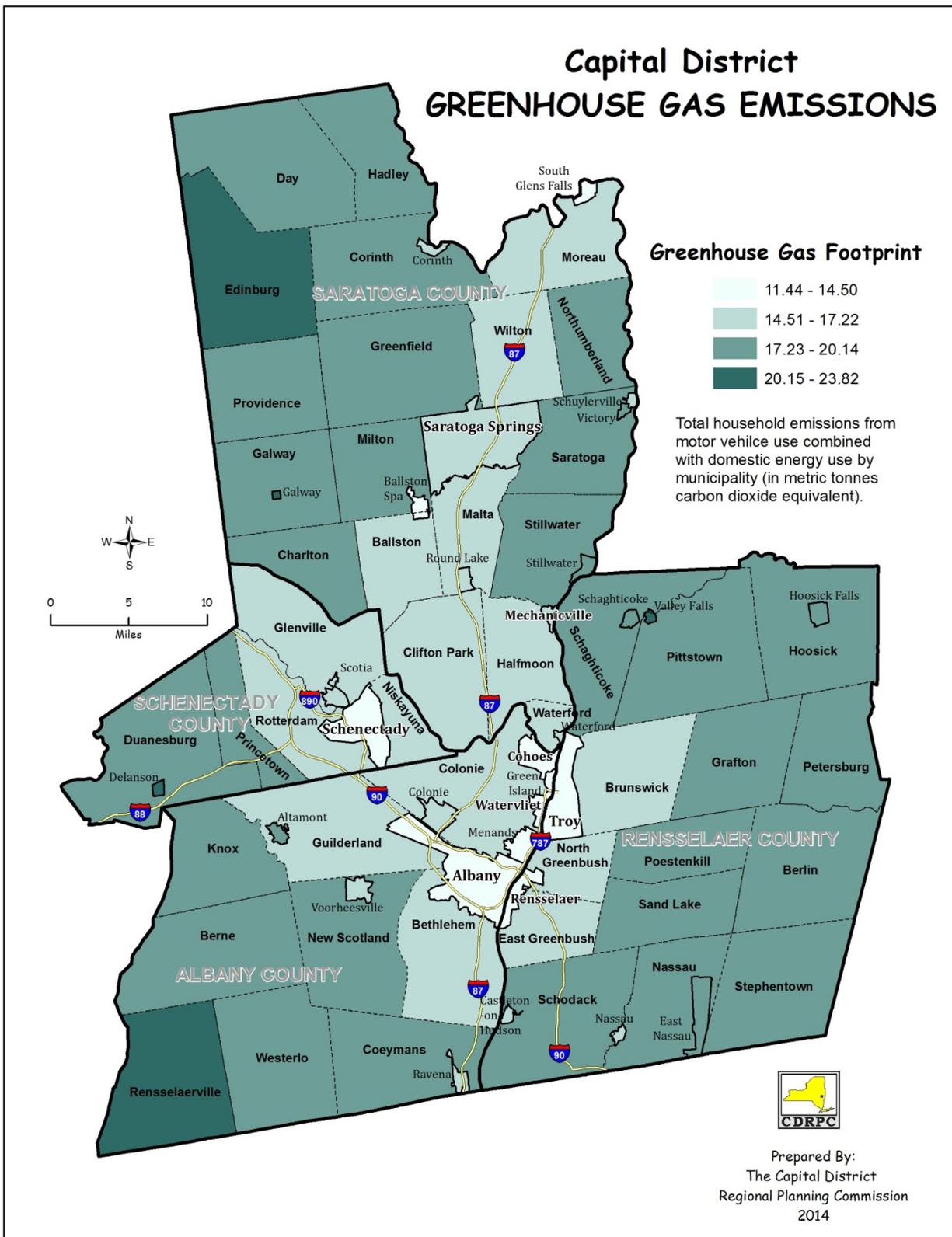
- Provide viable options as alternatives to personal vehicles and single occupancy vehicle commuting.
- Create walkable and bikeable communities interconnected by regional transit and trail networks.
- Encourage the use of alternative fuels and transportation technologies.
- Encourage expanded use of efficient and sustainable freight movement, respecting quality of life of communities.

Map 2



Map 3

Capital District GREENHOUSE GAS EMISSIONS



LED Street Lighting- LED lighting is an energy efficient technology that should be considered for street and highway lighting. Improved lighting with LED technology can improve visibility, increase pedestrian safety and security, significantly reduce energy costs and decrease greenhouse gas emissions. Incentive funding from National Grid and potentially other organizations is currently available to help offset the costs of implementing energy efficiency improvements. The Albany International Airport has converted parking and street lighting to LED lighting with incentive funding assistance, and 18 out of 30 buildings have been retrofitted to LED and CFL lighting. This has generally led to an eighty percent reduction in lighting energy usage for those facilities with an estimated two year payback for the capital investment. Municipalities and operating agencies in the CDTC area are encouraged to invest in LED lighting. NYSERDA has compiled a report that may be useful to communities which provides an analysis of the potential savings and barriers associated with upgrading existing municipal street lighting throughout New York State to solid-state light-emitting diode (LED) technology. See: <http://www.nysesda.ny.gov/-/media/Files/Publications/Research/Energy-Efficiency-Services/Street-Lighting-in-NYS.pdf>.

Performance Measures

Two important performance measures were identified by the Environment and Technology Task Force: greenhouse gas emissions and energy consumption. Both of these measures are used in the New Visions 2035 Plan. Significant recent changes in requirements for future fuel economy will need to be factored in for the forecasts of future energy consumption and greenhouse gas emissions. Issued in 2010, federal Corporate Average Fuel Economy (CAFÉ) and Greenhouse Gas emissions regulations will require passenger cars to achieve an average fleet fuel economy of over 54.5 mpg (miles per gallon) in model year 2025; light trucks will be required to achieve an average of over 39 mpg. Since the existing fleet of light duty vehicles has an average fuel economy of 17 to 23 mpg, this will represent a significant reduction in greenhouse gas emissions by 2025, and an even larger reduction by 2040 when almost all future vehicles will have met the 2025 CAFÉ targets. Requirements for first-ever standards for medium- and heavy-duty vehicles are also under development. For the 2040 horizon year of the Plan, the CAFÉ standards could result in a reduction in fuel consumption and greenhouse gas emissions in the Capital region in the range of 50% to 60%.

Other performance measures in the New Visions Plan have implications to the impacts of the environment and technology are addressed in more detail by other committees. For example, technology investments can have significant impacts to travel speeds and travel reliability and safety. These performance measures are discussed in the Regional Operations and Safety Advisory Committee White Paper. The Complete Streets Advisory Committee discussed the impacts of green infrastructure investments, documented in their white paper. CDTC will organize all of the performance measures for New Visions 2040.

CDTC Forecasts a Moderation of VMT Growth with the New Visions Plan. The CDTC New Visions Plan was developed with the expectation that increases in daily vehicle travel would be dampened from the trend forecast. The reduction of future VMT growth will result in direct reductions in future greenhouse gas emissions. The New Visions Plan can be expected to reduce VMT growth through a combination of actions, including the substitution of internet based communication for travel, increased carpooling, increased non-auto travel (transit, walking and cycling), shorter trip lengths (due to proximity of activities), spreading of peak hour trips to off-peak hour, increased telecommuting and slowing of the projected growth in the number of cars. The New Visions Plan is much broader than highway capital projects. It includes travel demand management strategies, operational strategies, land use policies (such as urban reinvestment and encouragement of mixed use development) and investments in transit, walking, and bicycle facilities.

CDTC's New Visions policy forecast results from planned transportation investment, demand management and the shifts of vehicular traffic to other modes and other times of day produced by improved regional land use patterns, community structure, site design and the better accommodation of bicyclist, pedestrian and transit modes. There is increasing evidence that younger people prefer to be independent of driving as a lifestyle choice. The policy forecast remains CDTC's target traffic condition used in project design and reflects plausible success in implementing the plan through the horizon year of 2040. CDTC forecasts for the New Visions Plan assume that PM peak hour trip growth rate will dampen so that it corresponds to the growth rate in households.

If CDTC were to assume that the New Visions Plan will not succeed in moderating the growth of auto VMT, this would become a self-fulfilling prophecy. This is because design of highway projects is based on PM peak hour traffic forecasts for twenty years, and for bridge projects, for thirty years. Assuming linear trend forecasts of travel ignores the socioeconomic trends, trends in gas prices, and land use planning, and ironically leads to larger foot

prints for highway projects, and diversion of resources into highway capacity and urban disinvestment. Linear trend forecasts for VMT would undercut the New Visions Plan and the CDTC Congestion Management System, and would encourage and contribute to increased fuel consumption and air quality emissions.

CDTC assumes that the desired outcome will be achieved by the set of land use and transportation actions in the plan. CDTC thus embraces its tempered, policy-based traffic forecasts for all planning and design work – not the forecasts based on previous trends. As a result, TIP projects are implemented in the Capital District at scopes and with design details that reflect the desired outcome.

Rationale for VMT Moderation with the New Visions Plan. The New Visions Plan calls for investments in transit, pedestrian and bicycle facilities, planning for smart growth, demand management, and other investments that will encourage a reduction in VMT growth per capita. The New Visions Plan is expected to reduce VMT growth by 5% below projected trend levels by 2030. Working with the best secondary sources available, an attempt to quantify future VMT reductions was made. These estimates are not scientifically provable, yet they are as likely to be conservative as they are to be optimistic. The effects of the New Visions Plan will be cumulative over time, and the different components of the plan will reinforce each other. The various New Visions initiatives work together to create viable places to live, work, shop and play that provide shorter trip options and non-auto options for travel.

Reductions in VMT will result in a corresponding reduction in fuel consumption and greenhouse gas emissions. VMT reductions are expected to result from New Visions Plan investments as follows:

**Table 1
Forecasts of Future Reduction in VMT per Household**

Investment Strategy	Reduction in VMT per future household
Smart growth, mixed use development and transit oriented development	1.5%
Investments in transit	1.5%
Investments in bicycle and pedestrian facilities	1.5%
Investments in demand management	0.5%
Total Reduction	5.0%

CDTC will update its forecasts of fuel consumption and greenhouse gas emissions using the recently released version of the Environmental Protection Agency (EPA) methodology, called the MOVES Model. The forecast will take into consideration the long term improvements in fuel economy that are expected to result from new CAFÉ standards, as well as CDTC forecasts of travel in the Capital District.

Because of the importance of reducing greenhouse gas emissions in the short term, it is important to understand existing patterns of greenhouse gas emissions. CDRPC’s report *Capital District 2010 Regional GHG Inventory* estimates greenhouse gas emissions and energy consumption related to on-road transportation for the four counties of CDTC’s planning area as shown in Table 2.

**Table 2
Greenhouse Gas Emissions and Fuel Consumption
For On-Road Transportation**

	Greenhouse Gas Emissions (MTCDE)	Energy Consumption (MMBT)
Albany	1,496,750	22,450,196
Rensselaer	619,296	9,272,632
Saratoga	1,177,072	17,628,401
Schenectady	459,058	6,879,141
Total	3,752,176	56,230,370

MTCDE= Metric Tons of Carbon Dioxide Equivalent
MMBT= energy unit equal to 1 million British thermal units

The following table from the *Capital District 2010 Regional GHG Inventory* illustrates that a 5% reduction in VMT (in the eight county area) would lead to a 5% reduction in transport related greenhouse gas emissions, a 1.6% reduction in total greenhouse gas emissions (across all sectors) and an annual fuel cost savings of \$97,348,191. A 10% shift of VMT from light duty gasoline cars and trucks to electricity would result in a 6.9% reduction in transport related greenhouse gas emissions, a 2.2% reduction in total greenhouse gas emissions (across all sectors) and an annual fuel cost savings of \$87,470,126. A 5% shift from gasoline to ethanol would result in a 2.6% reduction in transport related greenhouse gas emissions, a 0.3% reduction in total greenhouse gas emissions (across all sectors).

**Table 3
Reducing Transportation Emissions in the Capital District**

Shift light duty gasoline cars and trucks to electricity¹

% Shift of VMT	GHG Savings			Fuel Cost Savings ²
	Emissions (MTCDE)	% transport	% of total baseline	
10	340,176	6.9%	2.2%	\$87,470,126
20	680,351	13.7%	4.4%	\$174,940,253
50	1,700,878	34.3%	10.9%	\$437,350,632
100	3,401,756	68.6%	21.8%	\$874,701,263

Reduce overall travel demand (VMT)

% Reduction of VMT	GHG Savings			Fuel Cost Savings
	Emissions (MTCDE)	% transport	% of total baseline	
2	99,217	2.0%	0.6%	\$38,939,276
5	248,042	5.0%	1.6%	\$97,348,191
10	496,085	10.0%	3.2%	\$194,696,381
20	992,170	20.0%	6.3%	\$389,392,762

Shift from gasoline to E-85 (cellulosic or advanced cornstarch)

% Shift	GHG Savings			Fuel Cost Savings
	Emissions (MTCDE)	% transport	% of total baseline	
2	51,281	1.0%	0.3%	--
5	128,202	2.6%	0.8%	--
10	256,404	5.2%	1.6%	--
20	512,809	10.3%	3.3%	--

¹ Electric vehicle efficiency set to 0.34 Kwh / mile (UCS, 2012), total cost of electricity \$0.17/KWh
² Presumed \$4.00/gallon for gasoline
³ Assumes sustainable ethanol has 60% lifecycle emissions reduction per gallon over gasoline

New Visions and Technology

Technology – We must plan for new, smarter, better, and rapidly-changing transportation technology.

Advancements in technology, such as self-driving cars, self-adjusting traffic signals, smart phone apps, ridesharing, carsharing, and bikesharing will have tremendous and wide-reaching impacts on future transportation. These impacts include, but are not limited to, decreasing congestion, providing transportation to more seniors and people with disabilities, reducing traffic crashes, and more.

The New Visions Plan supports the use of technology in a number of important ways. Rapidly changing technology will have impacts to transportation both in the short term and the long term and must be considered in developing transportation plans and projects.

Automated Vehicles- Totally automated vehicles (self-driving cars) until recently were considered by many a concept for the distant future. Demonstrations by Google of a totally automated vehicle have made the full development of this technology plausible, although the timeline is uncertain. However, incremental improvements in vehicle automation are expected on the short term horizon. Because the impacts of automated vehicles have the potential to be dramatic, it would not be responsible to ignore them in a plan with a horizon year of 2040.

The U.S. Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) has taken steps to enable vehicle-to-vehicle (V2V) communication technology for light vehicles. According to the National Highway Traffic Safety Administration, "The U.S. Department of Transportation is currently collaborating with some of the world's largest automobile manufacturers to research how wireless technology can enable vehicles to communicate with each other and with the infrastructure around them. Connected vehicle technology—vehicle-to-vehicle and vehicle-to-infrastructure communications—could one day alert motorists of dangerous roadway conditions, impending collisions, or dangerous curves. Connected vehicles could also "talk" to traffic signals, work zones, toll booths, school zones, and other types of infrastructure." Automatic braking is already becoming an option on cars.

The safety benefits of these crash avoidance systems are expected to be dramatic. Annual fatalities from automobile crashes exceed 30,000 in the United States. Significantly reducing fatalities and severe injuries is arguably the most important benefit of these technologies. An additional benefit can be realized: electronically crash-proofing can mean that in the future, it may be possible to make vehicles lighter, which will make them less expensive and more energy efficient.

There is debate about when totally automated vehicles could be fully integrated into the vehicle fleet. There is also debate about some of the potential impacts of full implementation of this innovation. However, the following statements about potential impacts can be made:

- **Potential for near zero crash fatalities, near zero crash injuries-** The safety impacts of totally automated vehicles potentially could be more significant than near-term crash avoidance technologies already emerging in the market place. By removing driver error, virtually all vehicle crashes could potentially be prevented, including vehicle/pedestrian crashes and vehicle/bicycle crashes.
- **Significant increase in highway capacity-** On Interstate highways and expressways, narrower lanes, higher speeds, and closer spacing between cars may become feasible and safe. This would mean higher capacities on highways. Crash related incidents could be essentially eliminated, and congestion could be dramatically reduced without widening facilities. While it is possible that increases in speed could induce more traffic and more longer distance driving, offsetting the benefits of increased capacity, these potential effects are unknown. Reduction in congestion would seem to be the most likely outcome in the Capital District. Capacities on arterials would also increase, without increasing speeds, due to more efficient traffic flow at intersections.
- **Potential for light vehicles-** electronically crash-proofing vehicles could mean that, in the future, it may be possible to make vehicles lighter—which will make them less expensive and more energy efficient.
- **Seniors could drive longer, people with disabilities could drive-** Totally automated vehicles would mean that the driver is not needed to be in control of the vehicle, but would simply tell the vehicle where to go. Younger people could potentially "drive" as well, with parental supervision.

- **Potential Impacts on Transit-** The impacts of automated vehicles on transit are unknown. It is possible that in some markets, totally automated vehicles could make transit less competitive, but it is also possible that in some markets, transit could become more competitive and attractive. For example, automated shuttles could bring people to main line transit stops. In addition, totally automated transit vehicles could increase transit viability.
- **Potential Impacts on Smart Growth-** It is difficult to predict the impact of totally automated vehicles on development patterns. It is possible that commuting a longer distance will become more stress-free and more attractive, encouraging development further away from urban centers. However, auto use will still have a cost that will increase with distance. Totally automated vehicles could also make urban centers more attractive and more accessible. The increasing market appeal of urban living may counterbalance the attractiveness of driving longer distances hands free.
- **Totally Automated Trucks-** Freight movement can also be impacted in many ways that are difficult to foresee with certainty. In the relative near term, trucks may be able to operate on Interstate highways without a driver, so that a driver would only be needed once the truck leaves the Interstate. This could allow a driver to rest while the truck is in operation, increasing the number of hours a driver can spend safely operating the vehicle, and therefore leading to significant reductions in cost.
- **Potential Disbenefits of Totally Automated Vehicles-** One of the issues that will need to be addressed as automated vehicle technology develops is the importance of protecting the privacy of travelers. Another important issue will be equitable access to technology for lower income groups. A third concern is the transition period when totally automated vehicles will be mixed with vehicles operated by human drivers.

Assessing the potential future impacts of totally automated vehicles with certainty is not possible. The concept of scenario planning is useful for dealing with uncertainty in forecasts of the future. CDTC has already relied on scenario planning to assess different levels of growth in the Capital District and different levels of concentrated development versus dispersed development. Because transportation investments have long lasting impacts, the New Visions Plan must look to the future, and the plan is currently considering a horizon year of 2040.

Given the uncertainty surrounding automated vehicles, the following policies in the Plan should be considered:

- **Potential for totally automated vehicles to impact highway and bridge design.** In designing for new capacity projects, intersection projects, and other infrastructure projects, 20 year traffic forecasts are considered, and for bridge projects, 30 year traffic forecasts are considered. The New Visions Plan has strong policies against the addition of physical highway capacity except under certain conditions. The design process currently seeks to provide level of service “D” or better in the design year (either 20 years from now or 30 years from now). The New Visions Plan asserts that future potential congestion is a lower priority than existing congestion, which in many locations is worse than level of service “D”. The potential for future increased capacity resulting from totally automated vehicles should be strongly considered in highway and bridge design. Designing a larger footprint to anticipate 2040 traffic conditions may be totally unnecessary if automated vehicles are fully established in the fleet by then. Designing a larger footprint that is unnecessary is not only prohibitively expensive but can work against the New Visions policies to encourage complete streets and demand management. The New York State Department of Transportation should consider if changes to the current design approach are needed to reflect potential changes in future demand as well as potential changes in the congestion threshold that triggers a need for increased capacity. Further, as automated vehicles and other technology changes emerge, the New York State Department of Transportation should work with its partners within AASHTO and the Federal Highway Administration to consider implications to design standards such as lane and shoulder widths.
- **Smart Growth-** The CDTC New Visions Plan supports sustainable development patterns and site design, urban reinvestment, and community-based land use planning. While the impacts of totally automated vehicles on smart growth are uncertain, the region should continue to develop as an attractive region with vibrant urban and suburban communities that are walkable; and rural character and open space should continue to be protected. As the impacts of automated vehicles unfold, the regional vision can prevail and technology should be used to enhance communities.
- **Anticipate Technology with Flexibility and Smart Near-Term Investments-** While future technologies may lead to dramatic improvements, that potential will not lessen the need for making the best use of transportation investments in the near-term. In the near term, transportation investments will be needed

to improve safety and mobility for all residents. The New Visions Plan must proceed with short term and medium term investments, while maintaining flexibility to implement technology as it arrives.

Traffic Signal Technology- One area where technological advancements continue to improve opportunities for improving mobility is traffic signal technology. CDTC supports improvements to traffic signals that improve travel efficiency and traffic flow while reducing delay. Examples of traffic signal technology are listed below.

- **Signal coordination** provides the opportunity for cars to move along an arterial with only infrequent stops at traffic signals, and significantly reduces delay.
- **Transit Signal Priority (TSP)** is an innovation which allows buses to activate signals for extended green time as they approach a signal if they are behind schedule. The extended green time is usually ten seconds, which allows transit vehicles to provide higher quality service. It should be noted that autos in the same traffic stream with the bus will benefit as well. Because the green phase is typically extended only two or three times per hour, the impact on side streets is minimal. CDTC supports TSP as an important tool for improving transit service. TSP has been implemented in the Route 5 BusPlus corridor and is being developed for other corridors. Queue jumper signal phases also have the potential to improve transit on time performance by allowing buses to advance on green ahead of other vehicles, without disrupting traffic flow.
- **Pedestrian Signals-** Innovations in pedestrian signals include pedestrian activation of advanced walk phases, where pedestrians can begin crossing before vehicles enter the intersection; exclusive pedestrian phasing, where all vehicles, including right-turn-on red movements, are stopped while the pedestrian crosses. Countdown timers for pedestrians make crossing easier. In addition, a new type of signal for midblock pedestrian crossing has been introduced, called a HAWK beacon. This signal requires autos to stop only when a pedestrian needs to cross. Innovative technology holds promise for improving midblock pedestrian crossings, school crossings, and speed control.

Implementation of signal technology improvements has the potential to improve traffic mobility and safety at low cost. Signal technology also can enhance pedestrian, bicycle and transit access and provide an important component of complete streets. The CDTC Regional Operations and Safety Advisory Committee is developing recommendations for implementing and operating signal technology.

ITS technologies for transportation operations- Traffic signals are considered to be one type of Intelligent Transportation System (ITS) technology. ITS can be defined as using technology to make smarter use of transportation networks. It includes communications with drivers as well as communications within the transportation system. CDTC has long recognized the value of using ITS to improve travel for all modes, including autos, transit, bicycles and pedestrians, and freight. Emerging ITS technologies include:

- **Adaptive signal control** is a control strategy where the signal controller makes adjustments to cycle length, off-sets and phase timings in real-time based on changes in the traffic characteristics on the arterial. This can be especially valuable during an incident on an expressway, when traffic may divert to a parallel arterial. Adaptive signal control has been recommended for the Northway/Route 9 corridor in the I-87/US 9 Integrated Corridor Management Plan. Under adaptive control, traffic signals in a network communicate with each other and adapt to changing traffic conditions to reduce the amount of time cars and trucks spend idling. Using fiber optic video receivers similar to those used in dynamic control systems, the new technology monitors vehicle numbers and makes changes in real time to minimize congestion wherever possible.
- **Self-Organizing Signals-** One example of Adaptive Signal Control is a system being developed and tested at the University at Albany called Self-Organizing Signals. This proposed system is based on the theory of self-organizing traffic signals. Analogous to biological systems, each traffic signal in the system would communicate with the immediately adjacent signals and based on traffic sensor information would adjust the signal timing plan. This innovative approach has the potential to respond to minor changes in traffic flow as well as major changes to traffic flow in a way that optimizes the system. CDTC will continue to monitor the development of this innovative approach.

- **Active Traffic Management (ATM)** is defined as the ability to dynamically manage recurrent and non-recurrent congestion based on prevailing traffic conditions. Non-recurrent congestion refers to congestion that results from traffic crashes, weather events or other incidents. Speed harmonization can help to reduce flow breakdown and the onset of stop-and-go driving behavior in support of improved mobility. An example of a speed harmonization strategy is the use of variable speed displays. They are set (and varied) according to prevalent roadway and operating conditions, including visibility, weather, lane constraints (e.g., work zones), crashes and other incidents, and real-time traffic flows/congestion levels. Variable speed displays may be advisory or regulatory. Another example of active traffic management is Dynamic Lane Assignment (DLA), which consists of lane control signals – typically installed in conjunction with variable speed displays – providing advance notice that a lane(s) is closed ahead and to start the merge process into the available lanes well in advance of the actual closure.

Solar Powered Roadways- FHWA has funded research and development for the concept of solar powered roadways. This technology development has the potential to make roadways a source of solar power using solar energy. Roadways represent a public resource that receives extensive exposure to sunlight. With solar power embedded in the pavement itself, additional benefits can include lighting that is imbedded in the pavement to make lane striping highly visible; electronic heating elements that would melt snow and ice without use salt or other de-icing chemicals; and road information responsive to changing conditions, for example a cross walk that lights up when a pedestrian is crossing.

Other Technologies- The impacts of other emerging technologies will be explored, such as:

- smart streetlights
- self-healing road pavements (See Infrastructure White Paper)
- advanced composite bridge materials
- virtual traffic signals
- drone freight deliveries

Chapter 5: Bicycle and Pedestrian Needs

Bicycle and Pedestrian Transportation – Bicycle and pedestrian travel is vital to the region’s public health, transportation, and the economy.

Encouraging bicycle and pedestrian travel is a socially, economically, and environmentally responsible and healthy approach to improving the performance of our transportation system. Possible bicycle/pedestrian related improvements will be considered from the perspective of developing a system – not just based on whether a particular facility is currently used. That system of sidewalks, bike lanes, and trails will encourage safe bicycle and pedestrian use and will increase accessibility.

Since CDTC’s New Visions was adopted in 1997, there has been a Bicycle and Pedestrian Issues Task Force. This Task Force has conducted a comprehensive review of concerns related to bicycling and walking in the Capital District, identified key obstacles to greater use of these modes, and considered a number of possible regional strategies for enhancing our bicycle and pedestrian travel environments. The Task Force, which is now called the Bicycle and Pedestrian Advisory Committee, has met almost every month to discuss, strategize and mobilize to accomplish the bicycling and walking goals set in New Visions.

While there is still plenty of work to be done, walking and biking have risen in priority as viable modes of transportation, as well as effective components to the overall health of the community. Much has been accomplished as a result of the commitment, perseverance and hard work of the Bicycle and Pedestrian Advisory Committee. While all interest and public comment received is greatly appreciated, this effort particularly benefits from the sustained participation and enthusiasm of BPAC meeting attendees.

The New Visions white paper for the BPAC is titled the Bicycle and Pedestrian Action Plan. This document is an appendix to the New Visions Plan and is part of the New Visions Plan. The document includes an implementation plan to help CDTC prioritize bicycle and pedestrian programs, projects and initiatives to have the greatest regional impact and achieve the most goals.

Bicycle and Pedestrian Accomplishments: Initiatives Undertaken Since 2007

Capital Coexist – Education campaign, Enforcement training, etc.

After completing the Albany Bicycle Master Plan, CDTC evaluated the feedback received from the public through the study process. As a result of that feedback, CDTC initiated a localized bicycle safety education campaign geared towards cyclists and motorists safely coexisting on the region’s roadways. It was influenced by a variety of bicycle safety campaigns across the country, but especially the COexist campaign developed by the City of Fort Collins, Colorado. CDTC staff collaborated with the City of Albany Planning Department and BPAC to outline messages and materials that were thought to be the most valuable to both cyclists and motorists.

In 2009, CDTC contracted with Zone 5, an Albany-based communications and design firm to design four separate messages – Share the Road, Be Seen, Ride Right, and Eyes on the Road – and build a website. The Capital Coexist website was anticipated to become a bicycle education resource clearinghouse for the Capital Region, essentially a one-stop shop for bicycle safety tips, current bicycle projects, events and other educational materials. It is currently the home for bicycle safety information, links to other resources, a calendar for all bicycle and pedestrian related events and meetings at CDTC, a discussion page and contact page that links to various Capital Coexist social media.

Capital Coexist was officially launched in April 2010. The launch was timed that the messages would be promoted before Bike Month in May. The launch included the Capital Coexist website (www.capitalcoexist.org), and the four messages displayed on posters, rack cards and king-size bus wraps. The posters and rack cards were distributed and displayed around the region. The



bus wraps were displayed on several buses that moved along Albany’s most heavily traveled routes (i.e. Central Ave / Route 5).

Public outreach has been a key piece of Capital Coexist since launch. CDTC staff has attended numerous community events to promote bicycle safety such as Malta Community Day, the Madison Avenue Street Fair, the Albany Bicycle Expo, Green Your Commute Day, etc. Staff has participated in helmet fitting events and bicycle rodeos that are often coordinated by local police and or county traffic safety departments. Capital Coexist messages have also been aired on Radio Disney and displayed at the Tri City Valley Cats games. In more recent years, CDTC has received an increasing number of requests for materials for school-aged children. As a result CDTC has requested permission to reprint three bicycle safety publications: the *Getting There* activity book, *Sprocket Man* comic book, and *Chuggington Traffic Safety Activity Book*. These books have been printed and distributed to local schools for National Bike and Walk to School Days, bicycle rodeos, and other events.

Another interesting Capital Coexist project has been its enforcement training efforts. In 2012 CDTC partnered with the Adirondack Glens Falls Transportation Council (AGFTC) and *WEBike’s* Peter Fluke to conduct a Continuum of Training in Pedestrian and Bicycle Safety for Law Enforcement. The continuum of training has proven to be very successful at increasing officers’ pedestrian and bicycle safety knowledge and has resulted in increased pedestrian and bicycle safety enforcement activity and a greater sense of security for pedestrians and bicyclists of all ages and abilities. The trainings were conducted in the Spring and Fall of 2012 and about 50 officers from over a dozen difference enforcement agencies attended. Officers who attended the trainings learned how the 3 E’s must work together to make the walking and bicycling travel environment safer for people of all ages and abilities.

Since www.capitalcoexist.org was launched, the site has received over 17,000 page views from almost 4,500 visitors (source: Google Analytics). Capital Coexist has also utilized both Facebook and Twitter as additional media to help promote bicycle safety education. Currently, the Capital Coexist Facebook page has 366 “Likes” and there are 166 followers of the Capital Coexist Twitter with over 100 retweets. The website will be updated to include the pedestrian safety messages and materials developed by NYSDOT and NYSDOH, *Be Seen* initiative. The website update is anticipated to be completed in 2014.

Complete Streets

The term “complete streets” refers to a road/street that is designed and built to accommodate all users, which includes all modes, range of abilities, and ages. Complete streets have a variety of benefits such as improved safety and health, increased use and attractiveness of public transportation, lower transportation costs, more livable communities, increased economic activity and better accommodation of children, older adults and people with disabilities. The complete streets movement is a reaction to decades of auto-centric roadway design and has spread all over the country with many local and state governments passing complete streets legislation requiring all roadway projects to consider all users. Implementing complete streets has been challenging but has ultimately lead to strengthened relationships between municipal and elected officials, departments and between citizens and transportation professionals. Chapter 6 addresses complete streets in more detail.

Bike Rack Program

The Capital Region Bike Rack program was a new addition to the set of Travel Demand Management (TDM) strategies in 2009. This was a cooperative program between CDTC and CDTA to increase the quantity of secure bicycle parking in the region. As a TDM pilot, the program received an annual budget of \$50,000 for three years. The program had the following features:

- 50/50 cost sharing for private sector applicants;
- Free racks to public and non-profit applicants;
- Recipients must use the Association of Pedestrian and Bicycle Professionals’ Bicycle Parking Guidelines to ensure that installation sites meet “best practice” requirements;
- Five-year maintenance and indemnification agreements for received bike racks;

Year	2010	2011	2012
Number of organizations	77	30	30
Number of bike racks	334	241	145
Dollar value of all racks	\$50,000	\$36,531	\$21,000
Number of parking spaces	900	529	333

The following table shows the distribution of applicants’ intended locations over the three years, by county, compared to population (US Census Bureau 2009 population estimates).

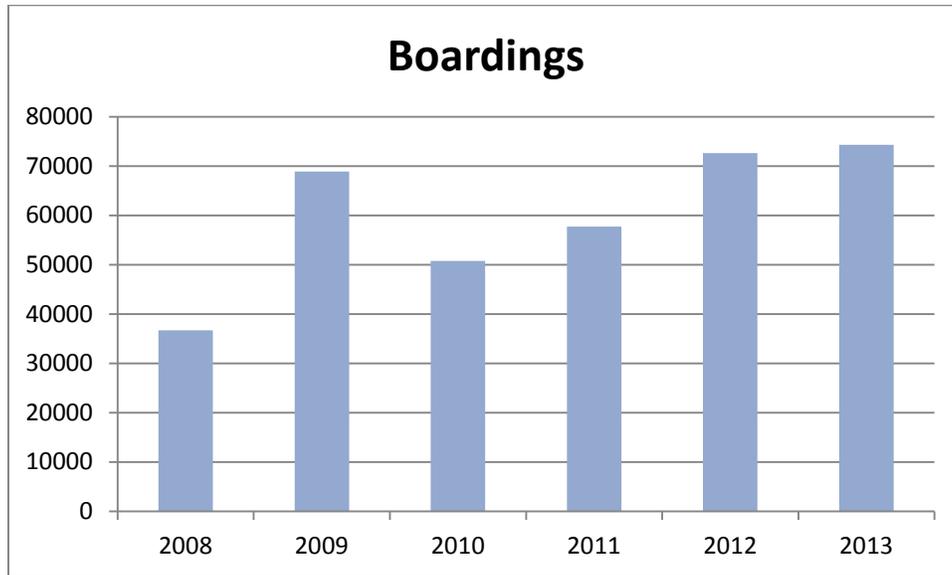
County	Albany	Rensselaer	Saratoga	Schenectady
Applications	54%	13%	20%	11%
Population	36%	19%	27%	18%

The distribution by type of entity is as follows:

Type of Organization	Percent
Nonprofit	27%
Government	31%
Other For profit	14%
Schools/Colleges	20%
Church/Religious Groups	6%

Bikes on Buses

The Bikes on Buses program was the first project to be awarded funds through the CDTC Spot Improvement program, or bike/ped set-aside, in 1998. It began as a pilot and its popularity influenced CDTA to gradually install bike racks on its entire fleet. This program has been a vital link in the region’s bike network, extending the distance of many trips by bike. As illustrated in the figure below, bike boardings continue to increase each year.

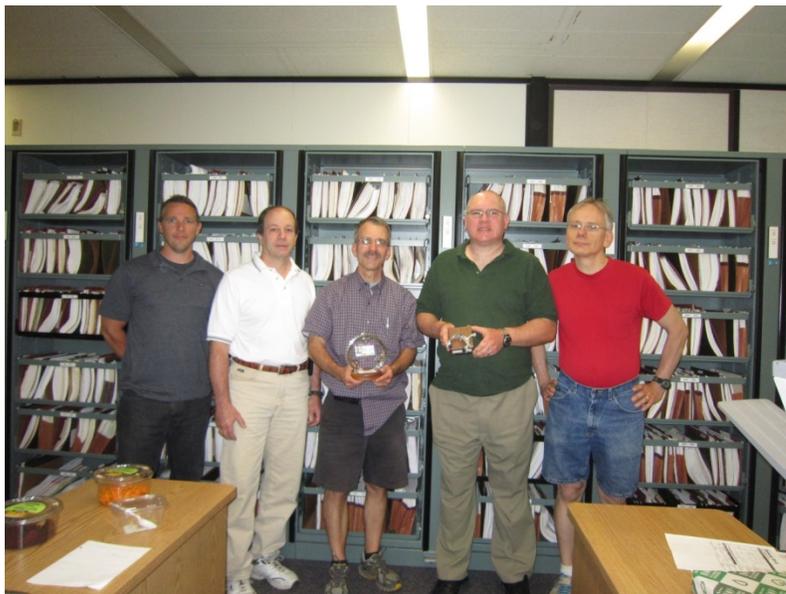


Bike Skills Trainings

Another one of the needs identified by CDTC’s Bicycle and Pedestrian Task Force was educational programming related to the safety of bicyclists while also encouraging bicycling. CDTC entered into an agreement with the New York Bicycling Coalition to partner on the provision of the League of American Bicyclists’ (League) “Traffic Skills 101” courses, which give participants the confidence to ride safely and legally in traffic or on the trail. They learn how to conduct bicycle safety checks, fix a flat, on-bike skills and crash avoidance techniques. League certified instructors held the course in Albany, Saratoga Springs, Schenectady, and Troy. Participants paid \$5 toward the participant course cost. A total of 17 residents participated in the 1.5 day course held between the end of April and mid-June 2014.

Bike to Work Day Challenge-

A group called Bikeatoga in Saratoga County has organized a Bike to Work Day competition for the last few years, and in 2014 worked with CDTC to implement their program throughout CDTC’s area. Almost 350 people registered for the challenge on May 16 in Albany, Rensselaer, Saratoga, and Schenectady Counties, amounting to over 3,500 bicycle miles, replacing about 148 gallons of fuel, 2,900 lbs. of CO₂, and burning about 159,000 calories! A survey was distributed, which 51 registrants completed. About 90% of survey respondents did bike to work, and the average number of miles was 11.2 round-trip.

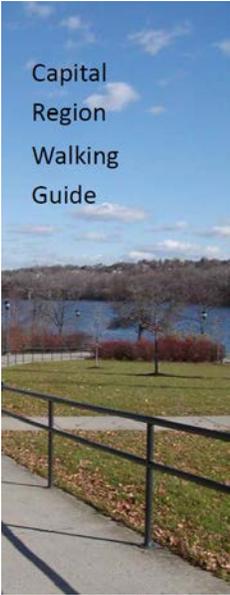


One of the 2014 winning teams in Albany County, the State Bureau of Environmental Radiation Protection

Trophies were donated by Bikeatoga, Albany Bicycle Coalition’s Lorenz Worden, Troy Bike Rescue’s Dakota and Sheila, and Steven Rolf Kroeger and were distributed within each County. Trophies are to remain with the current year’s winner until the next annual Bike to Work Day.

Capital Region Walking Guide

CDTC developed a walking guide in 2013 to both encourage walking and improve knowledge of pedestrian-related safety and laws. This guide includes the following sections: The Benefits of Walking, Get Walking!, Accessorize for Exercise, Know Your Streets in New York State, Know Your Signals, Tips for Walking and Running, Extend Your Trip with CDTA, Walking Maps and Guides, Organized Walks, Route Mapping, Trip Logging, and Walking Groups, and Useful Resources. 1,000 were printed.



Capital Moves

Capital Moves is a website providing information about the region’s transportation options. It was funded by a \$15,000 grant from NYSERDA and NYSDOT and completed in 2011. Major sections of the site are local or Capital Region travel, long distance travel, frequently asked questions, news, and an employer section. Additional links on every page are a travel calculator, guaranteed ride home, alternative fuel stations, and the region’s only comprehensive inventory of park and ride lot locations. The bulk of the website is located within the Capital Region travel section, with information on carpools, carsharing, vanpools, buses, walking and biking, and driving smart. The travel calculator compares the cost, emissions, and calories expended for each travel mode. In 2014, the site was used to host information about bike share pilots in the region. CDTC staff keeps the site current, including by Facebook and twitter accounts. In 2012, over 3,500 people visited the site and in 2013 about 4,600 people visited. In 2013, responsibility for the site transitioned from CDTA to CDTC and the site is now hosted by Zone 5.



Analysis

What’s working?

In general, data like bicycle and pedestrian counts, bike boardings on busses and increases in bicycle and pedestrian project spending over time demonstrate walking and biking as viable modes. Furthermore, the recent installation of sharrows and new bike racks as well as expanding trail networks have enhanced the region’s bicycle and pedestrian infrastructure. This has all been done through what are referred to as the 4 E’s: *encouragement, engineering, enforcement and education.*

Encouragement

The CDTC promotes bicycling and walking as viable alternative modes of transportation. Initiatives that have specifically aimed to promote bicycling and walking include the production of the two most popular pieces of CDTC printed material – the Mohawk – Hudson Bike-Hike Trail Map and Capital District Regional Bike-Hike Trail Map. As mentioned earlier, CDTC has distributed over 30,000 copies of its maps over the last 10 years, mostly across the region but also throughout the state, country and world. Other initiatives like the 2014 Bike Share demonstration, production of the Capital Region Walking Guide, and daily updates to Capital Coexist social media aim to support current bicyclists and pedestrians while encouraging others to bike or walk because they are fun, healthy and economical modes compared to driving.

Engineering

CDTC works closely with engineers during the engineering and design process of transportation projects. In fact, millions of dollars in federal funding have been programmed at the CDTC table specifically for pedestrian and bicycling infrastructure. Whenever possible, CDTC advocates for better designs of roadways and other facilities that improve safety and ease of walking and biking. NYSDOT and consultants often present draft designs to the BPAC and the recently established Complete Streets Working Group meets regularly with NYSDOT to coordinate local plans with projects on state-owned facilities.

Enforcement

The enforcement aspect is almost exclusively the responsibility of law enforcement. The CDTC has worked to build and grow relationships with local and state law enforcement agencies by working alongside police officers on bicycle and pedestrian safety plans and initiatives and providing enforcement training related to the Vehicle and Traffic Law. As part of Capital Coexist, CDTC hosted an Enforcement Training Workshop in the spring of 2012 that was well-attended by local law enforcement agencies. CDTC continues to work with law enforcement through the Route 5 / Central Avenue Pedestrian Safety initiative.

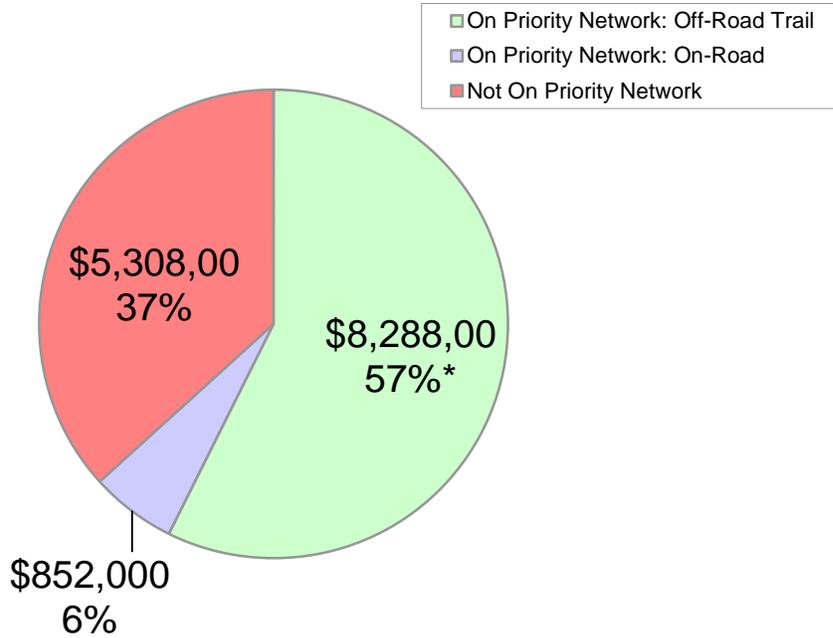
Education

Of the 4 E's, CDTC is best suited for this role. As a regional transportation forum, CDTC provides guidance and technical assistance to 78 municipalities in the Capital Region. CDTC has introduced terms like "Complete Streets" and "Smart Growth" through its practices and programs, guiding communities towards adopting plans and policies that are consistent with regional transportation goals. CDTC has also developed or been involved with the development of guides, safety campaigns and initiatives, advisory committees and public events that aim to educate planners, engineers and the public about important issues and planning topics relevant to the Capital Region. The best example of this has been the bicycle safety campaign Capital Coexist.

What's not working?

While data illustrates increases in bicycling in walking throughout the region there is still room for improvement. The previous *Bicycle and Pedestrian Game Plan and Toolbox* laid out short-, mid-, and long-term goals to enhance bicycle and pedestrian travel in the Capital Region. CDTC can confidently say that significant progress has been made towards some of these goals but others have fallen short. One issue CDTC would like to improve upon is the percent of funding programmed toward the Bicycle and Pedestrian Priority Network. This is the motivation for revising the network. As shown below, only 6% of TIP funds have been programmed for projects on the existing on-road priority network. Even though the Tri-State Transportation Campaign found that CDTC has programmed comparatively more of its funds toward bicycle or pedestrian related projects than nearby regions in New York, New Jersey, and Connecticut, CDTC would like to increase this amount.

Priority Network Funding



*All off-road trail facilities are considered on the “priority network.”

The second issue CDTC highlights is the lack of a uniform bike signage and route system throughout the region. Several municipalities have their own locally designated bike routes and have shared this information with CDTC but there is still a lack of comprehensive data and furthermore, a lack of a regionally connected, signed, on-road bicycle routes. In May 2001 CDTC released *Bicycle Signage Guidelines for the Capital District* to promote a uniform system of on- and off-road bicycle facility signage and wayfinding. There has been interest in local bicycle route wayfinding signage and uniform signage for specific off-road bicycle facilities but the Capital Region has yet to develop a connected system. CDTC encourages communities in the Capital Region to refer to or adopt the *Bicycle Signage Guidelines for the Capital District*.

The Bicycle & Pedestrian Priority Network

The new Priority Network will consist of two components— pedestrian districts and a linear bicycle network. The network has evolved to acknowledge that bicyclists and pedestrians have different needs and what improves safety for pedestrians doesn’t necessarily improve safety for bicyclists and vice versa. To develop the Pedestrian Districts, CDTC staff, under advisement of the BPAC, began by mapping fixed route transit, low-income individuals, zero vehicle households, residents 65 years of age or older, residents 65 years of age or older living below the poverty level, and residents reporting a disability. These were mapped to illustrate and identify locations where the most need for safe pedestrian infrastructure exists. Areas of population and employment density were also mapped. For the most part, the identified populations overlapped areas of population and employment density. The next steps incorporated environmental justice populations which identify areas of low-income and/or minority populations, and destinations that generate pedestrian activity which include shopping centers, schools, trails, hospitals and parks. Intersection density, as defined above, and which corresponds to street connectivity, was also mapped.

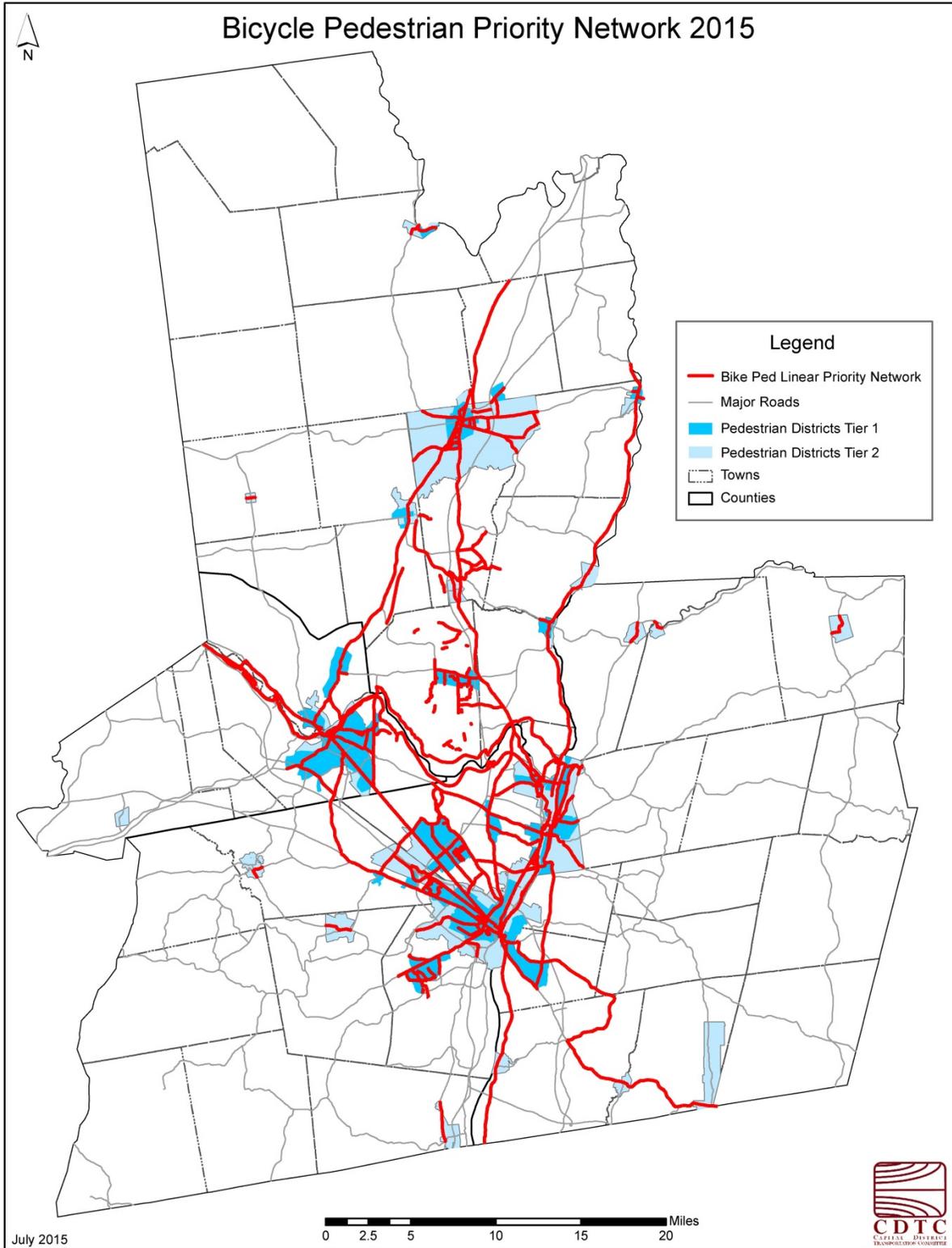
The data layers mentioned above helped guide CDTC staff to draft Tier 1 and Tier 2 Pedestrian Districts. Tier 1 Districts highlight areas that have population and employment density and met at least two of the following additional criteria: proximity to schools, shopping centers, hospitals, parks or trails and Environmental Justice population areas. Intersection density (the number of Intersections containing greater than 3 legs) was also used to identify and evaluate areas of street connectivity in relation to population and employment density. Tier 2 Districts consist of the remaining incorporated areas of all cities and villages that did not meet the criteria used to define Tier 1 Districts.

Pedestrian Districts were created to highlight and address the fact that pedestrian movement is more fluid than linear and that investments in pedestrian infrastructure should be made strategically, where there are greater densities of people living or working and in close proximity to pedestrian generating destinations. When a new TIP project evaluation system is adopted, proposed Tier 1 District projects will receive more points than proposed Tier 2 District projects.

The Bicycle Network is a linear network that connects the Pedestrian Districts via major travel routes, as well as making connections to identified pedestrian generators that may be located outside of the proposed Pedestrian Districts. Studies indicate that, like motorists, bicyclists prefer the most direct routes. Again with the advisement of the BPAC, CDTC staff began by mapping Federal-Aid eligible roadways with an annual average daily traffic volume of 10,000 vehicles or more, where bicyclists are not prohibited from traveling on. After reviewing these roads, the following criteria were developed to define the linear network:

- Roads located within a Tier 1 or Tier 2 Pedestrian District (automatic inclusion)
- Roads that are part of a designated bike route (automatic inclusion)
- Roads located within a population and employment density area (automatic inclusion)
- Roads that are part of the Mohawk Towpath Scenic Byway (automatic inclusion)
- Roads that do not meet any of the automatic inclusion criteria but do connect at least two pedestrian generators (schools, parks, trails, hospitals and shopping areas).
- All existing and newly built paved off-road trails and multi-use paths will remain part of the Bicycle Network.

The basis was that these longer routes are attractive to bicyclists and manageable to travel by bicycle, whereas walking would be less feasible. Other Non-Federal Aid eligible and lower volume roads were added to make needed connections. This network will be used in the TIP evaluation process to prioritize proposed projects. Proposed projects on the linear network will receive more points than other proposed projects. The BPAC recommends that project sponsors be held accountable for including bicycle and pedestrian infrastructure elements that are included in TIP applications. If a project is a high funding priority based on its location on the Priority Network and proposed improvements to the bicycle and pedestrian environment, the project must be implemented how it is proposed to maintain the integrity of the Priority Network and TIP evaluation process. Ensuring TIP accountability will require CDTC to develop a system to track TIP projects through completion.



Chapter 6: Complete Streets

Complete Streets – Street design will serve all users including pedestrians, bicyclists, transit riders, freight, and drivers.

Transportation investments are made based on a complete streets framework which supports the convenient and safe travel of all people — of all ages and abilities as appropriate to a facility's community context.

Utilizing a complete streets framework ensures that transportation investments are consistently planned, programmed, designed, operated and maintained with all users in mind – including bicyclists, public transportation vehicles and riders, pedestrians of all ages and abilities, and local delivery needs.

Successful implementation of a complete streets framework will be achieved by working with municipalities to improve communication and coordination, training and education, and design standards and other resources.

The concept of planning and designing transportation systems and facilities mindful of the needs of the various users of these systems and facilities is not a new one. Consideration of multiple modes of transportation (vehicles, pedestrians, bicyclists, transit vehicles and users, and local delivery needs) in the planning, design, operation and maintenance of all modes of transportation has been part of federal, state and local policy and practice for decades, although with mixed success. Momentum has been building for better approaches, including policy, planning, design processes and implementation to “Complete our Streets.” Evidence of this “new” or renewed interest in this approach to balancing the needs of all roadway users is the adoption of over six hundred and twenty (620) Complete Streets policies across the United States over the last decade. **New York State is among 27 states across the country that has passed Complete Streets legislation.**

A **common definition** of a **Complete Street** is one that is *designed & operated to enable safe access for all users, including:*

Pedestrians, bicyclists, motorists, & public transportation users of all ages & abilities including children, the elderly, and persons with disabilities, and local street deliveries.

According to the National Complete Streets Coalition:

*Complete Streets make it easy to cross the street, walk to shops, and bicycle to work.
Complete Streets allow buses to run on time and make it safe for people to walk to and from train stations.
(See: <http://www.smartgrowthamerica.org/documents/cs/cs-brochure-policy.pdf>)*

The National Association of City Transportation Officials (NACTO) and the NYSDOT websites list various **Complete Street elements such as:**

- *Sidewalks, crosswalks, raised crosswalks, curb ramps, pedestrian control signals*
 - *Road diets, lane striping, bicycle lanes, paved shoulders suitable for use by bicyclists, signage, curb cuts*
 - *Traffic calming measures, curb extensions, bus bulbs, gateways, speed humps, speed tables*
 - *Transit streets with dedicated bus lanes, bus pull-outs, and*
 - *Stormwater management – bioswales, flow through planters and pervious surfaces.*
- Source: <http://nacto.org/usdg/>*

According to the National Complete Streets Coalition:

Complete Streets make economic sense. A balanced transportation system that includes complete streets can bolster economic growth and stability by providing accessible and efficient connections between residences, schools, parks, public transportation, offices, and retail destinations.

Complete Streets improve safety by reducing crashes through safety improvements. One study found that designing for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28%.

Complete Streets encourage more walking and bicycling. Public health experts are encouraging walking and bicycling as a response to the obesity epidemic, and complete streets can help. One study found that 43 percent of people with safe places to walk within 10 minutes of home met recommended activity levels, while just 27% of those without safe places to walk were active enough.

Complete Streets can help ease transportation woes. Streets that provide travel choices can give people the option to avoid traffic jams, and increase the overall capacity of the transportation network. Several smaller cities have adopted complete streets policies as one strategy to increase the overall capacity of their transportation network and reduce congestion.

Complete Streets help children. Streets that provide room for bicycling and walking help children get physical activity and gain independence. More children walk to school where there are sidewalks, and children who have and use safe walking and bicycling routes have a more positive view of their neighborhood. Safe Routes to School programs, gaining in popularity across the country, will benefit from complete streets policies that help turn all routes into safe routes.

Complete streets are good for air quality. Poor air quality in our urban areas is linked to increases in asthma and other illnesses. Yet if each resident of an American community of 100,000 replaced one car trip with one bike trip just once a month, it would cut carbon dioxide (CO2) emissions by 3,764 tons of per year in the community. Complete streets allow this to happen more easily.

Complete Streets make fiscal sense. Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project spares the expense of retrofits later. Jeff Morales, former Director of Caltrans, said, “by fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including facilities for these travelers are minimized.

New York State’s Complete Streets Act went into effect in 2012. The following excerpt from the New York State Department of Transportation (NYSDOT) website gives an overview of complete streets and the NYS Complete Streets Act:

Governor Andrew M. Cuomo signed the Complete Streets Act (Chapter 398, Laws of New York) on August 15, 2011, requiring state, county and local agencies to consider the convenience and mobility of all users when developing transportation projects that receive state and federal funding. The New York State Department of Transportation (NYSDOT) is working to ensure that its policies and procedures meet the new standards. The initiative presents an opportunity to expand upon existing programs and collaborate with bicyclists, pedestrians, people with disabilities and others to identify best practices and designs for transportation facilities.

Who’s Responsible for Implementing Complete Streets?

The New York State Department of Transportation and local agencies - typically counties and municipalities - are responsible for implementing Complete Streets.

The law applies to projects that are undertaken by NYSDOT, or to local projects that receive both federal and state funding and are subject to NYSDOT oversight. Projects that are 100% locally funded are not subject to the law, but local agencies can choose to adopt Complete Streets practices. Many local agencies have already passed Complete Streets resolutions and/or adopted their own Complete Streets policies.

Notable societal changes, including both an aging population and lifestyle preferences of the millennial generation, are having an impact on how people are travelling and the types of communities and community attributes they value. According to the report Smart Growth and Economic Success: Benefits for Real Estate Developers, Investors, Businesses, and Local Governments, the aging of the Baby Boomers and the migration of younger workers to urban areas “are helping to drive an increasing preference for more compact, diverse, and walkable development.”

What are the Benefits of Complete Streets?

As stated in the Act, Complete Streets will contribute to a "cleaner, greener transportation system" and "more citizens will achieve the health benefits associated with active forms of transportation while traffic congestion and auto related air pollution will be reduced."

In February 2014 the New York State Department of Transportation released its **Complete Streets Report**, which was a requirement of the Complete Streets Act.

New York State Complete Streets Report

As stated in NYSDOT's report "The Complete Streets Act required the New York State Department of Transportation (NYSDOT) to develop a report that demonstrates the Department's implementation efforts and identifies best practices in Complete Streets implementation throughout New York State. Further, the Act states that NYSDOT must show how it has institutionalized Complete Streets by addressing and incorporating its design features in planning, project scoping, design and implementation of transportation projects."

According to the report "NYSDOT has a number of policies and procedures in place that are either directly or indirectly related to the implementation of Complete Streets principles. NYSDOT's internal review ... illustrated how the Department has integrated the principles and the spirit of the Complete Streets Act into its policies and procedures. In instances where guidance was absent or not consistent, NYSDOT identified the steps required to address those gaps."

Existing Design Guidance Related to Complete Streets

Over the past several years as the desire to create a more balanced transportation system that works safely and more efficiently for a variety of users has taken hold in many states and communities across the United States, a growing list of **design standards and guidance manuals** specifically aimed at **designing, operating and maintaining a system of Complete Streets** is now available including those listed in the Complete Streets White Paper.

Specific Complete Streets Design Guidelines are not currently available at the federal or New York State level. However, there are both federal and New York State roadway design standards and guidelines in place related to the appropriate application and design of various complete streets elements.

- NYS Highway Design Manual (various chapters, especially Chapter 17 Bicycle Facility Design and Chapter 18 Pedestrian Facility Design) NYSDOT's website provides a table listing specific design treatments and related NYS HDM references see: <https://www.dot.ny.gov/programs/completestreets/designing>
 - **Note:** NYSDOT has drafted both a **Complete Streets Planning Checklist** to replace the previously used Pedestrian Generator Checklist in Chapter 18 to be used in project scoping and development, and a
 - **Complete Streets Checklist for Highway Work Permits**
- ADA Requirements in the NYS Highway Design Manual Chapter 18 Pedestrian Facility Design: "The following references provide nationally accepted standards for pedestrian facilities. The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) (www.access-board.gov) as supplemented by the 2011 Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) are the primary regulatory standards that govern the design and construction of all pedestrian facilities in all Department projects."
- National Manual of Uniform Traffic Control Devices and the NYS Supplement
- NYSDOT's Shared Lane Marking ("sharrow") Policy (<https://www.dot.ny.gov/programs/completestreets/repository/TSMI13-07final.pdf>)

According to NYSDOT's website, "These additional design resources may be used in conjunction with the appropriate traffic and engineering studies":

- Cornell Local Roads Program [Complete Streets Manual](#)
- New York City DOT [Street Design Manual](#)
- National Association of City Transportation Officials (NACTO) [Urban Street Design Guide](#)

The Complete Streets Advisory Committee was formed prior to the last Transportation Improvement Program (TIP) update in order to review “preservation” (i.e. maintenance repaving) projects for potential incorporation of complete streets improvements. At that time, NYSDOT adopted a “Preservation First” policy and associated guidance to be used in development of NYSDOT’s own capital program update and Metropolitan Planning Organization TIPs. According to this guidance, Preservation First means “Expected resources will not support a “build new” or “worst first” approach but must have a “preserve what we have” approach.”

CDTC’s Complete Streets Advisory Committee includes staff from entities represented on CDTC’s Planning Committee including NYSDOT, CDTA, CDRPC, two cities, one county, and two. The Committee’s work is facilitated by CDTC staff.

To help guide the work of the group, the Advisory Committee developed a **Purpose and Planned Outcomes statement in September 2013:**

Purpose: *The Complete Streets Advisory Committee’s purpose is to assist in identifying opportunities and mechanisms to assist roadway improvement project implementers and municipalities, in partnership with roadway owners, in integrating complete streets elements into a variety of project types as listed below.*

The group will research, learn and then share learned information with the Planning Committee and Policy Board, as appropriate, on complete streets tools and techniques that should be integrated into projects across a range of project types. Initial emphasis will be on low cost techniques and partnerships to assist CDTC, NYSDOT, the four counties and municipalities to meet stated goals for improved transportation safety, a multimodal transportation system serving all users, and sustainability goals. Fostering improved communication between project planners and designers to achieve integration is a major goal.

Applicability: *There are three broad categories of projects:*

- *Preservation First/Maintenance and Operations projects (Includes projects currently on the adopted/draft TIP and those to be selected through upcoming preservation set aside project solicitations)*
- *Existing TIP infrastructure projects (Includes projects currently on the adopted/draft TIP which are considered “beyond preservation”)*
- *Land development/redevelopment initiated improvements*

Planned Outcomes:

- *Revised TIP Project Justification Package/Solicitation Materials and Project Selection process that includes questions and evaluation criteria to incentivize incorporation of complete streets elements into “preservation first”/maintenance and operations type projects.*
- *Identification of complete streets elements that can be integrated into various categories of project types (i.e. repaving/restriping projects, signal timing improvements, etc.) with an emphasis on low cost or shared cost elements.*
- *A list identifying “beyond preservation” projects on the TIP currently in the pipeline where there’s a window of opportunity to identify and implement complete streets elements.*
- *Institutionalization of a process between NYSDOT, CDTA and municipalities to foster enhanced communication and to provide an ongoing mechanism to provide meaningful input that will be utilized in the design process to integrate complete streets elements into projects. Determination of the points in the project development/design process representing windows of opportunity for this input. Identification of the most effective means of communication and input such as a regularly set meeting schedule (bi-monthly?) or based on NYSDOT’s project development/design schedule.*
- *Improve communication and coordination between NYSDOT and municipalities to ensure a unified approach and complete streets oriented outcomes as a result of development site plan review and approvals. In these fiscally challenging times, one key avenue for integration of complete streets elements into the capital region’s roadways and realization of a multi modal transportation system that serves the capital region’s communities is incremental improvements related to newly developed or redeveloped sites along major roadways. Incremental improvements are typically required as part of mitigation of development impacts to these roadways. To achieve this there needs to be more consistency among the region’s municipalities in requiring private sector participation in appropriate development mitigation as well as consistent support from and ongoing coordination with NYSDOT, CDTA, other agency and municipal partners.*



Source: NYSDOT website

The Complete Streets Advisory Committee identified a list of topics or issues to be further explored as part of the New Visions 2040 update. Some of these will take more time and effort than can be accomplished during the New Visions 2040 update timeframe; accordingly, these issues can be addressed through the recommendations listed in Chapter 14 detailing actions that will be undertaken subsequent to adoption of the New Visions 2040 plan. Topics include:

1. Synthesis of **best practices** for complete streets **implementation** (state, regional, local levels)
2. Analysis of **barriers to implementation**, including current language/requirements in the NYSDOT Highway Design Manual, and identification of potential solutions.
3. Description of data/analysis required to determine **Road Diet feasibility** in different contexts
4. Identification of best practices for **incorporation of green infrastructure** into roadway, sidewalk, bicycle facilities and other applicable projects.
5. Associated **Training and Educational Materials and Implementation Tools**
6. Examination of **economic, health and safety benefits** of complete streets improvements

Green streets integrate **green infrastructure** elements into street design to manage stormwater runoff, and utilize attractive, functional elements to minimize or offset negative environmental effects typically associated with street infrastructure. Implementation of a complete streets project provides an additional opportunity to improve the livability of our communities by incorporating green infrastructure. Making our transportation system more sustainable involves policies and practices that minimize environmental impact and create streets that are safe for everyone, regardless of age, ability, or mode of transportation.

Topics 3. and 4. were researched by CDTC staff with results described in the Complete Streets White Paper.



Fuller Road between Washington Avenue and Western Avenue, near the University at Albany

Road Diets-- According to FHWA's "Proven Safety Countermeasures" website "a *Road Diet* is a way to reconfigure a roadway that involves converting an undivided four lane roadway into three lanes made up of two through lanes and a center two-way left turn lane. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes, pedestrian crossing islands, and/or parking. Road diets have multiple safety and operational benefits for vehicles as well as pedestrians". Benefits include:

- *Making driving safer*
- *Making walking and bicycling safer*
- *Managing traffic speed*
- *Enhancing Quality of Life and Improving Accessibility*

Examples of Complete Streets Elements in the Capital District



Location: State St., Schenectady, NY; Source: CDTC



Location: State St., Schenectady, NY; Source: CDTC



Location: Dunning St., Malta, NY; Source: CDTC



Location: Delaware Ave., Albany, NY; Source: Times-Union



Location: Broadway, Saratoga Springs, NY; Source: CDTC



Location: Broadway, Saratoga Springs, NY; Source: CDTC



Location: Washington Ave., Albany, NY; Source: CDTC



Location: NY Route 2, Troy, NY; Source: CDTC

Examples of Complete Streets Projects Around New York State

Before



After



Location: NY Route 347, Hauppauge to Port Jefferson, NY; Source: NYSDOT



Location: Great Neck Rd., Great Neck, NY; Source: NYSDOT



Location: US Route 11, Canton, NY; Source: NYSDOT

Chapter 7: Transit

Transit – Our transit services will provide modern, innovative, and viable travel options.

Because transit facilities and services are an essential element of the social, economic, and cultural fabric, sufficient operating and capital funding and supportive policies must be in place. Innovative services and transit supportive investment are critical to developing a high quality transit system. The future transit system will:

- *Promote transit supportive land use patterns and infrastructure;*
- *Contribute to congestion management, air quality, and energy savings;*
- *Form the backbone for managing travel demand;*
- *Provide essential mobility for those who do not operate a private vehicle;*
- *Capitalize on market trends and attract choice riders.*

The New Visions Plan laid the groundwork for creating a more user friendly, attractive, efficient and reliable transit system for the Capital Region. As a starting point in 1993, CDTC’s original Transit Task Force conducted an in-depth review of the regional transit system and developed a detailed white paper to support the development of a planning and investment principle for the New Visions plan. The key findings of the 1993 transit task force were that:

- Site design and pedestrian improvements are critical to supporting transit use
- Enhancing existing services can offer large benefits
- One of several fixed guideway options is achievable in 20 years
- Broad regional support is necessary for financing transit

Considered groundbreaking and forward thinking for MPO’s at the time, the underlying principle, strategies and actions for transit remained largely unchanged until the 2035 plan when CDTA developed its first Transit Development Plan (TDP) in 2007. The TDP is a strategic plan for CDTA which guides service development, describes methods to coordinate enhancements to the transit system with regional growth patterns and economic development initiatives, outlines a system approach to route evaluation and describes a process to regularly assess service opportunities. In developing the TDP, CDTA conducted an environmental scan, demographic analysis and extensive market research to understand what customers want from transit services and to show how the region has changed over time, particularly with respect to new development and redevelopment. The TDP outlines several key objectives which were incorporated into the New Visions 2035 Plan:

- Increase transit ridership and revenue by improving the quality of CDTA services
- Align transit services with demand
- Improve existing and develop new partnerships with public and private stakeholders
- Re-emphasize the need for transit supportive built environments which can be achieved through design guideline development
- Continue performance monitoring to guide service development

In addition to CDTA’s short term transit strategies, New Visions 2035 articulates two “Big Ticket” transit initiatives that could be pursued if funding is identified and other factors such as strong regional support for Transit Oriented Development made them realistic to pursue. “Big Ticket” initiatives are bold, long term project concepts that are not currently committed to by CDTC but support CDTC’s members in being visionary, even during periods of fiscal constraint. However, the “Big Ticket” initiatives are currently unfunded. The transit “Big Ticket” initiatives are:

Bus Service Expansion, BRT Program with Transit Oriented Development

This initiative emphasizes the use of transit as a key transportation mode complemented by transit oriented development. Bus Rapid Transit (BRT) is a high performance transit service that functions more like light rail than a local bus. BRT systems typically incorporate elements such as limited stops, priority treatment at traffic signals, bus lanes to bypass traffic at key congested locations, an identifiable brand name and color scheme and station amenities such as real time arrival/departure information, attractive shelters, park-and-ride lots, benches and in some cases restrooms and other services. BRT systems are complemented by local buses, sometimes referred to as feeders, to bring passengers to the high performance BRT routes. CDTA has implemented BRT in mixed traffic on NYS Route 5 from downtown Albany to downtown Schenectady, known as BusPlus.

To further encourage transit use, Transit Oriented Development (TOD) is encouraged at BRT or other transit service stations. Transit Oriented Development is generally defined as mixed-use development (development that mixes residential, retail, office, open space, and public uses) within walking distance of a transit stop that encourages travel on foot or by public transportation instead of by car.

Guideway Transit System with Transit Oriented Development

Guideway Transit is a general term used to describe innovative mass transportation technologies that operate on an exclusive right of way (exclusive travel lanes or tracks depending on the technology). Dedicated lanes for buses differentiates this from the BRT “Big Ticket” initiative. These systems, in combination with Transit Oriented Development, create communities that on a regional scale preserve open space and reduce the need for travel by car. The “permanent” nature of guideways contributes to greater development along a corridor than that stimulated by bus service in mixed traffic. Transit Oriented Development is generally defined as mixed-use development (mixing residential, retail, office, open space, and public uses) within walking distance of a transit stop that encourages travel on foot or by public transportation instead of by car. Examples of guideway transit systems include:

Bus Rapid Transit (BRT) on Dedicated Lanes: A high performance rubber wheeled transit service that functions like rail but is flexible and can operate on the regular street network. BRT works best when the vehicles have exclusive travel lanes.

Automated Guideway Transit (AGT): A transportation system with unmanned vehicles that operate on their own tracks. This technology is commonly found at airports and occasionally as downtown circulators. CDTC identified potential applications for the Capital Region in its work in the mid-1990’s, but cautioned that unit costs need to drop before extensive application is feasible.

Light Rail Transit (LRT): A rail transportation system typically powered by electricity that can operate on an exclusive right of way or on streets in mixed traffic.

The combination of CDTC’s transit planning principle, CDTA’s initiatives in the Transit Development Plan and the “Big Ticket” initiatives encompass the key transit topics described in the New Visions 2035 plan.

Planning Studies Beyond New Visions Related to Transit

A number of other studies have been undertaken by CDTC and CDTA, often in direct partnership, to further explore transit investments in the Capital Region.

Fixed Guideway Feasibility Study (1995)

A peer city comparison was initially undertaken revealing that the overall size of the potential fixed guideway market, as measured by total population and employment, is smaller in Albany than in other peer cities. Moreover, region wide population and employment densities are considerably below that in other areas. This is an important finding, which suggests a limitation on the Capital Region’s capacity for supporting an extensive network of fixed guideway facilities.

However, the peer city comparison also revealed that centralization of population and employment within the three central cities of Albany, Schenectady, and Troy – where traditional transit markets are located – is consistent with and in some cases greater than elsewhere. In addition, the Capital Region is comprised of three major urban hubs and an interior suburban area, which means that “dual hub” corridors may be constructed with major concentrations of trip making at both ends of the corridor.

An examination was then undertaken of several full fixed guideway system configurations showing that that when combined with highway and parking pricing strategies, the systems show significant performance benefits in areas of access (percentage of trips with a time-competitive transit option), congestion relief and land use configuration that is transit supportive. Unfortunately, extensive fixed guideway systems do not return monetary benefits comparable to the level of investment required even through the year 2015. The main conclusion of the study was that the region is not dense enough and does not have enough transit supportive land use policies in place to support an extensive fixed guideway investment.

NY 5 Land Use and Transportation Plan (2001)

This plan was undertaken by CDTC and NYSDOT in partnership with the Cities of Albany and Schenectady, the Towns of Niskayuna and Colonie and the Village of Colonie along New York State Route 5 (Central Avenue/State Street). The goal of the plan was to make recommendations which:

- maximize the effectiveness of public investment in the transportation system;
- seek to stabilize and invigorate the economy of the five Corridor Communities;
- are pedestrian and transit-friendly;
- satisfy the needs of the real estate market, automobile and service access; and,
- provide a benefit to adjacent mixed-use and residential neighborhoods, and mixed-use and employment districts.

The plan ultimately identified a preferred future for the 17.5 mile NY 5 Corridor that intensifies land uses and encourages the region to pursue Bus Rapid Transit in the corridor.

NY 5 Bus Rapid Transit Conceptual Design Study (2005)

Building upon the Land Use and Transportation Plan, CDTA and CDTC collaborated on this study to further explore the potential for Bus Rapid Transit in the NY 5 Corridor. The study provided the initial information needed on route options and station locations to secure funding for the next steps including station design and operations planning, environmental clearance and incremental implementation of what is now the Route 5 BRT BusPlus which opened in 2011.

Understanding the Travel Market (2005)

This initiative looked at land use and census data to identify transit corridors with a higher likelihood of transit use in the Capital Region. The report concluded that urban centers offer the greatest opportunities for high end transit investments, including bus rapid transit, a finding that is consistent with the 1995 Fixed Guideway Transit Feasibility Study.

North/South Corridors Study (2009)

CDTA and the New York State Senate Task Force on High Speed Rail initiated a study of transit opportunities to promote urban reinvestment and high quality suburban planning in the north/south corridor in Albany, Rensselaer and Saratoga Counties. The study objectives were to: Identify potential short-range and long-term improvements to existing Northway Express bus service in the I-87 Corridor, review the role of existing rail corridors and identify what role they might play in maintaining the quality of transportation service in the region, explore transit options such as bus rapid transit, light rail transit and commuter rail, and identify other long-range, potential transportation capital investments and assess the engineering, environmental and market challenges to their implementation.

What Has Been Accomplished?

Since the New Visions plan was first adopted and following the numerous studies that were undertaken thereafter, a great deal has been accomplished in improving the regional transit system.

Route 5 BRT

The region's first arterial based bus rapid transit system (arterial bus rapid transit) was officially opened in April 2011 following several years of study and incremental implementation of the system. Operating in mixed traffic, the Route 5 BRT (the first CDTA branded BusPlus route) runs from downtown Albany to downtown Schenectady. In its first year of operation, ridership increased 25%, on time performance was greatly improved, and the look and feel of transit in the Capital Region vastly changed. In order to improve the attractiveness and reliability of the system, CDTA worked with a number of regional partners to install limited stop service, unique branding to differentiate BusPlus from the rest of CDTA's system, large stations with shelters and other customer information and conveniences, queue jumpers at certain signals which allow the BusPlus vehicle to move ahead of the rest of traffic by allowing a few seconds for the bus to move ahead of the rest of traffic at a signal, and transit signal priority was installed to allow the buses to communicate with traffic signals to provide priority to the buses when traveling through these intersections.



*CDTA's Liberty Park BusPlus station in Schenectady.
Route 5 BusPlus is also known as Route 905 or the Red Line.*

Washington/Western BRT

CDTA completed a conceptual design study and detailed Alternatives Analysis of a second BRT line in the Capital Region (the BusPlus purple line), proposed to operate from downtown Albany through the Harriman and University at Albany campuses ending at a transit center at Crossgates Mall. Completing the Alternatives Analysis allowed the project to be submitted to the Federal Transit Administration for funding through their Small Starts program. The project was accepted and has entered the Project Development phase. Funds for additional project development work including environmental clearance documentation and additional engineering work have been awarded by CDTC through its Transportation Improvement Program. CDTA is anticipating the purple line to be in service in 2017.

River Corridor BRT

The third BRT line (the BusPlus blue line) is proposed to run along the River Corridor from downtown Albany along Broadway (NYS Route 32) over to Troy with branches to Cohoes and Waterford. The Conceptual Design/Modified Alternatives Analysis for the River Corridor BRT has been completed and CDTA has been awarded funding through CDTC to undertake additional engineering work in the corridor. CDTA was also awarded a TIGER (Transportation Investment Generating Economic Recovery) grant from USDOT to implement pedestrian and other street improvements in the River Corridor in Albany, Troy and Cohoes. CDTA is anticipating the blue line to be in service in 2017.

CDTA Route Restructuring

Following criteria that were largely established in CDTA's Transit Development Plan (2007), CDTA worked in all four Capital Region counties to restructure the route system which had not been comprehensively evaluated for many years. The restructuring of the routes considered many factors including the need for cross town routes, methods to reduce the number of transfers, additional night service (given a growing 24 hour a day economy), and more service to major transit trip generators (i.e. universities, hospitals, regional shopping centers, etc.). It took CDTA 5 years to complete but they were able to create a more efficient transit system with routes that made more sense while keeping the impact on the authorities' budget to operate the new services to a minimum. A direct impact of the route restructure was an increase in transit riders system wide.

Implementation of smart card payment options

CDTA is upgrading its fare system to offer a choice-based, multifunctional system that is more flexible for customers and meets the needs of the Authority for the foreseeable future. The new fare boxes were installed in summer of 2014. Smart card and barcode readers will position CDTA for rollout of a new smart card and mobile ticketing application by spring 2015.

Universal Access Program

The partnerships developed through universal access agreements with numerous universities, private businesses and others in the Capital Region has been an enormous success with ridership increasing each year with each new partner added. CDTA intends to further expand the Universal Access program. These partnerships allow employees/students free transit access using their institutions' ID card or other means.

Bikeable Buses

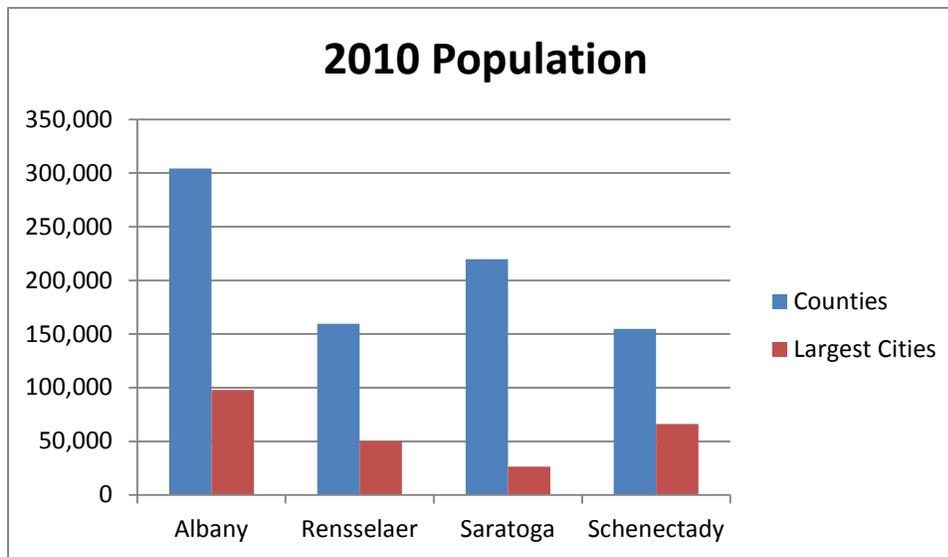
CDTA's entire bus fleet is now equipped with easy-to-use bike racks on the front, offering riders more options to get around in an environmentally sound and healthy way. They also help to expand the reach of transit. Each rack can hold two bikes and will accommodate both adult and children's bikes (excluding tricycles and tandem bikes). Availability is on a first-come-first-served basis.

Demographic Overview

Over one-third of the region's population resides in Albany County. The population in Rensselaer and Schenectady counties each comprise about one-fifth of the region's total, while Saratoga County's population makes up about a quarter. The region's population is forecast to approach almost 900,000 people by the year 2040, according to the Capital District Regional Planning Commission's (CDRPC) projections.

The review of various demographic data shows that population groups most likely to use transit are generally concentrated in the three large central cities (Albany, Schenectady and Troy). This conclusion remains similar to those identified in previous regional planning work related to transit. Ensuring that these population groups have access to jobs that in recent years have located in suburban communities remains a critical issue for the region.

The region's four largest cities each grew in population according to the 2010 Census, representing the reversal of a 50 year trend, and potentially strengthening transit. The chart below shows the 2010 Census population totals for each of the four counties' largest cities.



Source: 2010 US Census

The statistics that follow describe groups of the population that tend to use transit at a higher rate than the general population.

CDRPC's data shows that the population aged 65 and over is expected to increase to 22% of the overall regional population by 2040, while the age groups of 0 to 24 years and 25 to 64 years will decrease to 29% and 49%, respectively. According to the 2008-2012 American Community Survey, approximately 11% of the Capital Region population reports a disability, and approximately 11% of the region's population has an income below the poverty

level. Between 15% and 20% of children and 10% and 12% of adults age 18-64 in Albany, Rensselaer, and Schenectady Counties have incomes below the poverty level.

Overall, there are approximately 33,000 households in the Capital Region that do not have a vehicle available, according to the 2008-2012 American Community Survey. This represents 9.9% of the total number of households within the region. Albany County has the highest percentage at 12.3% and Saratoga County has the lowest percentage at 5%. Albany, Schenectady, and Rensselaer Counties each have more than 10% of their households falling in the 0-vehicle household category.

According to the 2008-2012 American Community Survey, English is the predominant language spoken by residents of the Capital Region. About 722,000 of the 793,000 people in the area speak only English. Albany County has the highest number of residents who speak another language. Over 11,000 people in Albany County speak English less than very well, over 3,000 people in Rensselaer and Saratoga, and over 4,000 in Schenectady County speak English less than very well.

Capital District Transportation Authority

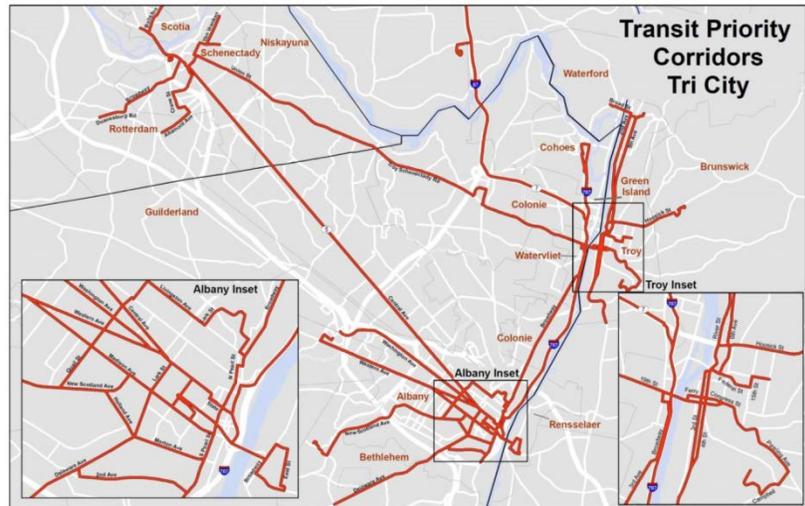
The Capital District Transportation Authority (CDTA) is a public benefit corporation that provides transportation and other services within Albany, Rensselaer, Saratoga and Schenectady Counties. CDTA has approximately 270 buses operating on 50 transit routes. The vast majority of CDTA’s trips are for work (over 70%) and the rest are for medical, educational or recreation purposes. Along with fixed route services, CDTA provides commuter express services and paratransit services for people with disabilities.

Ridership Trends

Ridership has increased on CDTA services for four consecutive fiscal years, and is on pace to increase for a fifth. In fiscal year 2013-14, CDTA set a 30-year record for ridership with nearly 16.5 million annual boardings. A key contributor has been the implementation of twelve universal access agreements twelve with local colleges, universities, and employers. In the past five years, CDTA has also implemented several route restructuring initiatives, with ridership on the restructured routes increasing by 15% or more. The Route 5 BRT project increased ridership on the corridor by more than 20%.

Transit Development Plan (2014)

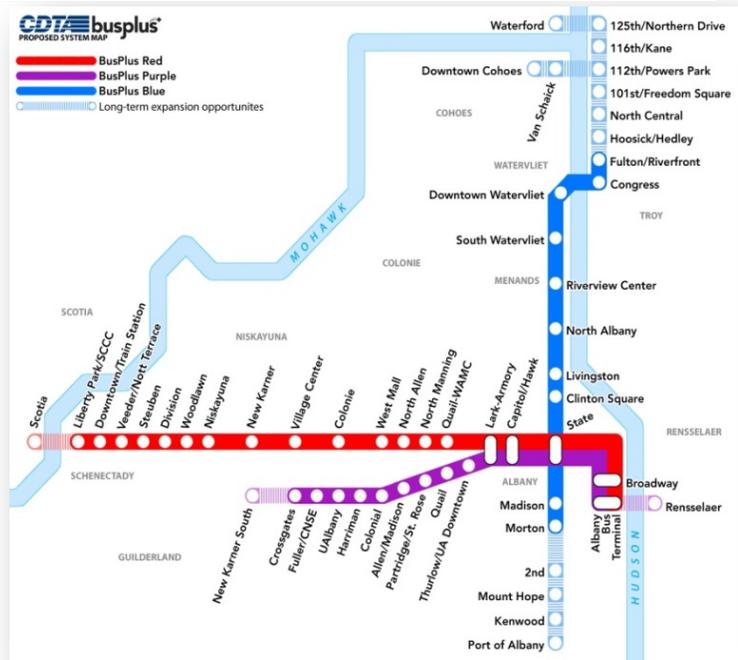
At the beginning of the New Visions plan update to 2040, CDTA was completed an update to its Transit Development Plan (TDP) in January 2014. The TDP is a five-year plan that documents CDTA’s services and outlines the most effective use of resources to increase ridership through the development of improved services, better facilities and innovative customer features. The updated TDP includes detailed service standards and a Transit Propensity Index displaying geographic data on community characteristics and transit generators. These are reflected in CDTA’s Transit Priority Corridor Network, which clearly communicates where CDTA will focus service and infrastructure improvements. The New Visions Transit Task Force used CDTA’s network as a base for building a long term CDTC transit priority network for the New Visions plan. CDTA’s 2014 TDP includes a number of recommendations for service improvements outlined below which will be folded into the short term recommendations for transit in the New Visions plan.



CDTA’s Transit Priority Corridors for a portion of the Capital Region from the 2014 Transit Development Plan

40 Miles of Bus Rapid Transit (BusPlus)

Improvements will include longer spans of service and improved frequency on the existing Red Line connecting Albany and Schenectady along NY Route 5. Two new BRT lines will create a network of 40 Miles of BRT. The Purple Line will travel on the Washington and Western Avenue corridor between downtown Albany and Crossgates Mall through the University at Albany and the Harriman Campus. The Blue Line will operate along the Hudson River from downtown Albany through downtown Troy and Lansingburgh, with branches to Cohoes and Waterford. CDTA is anticipating both the purple and blue lines to be in service in 2017.



Service Improvements and Expansion

CDTA will increase service based on productivity and growth areas, taking into account social and geographic equity. This will include increased frequency and span of service on high volume trunk routes, additional service to express routes, and improvements to services on neighborhood routes. The route performance review and reporting system will continue to provide regular updates on productivity and efficiency, guiding service recommendations for alterations and improvements.

Transit Hubs

Transit hubs and centers will offer enhanced waiting areas and the opportunity to purchase fare media, with the possibility for retail and commercial space and parking facilities. This would provide additional revenue opportunities and stimulate intermodal development. The facilities will be located in downtowns and other high ridership locations like downtown Albany, downtown Troy, and Crossgates Mall.

Park & Ride Expansion and Improvement

Guided by the Regional Park & Ride/Express Bus study, CDTA will establish new cost effective shared-use lots and review the purchase or long-term lease of property with the highest projected use. The growth of the regional park-&-ride network will support express services and feature lots with shelters, landscaping and paving. Wayfinding signs along major routes and branded entrance signs will also be installed.

Increased Shelter and Maintenance

At least 50 new shelters will be added. Plans to remove trash, graffiti, snow, and ice from shelters and other street amenities will be fortified, and landscaping will be added.

Improved Technology

CDTA will upgrade the fare collection system for smart cards and mobile phone ticketing, replace the Computer-Aided Dispatch and Automated Vehicle Location systems, and expand Transit Signal Priority and real-time arrival information from BusPlus to local services.

Premium Vehicles for Premium Service

CDTA will explore the purchase of high capacity articulated buses for trunk route corridors and commuter style buses with cushioned, forward facing seats with added leg room and complimentary Wi-Fi for use on express routes.

Improved Relationship with Development Community

CDTA will expand its relationship with the development community to demonstrate the benefits of easily accessible, transit-oriented development. Developers will consider transit a primary component of the necessary infrastructure, along with roads, water and power.

Non-CDTA Transit Options in the Capital Region

While CDTA is a significant partner providing regional transit options and is the designated recipient of federal transit funding, there are a number of other bus and rail operators that provide inter-city connections that should not be ignored in the regional transportation planning process.

Amtrak

Amtrak operates the following routes through the region:

- Adirondack, including New York, Albany, Schenectady, Saratoga Springs, and Montreal
- Empire Corridor, including New York, Albany, Schenectady, Niagara Falls
- Ethan Allen Express, including New York, Albany, Schenectady, Saratoga Springs, and Rutland
- Lake Shore Limited, including Boston, Albany, Schenectady, and Chicago
- Maple Leaf, including New York, Albany, Schenectady, and Toronto

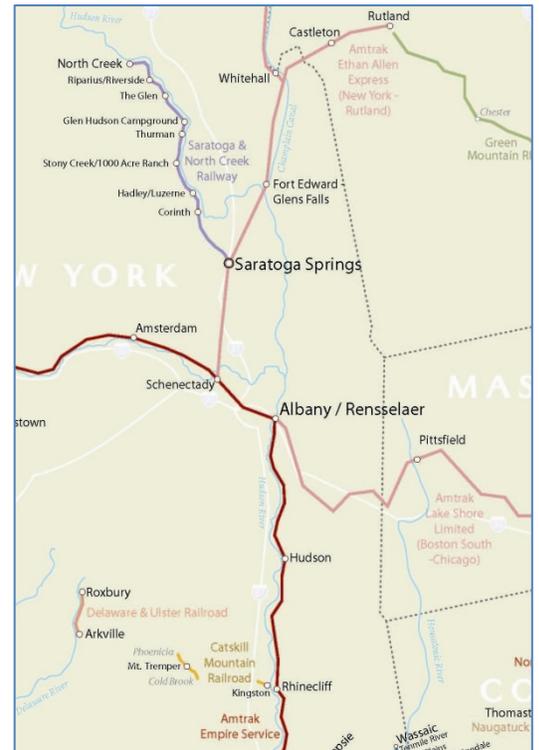
In addition, the Saratoga and North Creek Railway operates between North Creek and Saratoga Springs, connecting passengers to the national passenger rail system (Amtrak) and other services in Saratoga Springs.

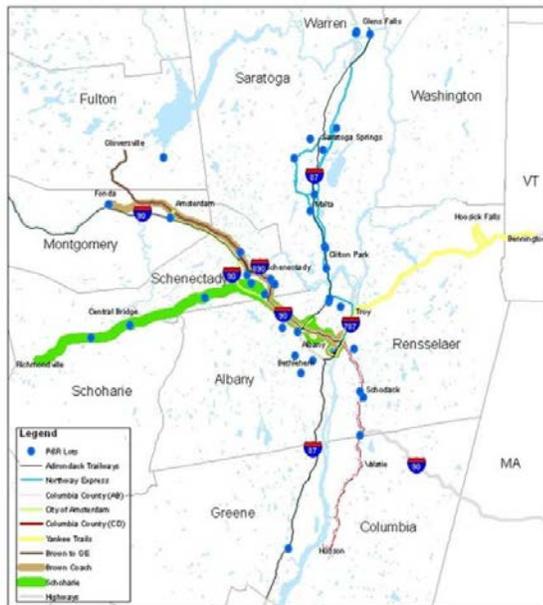
The Empire Corridor has been designated as one of 11 high speed rail corridors nationwide. The 463-mile Empire Corridor runs north and south between Albany and New York City, and east and west between Albany and Niagara Falls. New York State's Vision for High Speed Rail is to enhance the passenger and freight rail operations by diverting traffic from less energy efficient modes and improve connectivity among the State's cities and regions. The goal is to increase train ridership by improving the on-time-performance to make travel more reliable, reducing the trip time to make travel more comparable to automobiles and airplanes, increasing the train frequency to give citizens more options, and revitalizing stations to improve comfort and access.

New York State and the Federal Rail Administration are currently reviewing five options to achieve this goal:

- Base Alternative – Improvements to the existing right-of-way, new and redeveloped train stations, high-level boarding platforms, and 20 miles of new track, signals, and track improvements, such as grade crossings to enhance safety, security, and convenience.
- Alternative 90A – New train sets, locomotives and coaches, and as well as 20 more capacity and station improvement projects in the existing right-of-way.
- Alternative 90B – All Alternative 90A features plus station improvements and construction of more than 300 miles of track dedicated to passenger rail.
- Alternative 110 – All Alternative 90A features and 325 miles of new dedicated passenger rail track.
- Alternative 125 – Entirely new 247-mile corridor connecting Albany and Buffalo, requiring construction of a separate right-of-way for passenger rail service and sections of elevated track to bring passengers to stations or freight to customers and freight yards. New service would stop in Albany, Syracuse, Rochester, and Buffalo, where travelers could change to local trains.

Regardless of the high speed rail option, Amtrak is constructing a double track between Albany and Schenectady, where previously there was one track. In addition, the Schenectady station will be rebuilt and a fourth track will be constructed at the Albany-Rensselaer station.





Regional and Express Bus Services

The map at left shows the extent of a number of longer distance commuter routes with service generally into the region in the morning and out in the evening. These routes are provided by:

- Greyhound
- Yankee Trails
- Columbia County Transit
- Adirondack Trailways
- Brown Coach
- City of Amsterdam
- Schoharie County Transit
- CDTA’s Northway Express

In addition, the University at Albany operates Shuttles between its main campus, downtown Albany campus, and East Campus in Rensselaer. Megabus operates between the Rensselaer Rail Station and New York City as well as Ridgewood New Jersey, and between Burlington Vermont,

Saratoga Springs, and New York City. A number of other carriers provide service between locations in Albany or Schenectady and New York City. The New York State Office of General Services provides shuttles on workdays between its facilities in downtown Albany and satellite parking lots.

INTERMODAL FACILITIES

The Capital Region is home to a number of naturally occurring locations with multiple modes available – the Albany International Airport and the three Amtrak served passenger rail stations, in particular. All of these locations have local CDTA bus services and taxi services at or next to the terminal/station:

- Albany International Airport: the Airport provides national and international air services and connects passengers to a variety of transportation options in addition to CDTA including regional bus services.
- Schenectady: the Greyhound Station sits within walking distance of the Schenectady Amtrak Station and downtown and is served by a BusPlus stop as well as local CDTA services.
- Rensselaer: the Albany-Rensselaer Amtrak Station is in downtown Rensselaer and also serves as the Megabus stop.
- Saratoga Springs: Amtrak and the Saratoga and North Creek Railway provide passenger rail services at the Saratoga Springs Train Station. The station also includes a park-and-ride.
- Albany: the Albany Bus Terminal is in downtown Albany and is also served by a BusPlus stop and local CDTA services.

For Amtrak and CDTA, as regional inter-city bus services as well as CDTA services become more convenient for passengers, continued improvements to existing intermodal facilities and the potential for constructing new facilities, such as transit centers, are both short and longer term considerations.

Coordination with Human Service Agencies

CDTC is required to maintain a Coordinated Public Transit – Human Services Transportation Plan. The purpose of the Coordinated Plan is to identify gaps and overlaps in transportation services for disadvantaged populations and to provide prioritized recommendations for service improvements. These important services are described in Chapter 8.

Travel Demand Management

Travel demand management (TDM) refers to efforts to reduce auto travel and congestion by improving transit access, bicycle and pedestrian access, providing opportunities for carsharing, bikesharing, carpooling, vanpooling and telecommuting, and other strategies. Vehicle miles of travel is highly correlated with greenhouse gas emissions, and projects that reduce vehicle miles of travel are generally more effective in reducing greenhouse gas emissions. TDM reduces congestion, reduces the costs of driving, and is an important way to reduce greenhouse gas emissions. CDTC strongly supports TDM by investing in transit, bicycle and pedestrian facilities, ridesharing and land use planning. Transit related projects and investments that support TDM include:

- Federal funding for transit service in the Capital Region is a major part of the CDTC TIP.
- CDTA sponsors a number of transit pass subsidy programs including homeowner incentive programs and the Refugees and Immigrants program.
- CDTC maintains a travel options website for the Capital Region known as Capital Moves www.capitalmoves.org.
- CDTC sponsors Capital CarShare in Albany. Future expansion could include Troy, Schenectady and Saratoga Springs.
- CDTC sponsored four demonstration/trial weeks of Bike Share during the summer (2014) in Albany, Schenectady, Troy and Saratoga Springs.
- CDTA and NYSDOT provide Park and Ride lots for transit and carpool use.
- CDTA provides a taxi Guaranteed Ride Home for a bus rider or carpooler in the event of an unplanned emergency.
- CDTA partners with vRide to provide options for vanpools.

Emerging technology enabled (often smart phone) ride hailing services could have future roles in reducing the need for owning/using a personal vehicle for certain trips. These options have the potential to compete with transit as well as support it by offering an additional way to connect to transit, a service that is currently only provided by taxis in the Capital Region.

Transit Oriented Development (TOD)

New Visions supports sustainable development patterns and site design, urban reinvestment, and community-based land use planning. Under any growth scenario, the benefits of concentrated development patterns are significant for the transportation system and for regional quality of life. Transit Oriented Development not only supports urban centers with concentrated development patterns but can further aid in reinvestment by supporting mixes of land uses at a walkable scale.

In support of urban reinvestment and regional equity, CDTC has programmed significant funding for transportation projects in the cities. One important way that CDTC has supported land use planning is by sponsoring the Community and Transportation Linkage Planning Program (known as the Linkage Program). The Linkage Program provides funding for cities, towns, and villages to prepare and implement community-based transportation and land use plans consistent with New Visions principles. Through this program as well as CDTC's Corridor Management Initiative, TOD studies have been completed in the City of Albany and the City of Schenectady.

The need for additional support for nodal development that supports walking and transit continues to increase. CDTC continues to support communities undertaking zoning code updates that create areas for transit oriented development.

Transit Priority Network

CDTC's current Transit Priority Network constantly evolves to match the current CDTA route system. CDTC uses the network to assign points to projects proposed for federal funding and considered by CDTC for programming. Any project located on the transit priority network receives points, increasing its competitiveness for funding. One noted difficulty with this method is that a project implementing no transit components, or even worsening the environment for transit, may receive points. In addition, the networks have a small effect on the overall TIP scoring process, which is weighted in favor of fast-moving automobiles.

The Transit Task Force recommends changing the Transit Priority Network to base it off of CDTA's Transit Priority Corridors, with deviations off of the main line removed, connections to the Albany International Airport and Saratoga Springs train station added, and I-87 between Route 7 and I-90 added.

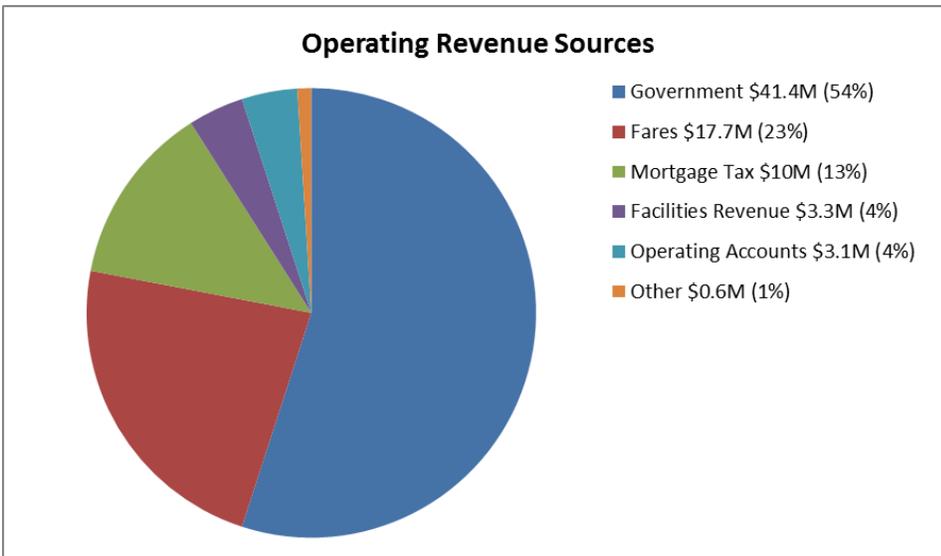


Funding

Many forecasts suggest level or potentially declining funding from identified financial revenue sources. In our region, fare box revenue amounts to approximately one-quarter of cost recovery, aligning with the national average. The transit financial model therefore necessitates significant and continuing subsidy.

Current Financial Picture

Understanding transit funding in our region involves focusing on the Capital District Transportation Authority (CDTA), which operates a 250-bus, 60-route fixed route bus service and as well as paratransit, several stations, 250 shelters, 3000 stops, and 40 park and ride lots. CDTA's operating budget totals approximately \$76M annually as of 2014.



Source: CDTA Transit Development Plan (2014)

As can be seen above, the revenue source picture is complex and varied. The largest source of revenue is government subsidy of \$41.4M, which includes State assistance of \$31.6M (42% of total operating budget), Federal assistance of \$7.9M (10%), and County assistance of \$1.9M (2.5%). A local mortgage recording tax mechanism also provides a local subsidy of \$10M (13% of budget). The next largest share of operating revenue following governmental subsidies is that portion derived from customer fares which total \$17.7M, or 23% of the operating budget. The remainder of the annual budgeting picture is varied and includes such sources as revenue from facilities, advertising, and transfers from operating accounts.

Funding in Comparable Systems and Environments

Amongst New York peers, the Syracuse and Rochester systems are roughly similar to Albany's while the Buffalo system is considerably larger, in terms of operating dollars. Syracuse shares a similar percentage – roughly 25% - of operating expenses recovered by farebox proceeds. Rochester and Buffalo experience a lower rate of under 15%. Both the Syracuse and Rochester peers rely upon the mechanism of the mortgage recording tax, at recent levels of 9-10% or \$6-7M. The Albany/Capital Region real estate market may be slightly stronger, accounting for CDTA's slightly higher MRT recovery of 13% or \$10M. Each system in New York also sources small amounts of revenue from advertising and other sources. These systems utilize relatively few novel or unexplored mechanisms to incorporate into CDTA.

Several lessons are apparent from examining the systems of Austin, Texas, Kansas City, Missouri and Madison, Wisconsin, which are succeeding as first rate systems in spite of declining Federal and State subsidies and average farebox recovery rates. Notably, Austin's Capital Metro operating budget includes \$182M or 64% from service area sales tax. Similarly, Kansas City's operating budget receives 59% from a dedicated sales tax that has received strong public support. While Madison does not share this dedicated local sales tax, its operating budget includes a significant local share from the city budget as well as local contracting partners.

Prior New Visions and Recent Progress

The Transit Futures Report prepared by the CDTC Transit Futures Task Force in 1995 outlined a “broad strategy of actions for the coming years” including an item of particular note with regard to the financial challenges faced then and now by transit: “Change the economic ‘equation’ to ensure effective user and non-user support of transit.” Included within the discussion of this item were the following categories:

1. Include demand management and transit support expenses as elements of developer financed traffic mitigation programs.
2. Increase employer participation in transit promotion and financing.
3. Implement cash out parking subsidies. This would require cash out legislation wherein an employer that purchases commercial parking spaces for employees is required to offer cash value of a parking space directly to an employee as an incentive to reduce driving.
4. Engage New York State as a full partner in parking management and transit promotion.
5. Consider highway pricing (particularly congestion pricing), parking pricing, and broad parking policies.
6. Adopt more effective fare policies.
7. Ensure TIP funding decisions recognize the multiple public objectives of transit service.
8. Secure new reliable public funding.

CDTA has made significant strides in several areas including employer participation by means of universal access agreements. Another fruitful area, developer financed traffic mitigation, exist in local instances although not in a regionally consistent manner and not specifically harnessed by transit. CDTC actively works to consider multi-modalism and transportation alternatives in TIP evaluation and is increasing attention on transit benefits.

Transit-supportive changes to parking policies and highway pricing (including congestion pricing) have been more challenging. Congestion pricing and other highway pricing mechanisms may not be well-suited to the context of the Capital Region. Parking policy and pricing options are still of interest. Reliable funding is at the crux of the future success of transit in our region.

Alternative Funding Discussion

CDTA has recently implemented cost efficiency measures. Therefore, attention should be directed primarily toward funding. The general types of funding can be thought of in the conceptual categories of *riders*, *business*, and *government subsidy*.

The ridership category of funding involves examination of current fare policy. While no current plans call for fare increases, fare policy changes could include both modest increases to standard bus fares and to BRT fares. There may be more flexibility in negotiating and pricing universal access agreements with major regional employers. Possible mechanisms might include a base costs plus cost per rider, with the latter being variable and relating to direct costs of provision of services.

The business category can be summarized as special assessment districts, tax increment financing or other value capture strategies, developer contributions such as mitigation or impact fees, innovative partnering, alternative ownership and project delivery mechanisms such as joint development and transit oriented development (TOD), and land and facilities leasing or sales.

The government subsidy category involves additional and more stable subsidies. As of this writing, Federal legislation extending or replacing MAP-21 is unknown. Potential sources could include fuel tax increases (potentially indexed for inflation), vehicle registration or license plate fees, vehicle ad valorem taxes (e.g. taxes based on motor vehicle value), millage increases (e.g. tax rates on motor vehicle values), vehicle miles travelled taxes, innovative financing repaid from a variety of standard and non-standard tolling strategies (including congestion pricing), parking fees, regional or local sales taxes, state income taxes, and value added taxes. More sustainable subsidies might include an incremental sales tax increase and/or a share of a fuel tax increase.

The success of a dedicated tax is predicated on the reputation of the transit agency, the specific benefits provided by the tax, and strong champions. Challenges include currently high tax rates that may be approaching a

maximum tolerable level. There are also challenges to impose such a tax in a regional manner with no regional form of government – agreement and coordination across municipalities would be necessary.

Most tenable in the Capital Region may be a novel funding source which directly connects an incremental tax increase to a clear benefit that transit is uniquely capable of providing. A notable example of this is the use in Pittsburgh’s Allegheny County (Pittsburgh Pennsylvania) of a pouring fee on alcoholic beverages that directs the funds to public transit. Research indicates this tax generates \$43M annually. In the Capital Region, the growing craft beverage movement could suggest a new funding source. By steering the tax proceeds of such a potential fee to transit, and portion to safe rides programs, evening and nighttime transit service could be increased in order to reduce the potential for driving under the influence (DUI) dangers.

Public Input

The Transit Task Force recommends asking the public about relative priority among modes related to both use of the physical roadways and funding. For instance, roadways can include space for street parking, travel lanes, bus lanes, sidewalks, trees, and bus stops. Another idea was to show street typologies that accommodate different levels of transit. The group would like to gather input from mayors or supervisors on street space scenarios, and restricting building construction with public funds to those that are accessible to transit. Finally, the group would like the public to be able to provide input online.

Chapter 8: Human Services Transit

The 2015 update of the Coordinated Public Transit-Human Services Transportation Plan is part of the New Visions 2040 Plan. It is included as an appendix of the New Visions 2040 Plan.

The Capital District Transportation Committee (CDTC) has had a long history of coordination efforts related to public transit/human services transportation dating back to the 1970's. A more formalized process was put into place after enactment of federal transportation legislation entitled the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEAU) in 2005. SAFETEAU required that projects selected for funding under the Section 5310 Elderly Individuals with Disabilities Program, the Job Access and Reverse Commute (JARC) Program (Section 5316), and the New Freedom Program (Section 5317) be “derived from a locally developed, coordinated public transit-human services transportation plan”, and that the plan be “developed through a process that includes representatives of public, private and nonprofit transportation and human services providers and participation by the public.” Toward that end, the **Regional Transportation Coordination Committee** was formed to guide the work of the coordinated plan and to work toward better integration and coordination of public transit- human service agency transportation services. The first Coordinated Plan was adopted in 2007 and the previous update was adopted in 2011. Federal legislation requires that the Coordinated Plan include the following components:

Plan Purpose and Required Elements

Federal legislation requires identification of the transportation needs of individuals with disabilities, older adults, and people with low income and development of strategies for meeting these local needs, along with prioritization of transportation services for funding and implementation. The locally developed Coordinated Plan must include the following components:

- An assessment of available services that identifies current transportation providers (public, private, and non-profit);
- An assessment of needs for individuals with disabilities, older adults, and people with low incomes;
- Strategies, activities and/or projects to address the identified gaps between current services and needs, as well as opportunities to improve efficiencies in service delivery; and
- Priorities for implementation based on resources (from multiple program sources), time, and feasibility for implementing strategies and/or activities identified.

Why is a Coordinated Plan important? As a region it will become increasingly important to address the growing mobility service needs of individuals with disabilities, seniors and low income residents.

Currently, the Capital District is home to over 90,000 people with reported disabilities, affecting how they are able to travel and use the variety of transportation choices most people take for granted. The Capital District's senior population is expected to continue to increase. For many people, sensory and mobility loss are associated with aging, impacting their ability to drive and making it more difficult to access and use transit. In addition, many of the region's low income residents face challenges related to access to jobs either because they do not have access to a private vehicle or public transit.

The Regional Transportation Coordination Committee (RTCC) continues to foster communication and coordination among a variety of groups in an effort to better serve people with transportation challenges. This Coordinated Public Transit-Human Services Transportation Plan is the third developed with the assistance of the RTCC.

Ensuring key stakeholders and representatives from transportation disadvantaged groups are included in developing the Coordinated Plan: A Coordinated Plan must be crafted with input and participation from seniors, individuals with disabilities, representatives of human service agencies, public, private and non-profit transportation providers and other members of the public. The RTCC assisted CDTC in developing this Coordinated Plan and will seek to increase participation and input from additional stakeholders moving forward. Through the proposed Workshop on Tools for Human Service Agencies and other events, this will be an ongoing effort as we seek opportunities to engage a wider circle of stakeholders.

The overall purpose of a Coordinated Public Transit – Human Services Transportation Plan is to improve services for transportation disadvantaged populations by identifying gaps and overlaps in service and providing prioritized recommendations for service improvements.

Recent Changes in the Federal Funding/Programmatic Landscape:

In 2012 the new federal transportation law known as MAP-21 made significant changes to several federal programs related to Public Transit and Human Service Transportation. MAP-21 requires programs and projects seeking federal funding under the 5310 program adhere to a regionally developed Coordinated Plan; other federally funded transportation should be coordinated.

Changes to the way non-emergency Medicaid trips are handled as a result of recent New York State reforms, as well as shifting budget priorities impacting social service agencies, have reduced opportunities for previously robust and successful coordination activities, such as a regional brokerage of trips. **Identifying new solutions and coordination strategies is an important challenge for the region.**

Plan Implementation Goals:

1. To raise awareness of the Coordinated Plan and encourage stakeholders and the public, including representatives of transportation disadvantaged populations, to participate in its implementation.
2. To provide qualitative and quantitative data regarding the mobility and access needs of transportation disadvantaged populations and the type and location of current transportation services:
 - Provide demographic information on transportation disadvantaged populations, focusing on geographic patterns.
 - Identify public and private organizations currently involved in serving the needs of transportation disadvantaged populations and the existing transportation services they provide by type, timing and geography.
3. To use data and information gathered through additional agency/stakeholder outreach to identify feasible recommendations for local agencies:
 - Provide information and examples to help encourage increased collaboration and coordination among agencies to close service gaps.
 - Incorporate and update analyses and recommendations from previous studies and identify best practices.
 - Formulate strategies to address identified gaps in services recognizing that to provide quality and efficient transportation services a variety of options should be available to meet the diverse needs of transportation disadvantaged individuals.
4. To identify and document gaps, barriers and strategies proposed to address them, and develop a mechanism to prioritize use of resources for implementation of identified strategies, including federal 5310 funds.
 - Identify strategies to better coordinate land use and transportation services incorporating principles related to smart growth, concentrated development, and livable/age friendly communities to foster more efficient ways to travel including enabling greater access to and use of fixed route public transit services for those that are able to use them.
 - Promote enhanced pedestrian access to public transit and other alternative modes of travel.
 - Propose evaluation criteria/prioritization mechanisms for the merit evaluation process used in the cyclical **Transportation Improvement Program (TIP)** update to prioritize projects including elements that promote universal access and improve access and mobility options for traditionally transportation disadvantaged populations.
 - Promote coordinated advocacy and improve efforts to coordinate funding with human service agencies.
 - Foster development and implementation of mobility management approaches.

Information on services offered by CDTA along with information gathered from a 2011 survey to the area’s human service agencies is included in the Plan. **Survey results indicate an increasing reliance on volunteer drivers for those agencies providing direct transportation services as well as increasing costs.**

What else is Included in the Coordinated Plan? In addition to demographic and other background information the Coordinated Plan includes an inventory of existing public transit and specialized transportation services. The region is served by a network of transit and social service transportation options that provide public and special transportation services in response to the growing needs of the

region. These range from services operated by the Capital District Transportation Authority (CDTA) such as fixed-route and paratransit services to those provided by human service agencies and private entities.

A listing of past and currently funded coordination efforts, as well as gaps, barriers and proposed strategies, are presented.

Strategies and Actions include:

- 1) Prioritize projects for Section 5310 funding that address identified needs, gaps and barriers.
- 2) Reach out to NYS Department of Health, OPWDD and Veteran's groups to participate in the RTCC .
- 3) Organize and hold a **Workshop on Tools to Improve Human Service Agency Transportation Service Quality and Efficiency**.
- 4) Restructure the RTCC meetings to foster better communication, information sharing and coordination among service providers.
- 5) Ensure that listings of available paratransit services within the Capital District's four counties are included in the 511NY paratransit services listings. Explore use of 211 as a resource for human service agency transportation.
- 6) Smart Growth – Identify mechanisms, such as education and outreach, potential incentives and other means to improve decision making for Location Efficient Siting of Facilities/Housing serving transportation disadvantaged populations.
- 7) Facilitate completion of ADA Transition Plans and associated physical improvements to continue to work toward an accessible regional transportation system. Include a method to incentivize and prioritize inclusion of accessible features in federally funded transportation projects through changes to CDTC's Transportation Improvement Program (TIP) merit evaluation process for candidate projects.
- 8) Explore utilization of *A Framework for Action* - a self-assessment tool that states and communities can use to identify areas of success and highlight the actions still needed to improve the coordination of human service transportation.
- 9) Explore opportunities for coordination for other federal programs that fund transportation components but are not funded through FTA or FHWA.

Chapter 9: Regional Operations and Travel Reliability

Travel Reliability – Reliable traffic flow is more important than reducing congestion – traffic congestion is often a sign of an area’s economic vitality.

Managing traffic flows on the Capital Region expressway and arterial system is critical for both economic and social reasons.

- *Congestion Management is much more cost effective than highway capacity increases or new lanes. Congestion alone does not justify increasing highway capacity or adding new lanes.*
- *Congestion management actions will include traffic management center improvements, incident management, managed lanes, managed tolls, traffic information technology, traffic signal coordination, parking management, and travel demand management strategies such as supporting more transit, pedestrian, and bicycle travel, carpooling, vanpooling, carsharing, bikesharing, and flexible work hours.*
- *Some congestion is acceptable when the community deems it acceptable, or when it results from balancing the needs of other transportation modes such as pedestrian, bicycle, and transit.*

The New Visions Plan addresses operations and travel reliability in a number of important ways and provides a framework for improving regional environmental quality.

CDTC has studied traffic congestion and traffic operations in the Capital District. The New Visions Plan recognizes that managing traffic flows is critical for the health of the region. There are multiple tools available for managing traffic and the Plan supports a comprehensive approach to traffic management. Some of the major categories of tools include incident management, demand management, intelligent transportation systems (technology), arterial management and land use planning. These approaches are discussed in this paper.

Most of the congestion in the Capital District is caused by “non-recurring delay” such as delay caused by a vehicle crash, a snowstorm or major weather event, or construction. **Incident Management** is the planned, coordinated process of detecting and removing incidents to restore normal traffic operations as quickly as possible. With a majority of all expressway system delay caused by incidents -- ranging from vehicles with flat tires on shoulders to major crashes -- quick detection and removal are critical to maintaining traffic flows, particularly during peak travel periods.

As a representative example, the following table (Table 1) compares “incident delay” to “recurrent delay” on the Northway for weekday AM and PM peaks in 2011. The data indicates that a total of 72% of weekday peak hour delay on the Northway is related to incidents. Because incident delay is the main cause of congestion, and because travel time reliability and predictability are important to travelers, the CDTC New Visions Plan has identified traffic reliability as an important performance measure. This traffic data is collected by the New York State Department of Transportation (NYSDOT) through the Management Information System for Transportation (MIST) for a number of locations on the Northway, I-90, I-787 and Alternate Route 7. This system provides traffic count and speed and incident data for every 15-minute interval throughout the year. On the expressway system, delay is calculated as travel time in excess of travel time at 50 miles per hour.

Table 1: 2011 Weekday Vehicle Hours of Delay on the Northway: Recurrent Delay and Incident Delay

	Hours of Delay				Percent Delay		
	Recurrent Delay	Incident Delay	Disabled Vehicle Delay	Total Delay	Recurrent Delay	Incident Delay	Disabled Vehicle Delay
AM Peak Southbound	32,312	55,213	3,661	91,186	35%	61%	4%
AM Peak Northbound	150	3,471	16	3,637	4%	95%	0%
Total AM Peak	32,461	58,684	3,677	94,823	34%	62%	4%
PM Peak Southbound	1,479	2,503	353	4,335	34%	58%	8%
PM Peak Northbound	19,766	63,473	7,163	90,402	22%	70%	8%
Total PM Peak	21,245	65,976	7,516	94,737	22%	70%	8%
Total AM and PM Peaks	53,706	124,660	11,194	189,559	28%	66%	6%

Source: NYSDOT MIST database. The AM peak period is defined as from 7:00 AM to 9:00 AM. The PM peak period is defined as from 4:00 PM to 6:00 PM.

Table 2 shows total delay on the Expressway system that is monitored by the MIST data system. The data indicates that delay is worse in the PM peak period, with 50% more delay occurring system wide. However, on the Northway, AM peak period delay is more comparable to PM peak period delay.

**Table 2
2011 Weekday Vehicle Hours of Delay by Facility and Peak Period**

Facility	Limits	AM Peak Period	PM Peak Period
Northway Southbound	From Exit 10 to Exit 1	91,186	4,335
Northway Northbound	From Exit 1 to Exit 10	3,624	90,402
Ramps Between I-90 and I-87		1,168	4,135
I-90 Westbound	From Exit 10 to Exit 1	7,154	37,739
I-90 Eastbound	From Exit 1 to Exit 10	2,393	7,031
Route 7 Westbound	From I-787 to I-87	463	5,764
Route 7 Eastbound	From I-87 to I-787	2,930	489
Route I-787 Southbound	From Route 7 to Route 378	5,578	1,449
Route I-787 Northbound	From Route 378 to Route 7	900	22,426
Total		115,396	173,769

Source: NYSDOT MIST database. The AM peak period is defined as from 7:00 AM to 9:00 AM. The PM peak period is defined as from 4:00 PM to 6:00 PM.

An important measure of traffic flow is reliability. Non-recurring delay is more unacceptable to the average commuter because it is unexpected and disrupts plans, while predictable, recurring delay can be more tolerable. For example, the MIST data shows that on an average day, average travel time from Exit 5A on I-90 to the Riverview Road in Clifton Park on I-90 is 20 minutes, or 6 minutes longer than free flow. However, the 95th percentile travel time (incident related) is 30 minutes, which is 16 minutes longer than free flow. The incident related travel time is more disruptive. In order to measure the reliability of expressway segments, CDTC uses the Planning Time Index (PTI). This index represents the ration of travel time on a worse than average day (95th percentile) to a travel time with an average speed of 55 mph. Tables 3 and 4 show the Planning Time Index by expressway segments for AM and PM peaks for 2011 weekdays. The tables also show average speed and 95th percentile speeds. In the PM peak hour, the Northway segment north of Exit 7, northbound, has the slowest average speed on the Northway, while the Northway segment between Exits 2 and 4 northbound is the least reliable. In the PM peak, Route 7 between I-787 and the Northway also has a high PTI indicating lower reliability. In the AM peak, the two segments with the highest PTI are on the Northway southbound between Exits Exit 8A and the Twin bridges. Incident management is a vital tool for addressing traffic reliability.

Table 3
PM Peak Period Planning Time Index, Weekdays, 2011
Average Speed and 95th Percentile Speed

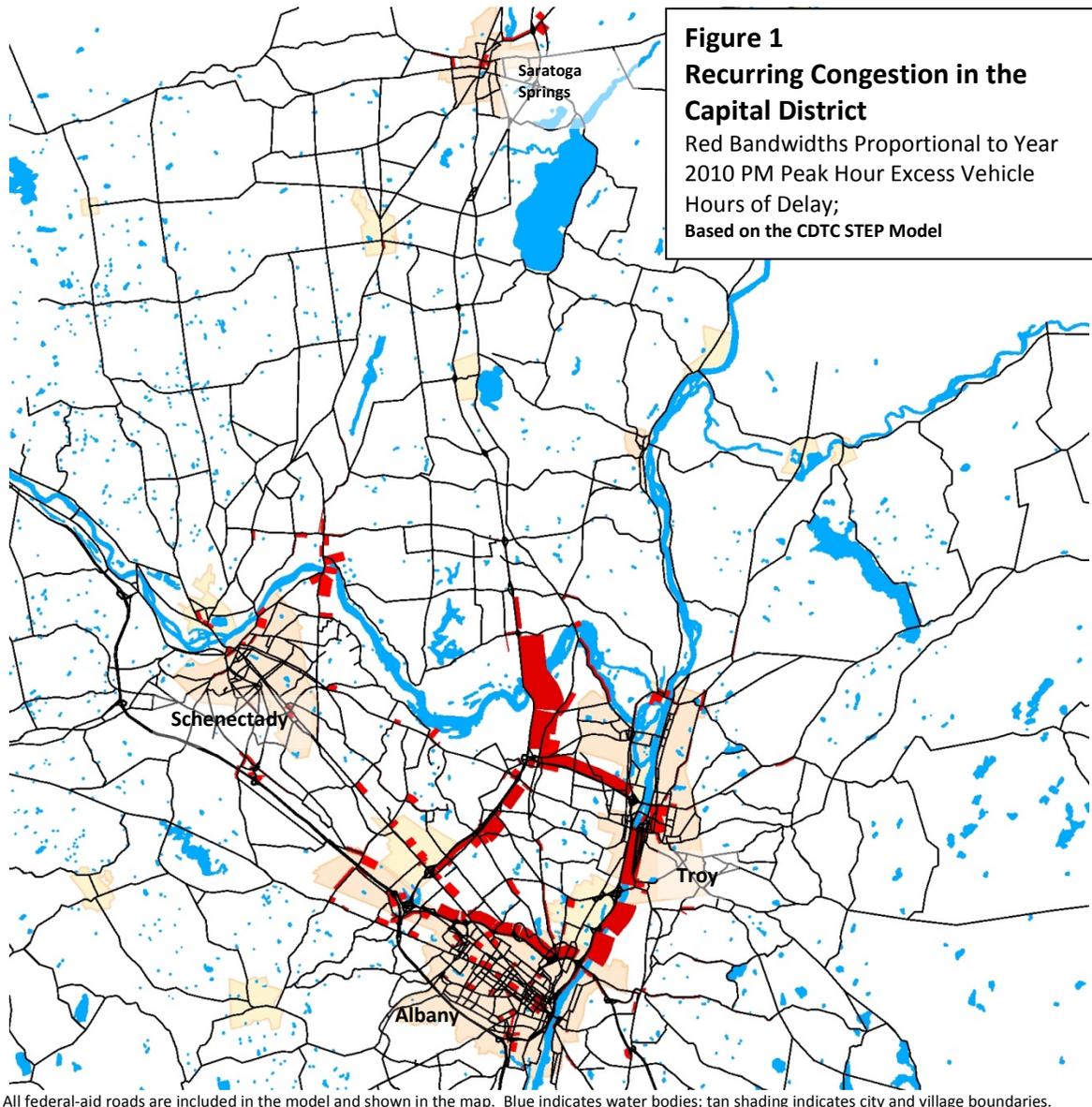
Link Name	Average Speed (mph)	95th Percentile Speed (mph)	Planning Time Index
I-87 Northbound (NB):			
I-87 Ex. 1-2 (NB)	49	30	1.83
I-87 Ex. 2-4 (NB)	48	25	2.17
I-87 Ex. 4-5 (NB)	47	30	1.81
I-87 Ex. 5-6 (NB)	48	29	1.90
I-87 Ex. 7 (NB)	47	34	1.62
I-87 Ex. 7 (north of) (NB)	43	32	1.74
I-87 Twin Br. (south of) (NB)	59	49	1.12
I-87 NB Riverview Rd.	57	50	1.10
I-87 Ex. 8 Twin Br. (NB)	58	51	1.07
I-87 Ex. 8-8A (NB)	60	54	1.02
I-87 Ex. 8A-9 (NB)	60	55	1.00
I-87 Ex. 10 Rest Area (NB)	63	58	0.94
I-787 Northbound (NB):			
I787 NB Ex. 7-8	50	38	1.46
Route 7 Westbound (WB):			
Rt. 7 WB I787-I87	51	26	2.12
I-90 Westbound (WB):			
I-90 WB Ex. 6-5A	53	43	1.27
I90 WB Ex. 5A-5	49	35	1.59
I90 WB Ex. 5-4	49	32	1.70
I-90 WB Ex. 3-2	43	29	1.92
I-90 Westbound (WB):			
I-90 EB Ex. 2-3	56	50	1.11
I90 EB Ex. 4-5	56	46	1.19
I90 EB Ex. 5-5A	50	39	1.41
I-90 EB Ex. 5A-6	55	41	1.35
Patroon Br. I90 EB to Exit 8	53	46	1.20
I90 EB Ex. 8-9	60	56	0.99
I90 EB Ex. 9-10	61	57	0.96

Table 4
AM Peak Period Planning Time Index, Weekdays, 2011
Average Speed and 95th Percentile Speed

Link Name	Average Speed (mph)	95th Percentile Speed (mph)	Planning Time Index
I-87 Southbound (SB):			
I-87 Ex. 2-1 (SB)	54	40	1.39
I-87 Ex. 4-2 (SB)	56	48	1.14
I-87 Ex. 5-4 (SB)	61	53	1.03
I-87 Ex. 6-5 (SB)	57	48	1.16
I-87 Ex. 7 (SB)	66	60	0.92
I-87 Ex. 7 (North of) (SB)	57	48	1.14
I-87 Twin Br. (south of) (SB)	57	43	1.29
I-87 SB Riverview Rd.	54	38	1.43
I-87 Ex. 8-Twin Br. (SB)	46	23	2.37
I-87 Ex. 8A-8 (SB)	49	18	3.06
I-87 Ex. 9-8A (SB)	51	28	1.96
I-87 Ex. 10-9 (SB)	60	35	1.58
I-787 Southbound (SB):			
I787 SB Ex. 8-7	54	39	1.42
Route 7 Eastbound (EB):			
Rt. 7 EB I87-I787	58	47	1.17
I-90 Westbound (WB):			
I-90 WB Ex. 6-5A	55	47	1.17
I90 WB Ex. 5A-5	53	48	1.16
I90 WB Ex. 5-4	56	48	1.15
I-90 WB Ex. 3-2	55	51	1.09
I-90 Westbound (WB):			
I-90 EB Ex. 2-3	55	49	1.11
I90 EB Ex. 4-5	57	49	1.12
I90 EB Ex. 5-5A	51	43	1.27
I-90 EB Ex. 5A-6	59	54	1.03
Patroon Br. I90 EB to Exit 8	55	47	1.17
I90 EB Ex. 8-9	61	55	0.99
I90 EB Ex. 9-10	62	55	0.99

Source: NYSDOT MIST database. The AM peak period is defined as from 7:00 AM to 9:00 AM. The PM peak period is defined as from 4:00 PM to 6:00 PM.

The MIST data system provides extensive monitoring of the four highest volume expressways in the Capital Region, but congestion also occurs throughout the region. CDTC maintains a travel demand model for the four county region which is called the STEP Model (Systematic Transportation Planning and Evaluation Model). The STEP Model is based on population, housing and employment data and estimates traffic volumes based on demand. These estimated volumes are compared against actual traffic counts to validate the model. Figure 1 shows the STEP Model estimates of traffic congestion (excess vehicle hours of delay) in the Capital District. The STEP Model indicates that the worst congestion in the Capital District occurs on the four highest volume expressways that are covered by the MIST data. The model also indicates other locations along arterials in the cities and suburbs that are often related to intersection delays. CDTC has developed a “Congestion Management Process” (CMP) that identifies critical congestion locations.



Strategies and Programs

The Capital Region Transportation Management Center is a traffic monitoring and response center operated by the New York State Department of Transportation in partnership with the New York State Police. The TMC is located at the New York State Police Troop G headquarters in Latham, NY and has been in continuous operation since December, 1998. Partnering with the State Police has enhanced situation awareness of regional traffic issues and decreased incident response time. The TMC is a focal point for regional traffic incident management, utilizing traffic cameras and road sensors, and it is the originator of NYSDOT regional 511 video and message feeds. The TMC enables State Troopers, DOT HELP Trucks, and other emergency personnel to respond swiftly to crash scenes and other highway problems. When it is appropriate, DOT maintenance crews are dispatched to help restore traffic flow quickly. Since the establishment of the TMC, traffic flow has improved for all Capital Region highway users. The TMC also coordinates with the Thruway Operations Center (TSOC), CDTA, and plans for traffic management during construction and special events.

The TMC is an essential tool for providing incident management services. Reliability of and predictability of travel are important goals supported by the TMC. Quick clearance of incidents, management of traffic during construction, coordination between NYSDOT and emergency service providers are critical to minimizing delays. The TMC is an important component of the Governor's "Drivers First" initiative. Reliability and predictability of travel time on expressways benefits all users including passenger vehicles, truck freight/commodity movements

and public transit such as the CDTA's Northway Express Bus Service. Planning for traffic management during construction as part of design benefits drivers.

CDTC has provided strong support for the TMC and its mission. CDTC has consistently provided funding through the Transportation Improvement Program (TIP). The 2013-18 CDTC TIP provides \$2.8 million per year for the TMC, including support for the HELP program. The CDTC New Visions Plan identifies the TMC as a vital component of congestion management and traffic reliability for the Capital District. Non-recurrent delay represents the worst congestion Capital Region drivers encounter, and TMC incident management and operations efforts are the most effective ways to reduce non-recurrent delay in the Capital District. Commercial vehicles rely on TMC and 511 data. The TMC is also a critical resource for responding to emergencies such as Hurricane Irene and Hurricane Sandy. By managing traffic flows, the TMC makes a vital contribution to the attractiveness and economic vitality of the Capital District.



The Capital Region Transportation Management Center



The HELP program provides roadside assistance



Variable message signs help motorists avoid incidents and delays



The TMC operates 40 Digital CCTV cameras

Travel Demand Management- Travel demand management (TDM) refers to efforts to reduce auto travel and congestion by improving transit access, bicycle and pedestrian access, providing opportunities for carsharing, bikesharing, carpooling, vanpooling, and telecommuting, and other strategies. TDM reduces congestion, reduces the costs of driving, and it is an important way to reduce greenhouse gas emissions. CDTC strongly supports TDM by investing in transit, bicycle and pedestrian facilities, carpooling and land use planning. CDTC projects and investments that support TDM include:

- Federal funding for **transit** service in the Capital District is a major part of the CDTC TIP. New Visions incorporates CDTA's Transit Development Plan, which will improve and grow a variety of transit services for the Capital District, increasing mobility and supporting economic development and smart regional growth. One example is CDTC's investment in the BusPlus system on the Route 5 corridor.
- New Visions encourages development that incorporates **bicycle and pedestrian** accommodations into highway construction as well as city, village, and town plans and provides for recreational opportunities through creation of bike/hike trails.
- CDTC maintains the **iPool2 Ride2gether** website which offers a ridematching service and a one-stop shop for traveler needs.
- CDTC maintains the **Capital Coexist** website, a localized education campaign geared towards cyclists and motorists safely coexisting when using the region's roadways.
- **Capital CarShare-** CDTC sponsors this car-sharing program in Albany, with four cars available and two more on the way. Future expansion could include Troy, Schenectady and Saratoga Springs. Providing the opportunity to rent a car on an as needed basis makes not owning a car, or only owning one car in a household, more feasible.
- CDTC sponsored four demonstration/trial weeks of **Bike Share** during the summer (2014) in Albany, Schenectady, Troy and Saratoga Springs.
- Investments in **Park and Ride** lots have been supported by CDTC and CDTA and NYSDOT.
- **Guaranteed Ride Home-** this program provides a taxi trip home for a bus rider or carpooler when they need to respond to an unexpected issue, such as picking up a sick child from school.



Traffic Signal Technology and Intersection Improvements- Improving intersection operations is critically important to improving traffic flow for autos, transit vehicles and freight, and high quality access for pedestrians and cyclists. CDTC supports improvements to traffic signals that improve travel efficiency and traffic flow while reducing delay. CDTC also supports the construction of roundabouts at intersections where feasible. Examples of CDTC sponsored traffic signal and intersection improvements are listed below.

- Route 5 Transit Signal Priority/signal coordination;
- Queue Jumpers at the Intersections of Central Avenue with New Karner Road and Wolf Road;
- ITS Transit Signal Priority on Washington and Western Avenues;
- ITS Signal Improvements on New Scotland Avenue;

- ITS Signal Improvements on Pawling Avenue;
 - Green Island Traffic Signals;
 - Erie Boulevard/Jay Street/Nott Street/Front Street Roundabout;
 - ITS Signal Improvements in the Troy's Second Avenue Corridor and in the area around Federal Street, Congress Street, Ferry Street and Fifth Street;
 - South Broadway/Ballston Avenue Intersection Improvements;
 - New Traffic Signal at Intersection of Providence Avenue & Hillside Avenue
- **Signal coordination** provides the opportunity for cars to move along an arterial with only infrequent stops at traffic signals, and significantly reduces delay. CDTC has sponsored signal coordination projects. Signal coordination can be used to improve arterial function, to discourage speeding on arterials while allowing motorists to make better time. Signal coordination can also be used to encourage speed calming on community streets. The goal of signal coordination is to improve travel time for an entire trip rather than focusing on travel time at a single intersection.
 - **Transit Signal Priority (TSP)** is an innovation which allows buses to activate signals for extended green time as they approach a signal if they are behind schedule. The extended green time is usually ten seconds, which allows transit vehicles to provide higher quality service. It should be noted that autos in the same traffic stream with the bus will benefit as well. Because the green phase is typically extended only two or three times per hour, the impact on side streets is minimal. CDTC supports TSP as an important tool for improving transit service. TSP has been implemented in the Route 5 BusPlus corridor and is being developed for other corridors. Queue jumper signal phases also have the potential to improve transit on time performance by allowing buses to advance on green ahead of other vehicles, without disrupting traffic flow.
 - **Pedestrian Signals-** Innovations in pedestrian signals include pedestrian activation of advanced walk phases, where pedestrians can begin crossing before vehicles enter the intersection; exclusive pedestrian phasing, where all vehicles, including right-turn-on red movements, are stopped while the pedestrian crosses. Countdown timers for pedestrians make crossing easier. In addition, a new type of signal for midblock pedestrian crossing has been introduced, called a HAWK beacon. This signal requires autos to stop only when a pedestrian needs to cross. Innovative technology holds promise for improving midblock pedestrian crossings, school crossings, and speed control.
 - **Roundabouts-** At many intersections, roundabouts are extremely effective at improve traffic flow and can provide significant safety benefits, especially for reducing severe (injury/fatal) crashes. An additional benefit of roundabouts is that maintenance requirements can be significantly less than for signalized intersections, and roundabouts by design can adapt to changing traffic conditions. NYSDOT has policies in place to require consideration of roundabouts when reconstructing an intersection. Additionally, roundabouts are the preferred alternative if the roundabout alternative is feasible.

Implementation of signal technology improvements has the potential to improve traffic mobility and safety at low cost. Signal technology also can enhance pedestrian, bicycle and transit access and provide an important component of complete streets. The CDTC Regional Operations and Safety Advisory Committee is developing recommendations for implementing and operating signal technology.

ITS technologies for transportation operations- Traffic signals are considered to be one type of Intelligent Transportation System (ITS) technology. ITS can be defined as using technology to make smarter use of transportation networks. It includes communications with drivers as well as communications within the transportation system. CDTC has long recognized the value of using ITS to improve travel for all modes, including autos, transit, bicycles and pedestrians, and freight. Emerging ITS technologies include:

- **Adaptive signal control** is a control strategy whereby the signal controller makes adjustments to cycle length, off-sets and phase timings in real time based on changes in the traffic characteristics on the arterial. This can be especially valuable during an incident on an expressway, when traffic may divert to a parallel arterial. Adaptive signal control has been recommended for the Northway/Route 9 corridor in the I-87/US 9 Integrated Corridor Management Plan. Under adaptive control, traffic signals in a network communicate with each other and adapt to changing traffic conditions to reduce the amount of time cars and trucks spend idling. Using

fiber optic video receivers similar to those used in dynamic control systems, the new technology monitors vehicle numbers and makes changes in real time to minimize congestion wherever possible.

- **Self-Organizing Signals-** One example of Adaptive Signal Control is a system being developed and tested at the University at Albany called Self-Organizing Signals. This proposed system is based on the theory of self-organizing biological systems. Analogous to biological systems, each traffic signal in the system would communicate with the immediately adjacent signals and based on traffic sensor information would adjust the signal timing plan. This innovative approach has the potential to respond to minor changes in traffic flow as well as major changes to traffic flow in a way that optimizes the system. CDTC will continue to monitor the development of this innovative approach.

Arterial Management and Land Use Planning- A critical factor to the success of preserving capacity along existing arterial highways involves the coordination of development along the roadway. How land owners adjoining arterial highways use or develop their property and gain access to the highway system has a direct impact on how well the highway user is served. Land use and access considerations are critical to a successful arterial management program. CDTC supports strong municipal planning because municipal land use and zoning policies strongly influence the efficiency of the region's arterials and highways. CDTC also supports accommodation of pedestrian, transit, and access management concerns in the site planning review process. New Visions endorses corridor transportation plans that call for a well-designed network of connected streets featuring pedestrian and bicycle treatments and transit access. The Plan acknowledges the importance of land use and development. CDTC sponsors the Linkage Planning Program, which provides funding for cities, towns, and villages to prepare and implement community-based transportation and land use plans consistent with New Visions principles.

The I-87/US 9 Integrated Corridor Management Plan- In partnership with CDTC, NYSDOT prepared an Integrated Corridor Management Plan for the Northway/Route 9 corridor. Integrated Corridor Management (ICM) would enable the New York State Department of Transportation (NYSDOT) to optimize use of available transportation infrastructure by directing travelers to underutilized capacity in a corridor. Strategies could include motorists shifting their trip departure times, routes, or modes, and/or NYSDOT dynamically adjusting capacity on I-87 by or adjusting traffic signal timings to accommodate demand fluctuations.



The Thaddeus Kosciuszko Bridge carries the Northway over the Mohawk River

In addition, access management and smart growth strategies are proposed for the US 9 corridor. Access management is the systematic control of the location, spacing, design, and operation of driveways, median

openings, interchanges, and street connections to a roadway. Good access management provides a safe operating system for all users while balancing the function of the roadway with the access needs of the adjacent land uses.

The ICM Plan is based on the CDTC New Visions Plan policy that says that adding physical capacity to the Northway is not the right approach, but that managing congestion and traffic flows in the Northway corridor is the best way to add capacity and improve the Northway. A management approach is the best approach because the most severe delay on the Northway is “non-recurrent” delay; that is, delay that results from incidents and other events. CDTC analysis has shown that widening the Northway would result in travel demand immediately increasing to fill the new capacity, while doing little to address incident delay and reliability. One of the conclusions of this analysis is that there is no feasible capital improvement such as highway widening that can eliminate daily recurring congestion in the peak periods. Adding capacity to the Northway can be expected to result in higher traffic volumes and could generally be expected to result in conditions similar to those which exist today. In addition, widening would not prevent delays that result from incidents such as bad weather conditions, traffic crashes and vehicle breakdowns. Adding considerable capacity in one corridor would also re-concentrate traffic into the peak period, putting severe traffic pressure on all intersecting roads and expressways that are not widened. In addition, widening the Northway would be prohibitively expensive and would provide benefits for only short periods in peak periods in one direction. Finally, people are driving less, moving back to the cities, and obtaining fewer drivers licenses; and self-driving vehicles will likely decrease congestion and crashes. This means that adding physical capacity to the Northway would not be a wise long term investment.

The I-87/Route 9 ICM Plan was developed in consultation with state and local police/emergency response staff and other local officials. It developed recommendations to manage incidents, improve traffic flow, and improve reliability. These recommendations are listed in Tables 5, 6, and 7. It is important to note that an important part of managing the Northway corridor is based on ongoing operational costs, which are shown in Tables 5, 6, and 7. Investing in operations is critical to managing traffic flow in the Northway corridor and in other corridors, and the corresponding costs need to be budgeted.

**Table 5
I-87/Route 9 ICM Short Term Recommendations**

Strategy/Elements	Description	Qty	Unit Price	Capital Cost	Operation/ Maintenance Cost (per year)
Bluetooth Based Detection for Travel Time I-87 & US 9					
Bluetooth Based Detection on I-87	Solar powered, cellular communications links, Bluetooth installed at ramps	16	\$7,500	\$120,000	\$24,000
Bluetooth Based Detection on US 9	Solar powered, cellular communications links, Bluetooth installed at Selected intersections	34	\$10,000	\$340,000	\$68,000
Totals				\$460,000	\$92,000

Table 6
I-87/Route 9 ICM Medium Term Recommendations

Strategy/Elements	Description	Qty	Unit Price	Capital Cost	Operation/ Maintenance Cost (per year)
Extension of Existing ITS Program on I-87					
Communications Backbone (per mile)	Extension of the existing fiber optic back bone from the Twin Bridges north to Saratoga Springs (Exit 8 to Exit 13)	14.5	\$120,000	\$1,740,000	\$174,000
CCTV	Color video with pan, tilt, and zoom, cabinet, tower, foundation and conduit (Fill in between Exit 8 and 13)	10	\$45,000	\$450,000	\$90,000
Variable Message Signs	Full matrix NTCIP, with foundations and gantry	4	\$250,000	\$1,000,000	\$100,000
Incident Detection on Route 9					
Communications Backbone (per mile)	Extension of the existing fiber optic back bone on I-87 to Route 9, on Route 9 from Exit 2 to 13	16.5	\$120,000	\$1,980,000	\$198,000
CCTV	Color video with pan, tilt, and zoom, cabinet, tower, foundation and conduit at intersections along Route 9	26	\$40,000	\$1,040,000	\$208,000
Totals				\$6,210,000	\$770,000

Table 7
I-87/Route 9 ICM Estimated Long Term Deployment Costs

Strategy/Elements	Description	Qty	Unit Price	Capital Cost	Operation/ Maintenance Cost (per year)
Adaptive Signal Control on US 9					
Central Software	Central software for Traffic Operations Center	LS	\$250,000	\$250,000	\$50,000
Detection	In pavement detectors (speed, volume, occupancy) on approach lanes with wireless connection	50	\$40,000	\$2,000,000	\$400,000
Algorithm/ Controllers	Algorithm/ Controllers	50	\$15,000	\$750,000	\$150,000
Totals				\$3,000,000	\$600,000

One concept studied during the ICM but needing further study is **active traffic management (ATM)** to serve traffic approaching the Twin Bridges. Active traffic management is defined as the ability to dynamically manage recurrent and non-recurrent congestion based on prevailing traffic conditions. Non-recurrent congestion refers to congestion that results from traffic crashes, weather events or other incidents. Speed harmonization is one example of active traffic management. Speed harmonization can help to reduce flow breakdown and the onset of

stop-and-go driving behavior in support of improved mobility. An example of a speed harmonization strategy is the use of variable speed displays. They are set (and varied) according to prevalent roadway and operating conditions, including visibility, weather, lane constraints (e.g., work zones), crashes and other incidents, and real-time traffic flows/congestion levels. Variable speed displays may be advisory or regulatory. Another example of active traffic management is Dynamic Lane Assignment (DLA), which consists of lane control signals – typically installed in conjunction with variable speed displays – providing advance notice that a lane(s) is closed ahead and to start the merge process into the available lanes well in advance of the actual closure.

For the Northway, this strategy would require the installation of a series of overhead gantries at a spacing of approximately every 1/2 mile northbound on I-87 from Exit 4 to the Twin Bridges (5 miles) and southbound on I-87 from Exit 9 to the Twin Bridges (5 miles). Estimated costs are shown in Table 8. As described earlier, this is a location of recurring traffic congestion due to the geometry of I-87 approaching the Twin Bridges. Active traffic management has been shown to improve travel time reliability, increase roadway throughput, reduce crashes, save fuel and squeeze more traffic capacity from the existing roadway cross section. A comprehensive program of before and after traffic studies is underway for an active traffic management project in northern Virginia. CDTC will further evaluate this approach as national experience increases.

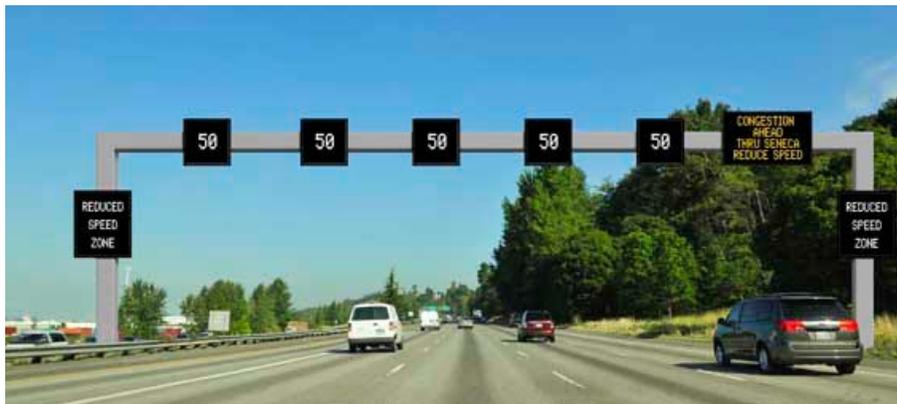


Figure 2. Variable speed displays in Seattle

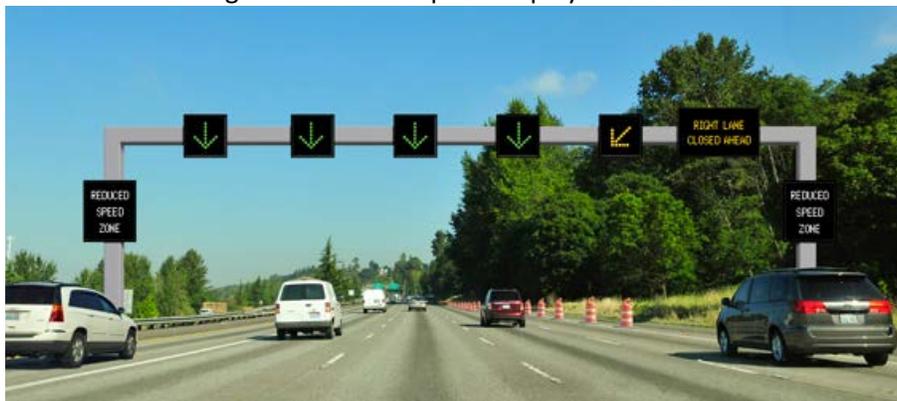


Figure 3. Dynamic Lane Assignment in Seattle

Table 8
I-87/Route 9 ICM: Estimated Deployment Costs for Strategies Requiring Further Study

Strategy/Elements	Description	Qty	Unit Price	Capital Cost	Operation/Maintenance Cost (per year)
Active Traffic Management on I-87					
Speed Harmonization	Gantries every 1/2 mile Northbound on I-87 from Exit 4 to the Twin Bridges (5 miles) and Southbound from Exit 9 to the Twin Bridges (5 Miles)	20	\$225,000	\$4,500,000	\$450,000
Variable Speed Limits					
Dynamic Lane Assignment					
Queue Warning					

Operational Improvements and the Intelligent Transportation System Priority Network

Given the expense and difficulty of adding expressway capacity, and given the high demand for expressway usage that is forecast to continue to grow in the Capital District, it is clear that strategic investments in operational improvements will continue to be important to the future of the Capital District. ITS investments, including incident management and traveler information systems, will make the Capital District more accessible and will be important for maintaining the quality of travel. Emerging and future technologies hold promise, and analysis of future traffic growth and future conditions further underscores the importance of ITS and operational investments to provide important benefits to the traveling public.

The identification of priority networks does not imply that improvements off the defined networks are not warranted or desirable. Flexibility is required in interpretation, so long as the basic message—*these are important facilities*—is not lost. The New Visions Plan identifies a network of expressway and arterial facilities as the platform for the regional ITS. There should be centrally coordinated traffic control and/or guidance along these facilities. The logic is that advising travelers of preferable alternatives *before* they enter the most congested areas and facilitating smooth flows along the alternatives can keep overall traffic conditions from worsening. The regional ITS priority network contains:

- ◆ priority expressways;
- ◆ arterials representing their immediate alternatives (ordinarily either parallel to or connecting the expressways);
- ◆ their secondary alternatives (which entail more surface street travel); and
- ◆ other arterials that are strategically important because they are important travel corridors, although they are not viewed as alternative routes for expressway travelers.

The Regional Operations and Safety Advisory Committee was asked to review the ITS priority network and determine if updates were needed. One of the comments made by the Committee is that volume and crashes on roads within the priority network should be considered in evaluating funding priority. The CDTC project evaluation process already takes into account volumes, facility importance and potential crash reduction in evaluating and prioritizing projects. This concept will be further considered in the context of ITS projects as CDTC refines its project evaluation and selection process.

The ITS priority network recognizes the importance of the expressway system, but the role of ITS on the arterial system is also important. Some ITS improvements to arterials which parallel the expressways will have direct benefits to expressway travel, especially by providing alternate routes during expressway incidents. Access management and physical improvements will be required for this to be effective. Nonetheless, ITS benefits from signal coordination, transit signal priority, or other improvements will also provide significant benefits to normal daily arterial function.

The ITS network recognizes the importance of coordinating signal timing on major city and suburban arterials. Transit-friendly application of that technology will include designing the operation of the signal system to achieve multiple objectives. Rather than optimizing signal timing for maximum traffic flow, signal system design can be developed that allows for efficient traffic progression at travel speeds that are compatible with pedestrian, bike and transit movements. This may provide for a win/win outcome. Even modest improvements in basic signal timing will show important results. Implementation of signal coordination along arterial corridors will improve traffic flow for autos as well as for transit using Transit Signal Priority (TSP). Successful implementation of signal coordination along the Route 5 corridor in Albany, Colonie, Village of Colonie, Niskayuna and Schenectady has demonstrated the value of ITS for arterial performance. For routes that parallel expressways, ITS holds the promise of allowing the signal coordination and timing plan to be changed by the TMC to facilitate diverted traffic during an incident.

The ITS priority network is described in Table 9. The priority network was updated to show it not going to Lake George, but does extend to the Saratoga County/Warren County border. It also includes all routing in the 40 mile BRT system. The Route 5 portion of the ITS Priority Network continues to include the BusPlus BRT; while the updated Priority Network includes all routing for the Washington Western BRT and the River Corridor BRT.

Table 9
ITS Priority Network Facilities

Priority Expressway Corridors	Centerline Miles
Northway (I-87) and Fuller Road Alternate: US 20 to Saratoga County/Warren County Line	43.6
Thruway (I-87/I-90): Albany/Greene County line to Schenectady County/ Montgomery County line; Berkshire Spur (21A to B1)	44.9
I-88: Thruway Interchange 25A to Schenectady County/Montgomery County Line	14.5
I-90: Thruway Exit 24 to Berkshire Spur	19.3
I-787: Thruway Interchange 23 to Alternate Route 7	8.7
I-890: End to End	7.8
Alternate Route 7: Northway to I-787	3.6
TOTAL MILEAGE	142.4
Priority Arterial Corridors – Immediate Alternate Routes for Expressways	
NY 2: I-787 to US 9	4.0
NY 5: Downtown Albany to Downtown Schenectady; Includes BusPlus BRT	16.0
US 9: Downtown Albany to Warren County Line	50.5
US 9/20: Downtown Albany to I-90 Interchange 11	7.0
Everett Road from Sand Creek Road to Route 5	0.8
NY 32/US 4: Downtown Albany to Waterford (US 4); includes all River Corridor BRT routing including Broadway in North Albany; BRT Routes in Troy, Lansingburgh and Cohoes	20.0
Erie Boulevard: NY 5 to Freeman’s Bridge Road	1.2
Fuller Road: US 20 to NY 5	1.9
Washington Avenue: Central Avenue to NY 155	7.6
Wolf Road: NY 5 to Albany Shaker Road	2.0
I-90 Exit 8 Connector (NY 43): I-90 to US 4	1.3
US 9W: I-787 to Greene County Line	11.4
NY 5S from I-890 to Schenectady County/Montgomery County Line	5.86
TOTAL MILEAGE	129.6
Secondary Alternate Routes for Expressways	
	Centerline Miles
US 4: US 9/20 to NY 7	10.4
NY 7: I-890 to I-88	5.7
US 20: Downtown Albany to NY 155; includes Washington Western BRT routing	10.4
US 20/NY 146: NY 155 to Thruway Interchange 25	5.7
NY 50: NY 5 to Glenridge Road	3.4
NY 146: US 9 to Glenridge Road	6.1
NY 155: US 20 to Watervliet Shaker Road	4.0
Albany Shaker Road: NY 7 to US 9	7.7
NY 7: I-87 to Albany Shaker Road	3.2
Balltown Road: NY 5 to Glenridge Road	6.7
Freeman’s Bridge Road: Erie Boulevard to NY 50	1.7
Glenridge Road: NY 50 to NY 146	2.1
Watervliet Shaker Road: New Karner Road to Albany Shaker Road	1.3
NY 787 Cohoes Arterial: NY 7 to Route 32	2.6
TOTAL MILEAGE	71.0
Priority Arterials Not in Expressway Corridors	
NY 2 in Troy and Brunswick	10.3
NY 7 in Troy and Brunswick	9.1
NY 7: Albany Shaker Road to I-890	6.6
NY 32: US 9W to Elm Avenue	3.6
NY 85: I-90 to NY 140	4.6
NY 443: Downtown Albany to Elm Avenue	5.7
Broadway/Partition Street/East Street: US 20 to Amtrak Station	0.3
Streets with a density of more than two traffic signals per mile	53.0
TOTAL MILEAGE	93.2

Chapter 10: Infrastructure

Preserving, Managing, and Renewing Capital District Infrastructure

Infrastructure – Transportation funding must be sufficient to both repair and sometimes replace our highway, bridge, and transit infrastructure.

New Visions remains committed to the maintenance, repair, replacement, reconstruction and right-sizing of the existing freight and passenger transportation facilities in a cost-effective manner that protects and enhances rideability, public safety, accessibility, and serviceability.

Currently the needs for replacing bridges, reconstructing pavement, and investing in transit and port facilities outweigh available funding. Renewing existing infrastructure in our communities is fiscally responsible and consistent with smart growth.

CDTC needs to ensure that system preservation and system reconstruction are balanced, and that roads and bridges in our cities and rural communities are equitably considered. Continued capital investment in our transit system, ports, and airport and their connections to other surface transportation will remain a priority.

New York’s transportation system is critical to growing the State’s economy, competing in national and world markets, creating jobs, and sustaining the quality of life in its cities and communities. This is true throughout the State, but especially so in metropolitan areas like the Capital District. According to a study prepared for the U.S. Conference of mayors, “.....the concentration of people and businesses in metro areas creates unique economic conditions that give rise to new industries, speed the diffusion of knowledge, spur technological innovation, increase productivity, and promote growth.” There is little dispute as to the need to do a better job in maintaining and improving all of New York’s – and the region’s – transportation systems. But the question is: how do we do it?

CDTC’s “New Visions” Long Range Transportation Plan, through extensive outreach and a committee structure providing technical support, sets out a framework of principles, strategies, and actions to help guide the region’s transportation development in the future. The Infrastructure Task Force has been charged with evaluating current conditions on the region’s entire system, projecting its future needs, and understanding how best to put limited financial resources to best use in order to benefit the region – including, and especially, by innovative means. The efforts of New Visions and the Infrastructure Task Force will inform how investment decisions are made within the Transportation Improvement Program (TIP), the five-year transportation capital improvement program.

The Capital District Transportation System

The Capital District is held together by a vast web of streets and highways, bus and rail systems, bike paths and trails. While often taken for granted, this network is vital to the health of the region. Consider that the region is home to over 15,000 miles of roadway and 1,087 bridges; three large Class I railroads; a four-county public transit service operated by the Capital District Transportation Authority (CDTA); AMTRAK passenger rail service with stations in Albany-Rensselaer, Schenectady, and Saratoga Springs; an international airport; and one of the few inland ports in New York; among other assets and services. With a current replacement value of over \$50 billion, preserving the region’s transportation system so that it lasts for generations and meets changing needs has been a top priority for CDTC for the last 40 years.

The direct users of these transportation facilities and services, including commuters, shoppers, tourists, and shippers are not the only beneficiaries. Employers and consumers of shipped goods benefit as well. Every citizen is a stakeholder, and it is only by maintaining these transportation facilities can the Capital District economy thrive.

Capital District Street System by the Numbers

System Size:

- 15,400 lane-miles total regional
- 3,000 lane-miles State owned
- 12,400 lane-miles locally owned
- 7,500 rural lane-miles
- 4,500 federal-aid eligible lane-miles

National Highway System Mileage

- 1,107 total lane-miles
- 740 State-owned interstate lane-miles
- 351 State non-Interstate lane-miles
- 16 locally-owned mileage

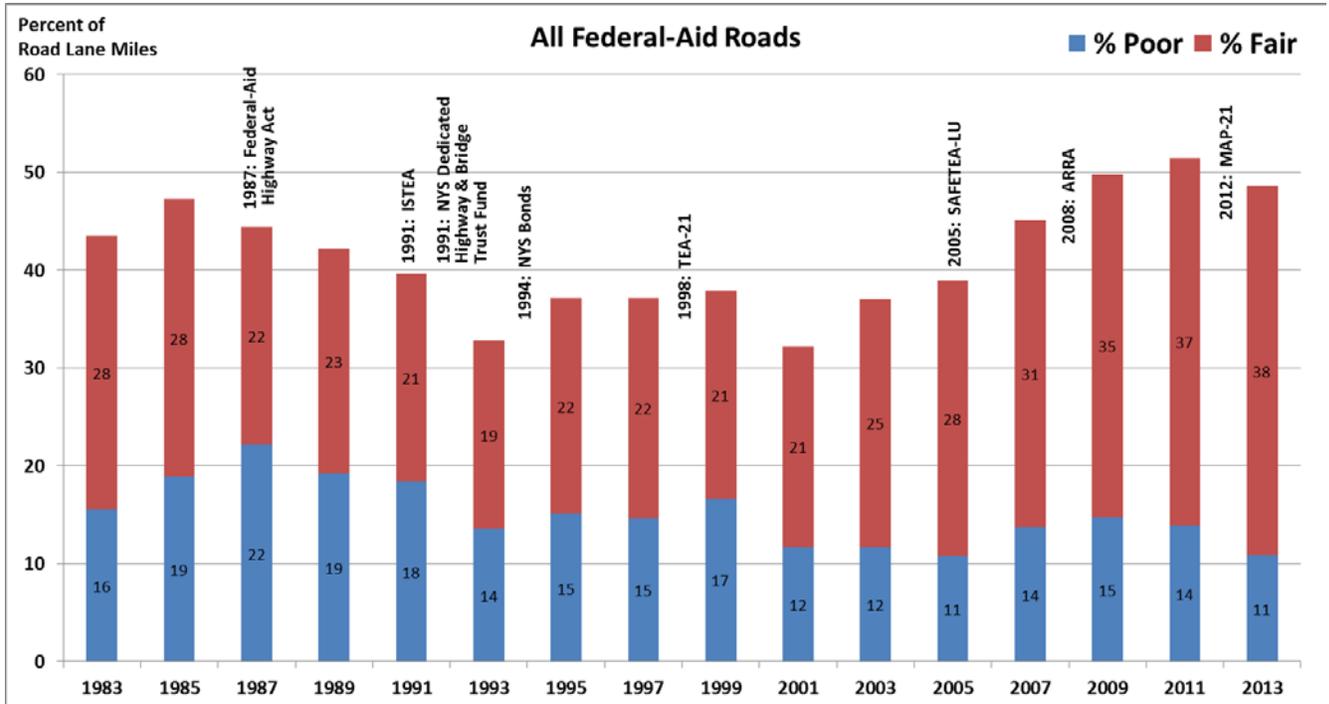
Total Vehicle Miles Traveled (VMT) in 2013:

- 19.7 million region-wide travel
- 7.2 million (36 percent) Interstate travel
- 6.6 million (34 percent) State system
- 5.9 million (30 percent) local system

Replacement Value: \$26-30 billion

Deteriorating Conditions in the Region

Figure 1: Pavement Condition of Capital District Federal Aid Streets and Highways: 1983-2014



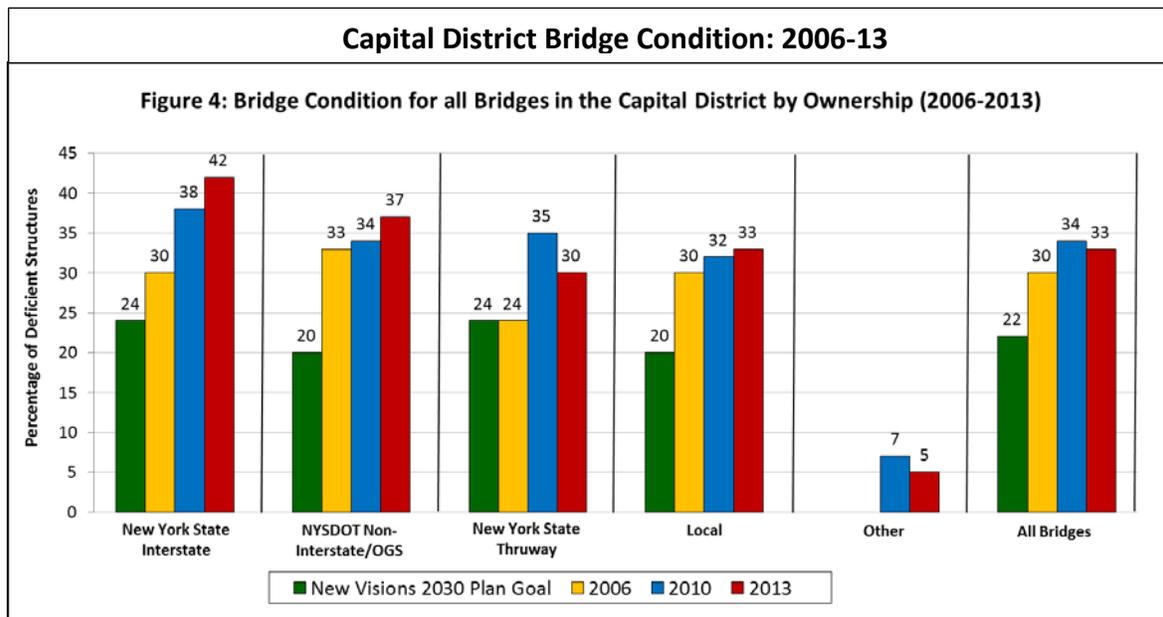
Today, unfortunately, the Capital District is faced with a challenge. Reduced investment levels combined with new demands placed on the region’s transportation system has placed a great deal of stress on the region’s physical infrastructure, reversing years of progress made during the TEA era.

This bar chart shows the changes in pavement condition of the region’s major streets and highways. The lower the bar, the better the condition. The emphasis of preservation under CDTC’s New Visions Plan and increased funding from TEA legislation through the 1990s has helped address the sizable inventory of roads creaking past their useful lives. As investment levels decreased over the last ten years, condition declined. The chart shows the timeline for the passage of various federal and State transportation legislation.

Pavement condition of the region’s federal-aid eligible roads – major streets and highways that carry most of the region’s traffic – is beginning to decline after improving through the 1990’s. Only half the system is in a state of good repair.

- The interstate system continues to age, and the resources needed for its eventual reconstruction are a looming concern. There have been few full reconstruction projects on these highways which are now between 30 and 50 years old. The engineering life of a freeway generally lies between 50 and 70 years.
- Both federal-aid and non-federal aid facilities that are located in the less-populated, more rural parts of the region are in worse shape than facilities in more urban or developed areas.
- The region’s non-federal aid system (both State and locally-owned facilities) is in the worst shape with more than 50 percent in need of repair or reconstruction. While less heavily travelled, these local roads provide critical links between highways, farms, markets, homes, jobs, schools, hospitals, and recreation.

Bridges in New York and in the Capital District are well into middle age, and are deteriorating faster than they are being cared for. Of the 1,087 bridges in the Capital District, 33 percent are structurally or functionally deficient. Eight percent have some kind of structural deficiency. These values have risen over the last seven years.



This chart shows that bridge needs remain substantial. The number of structurally and/or functionally deficient bridges increased by 10 percent over the last seven years. Interstate bridges are in the worst shape, with deficient structures increasing by 40 percent since 2006. According to New Visions 2030, repairs to interstate bridges are estimated to require more than one-half of the region’s total bridge budget over the next 25 years.

- National Highway System (NHS) bridges are a particular concern. Forty percent of the region’s 429 NHS bridges, are categorized as deficient. Interstate bridges were in even worse shape with 94 bridges (42 percent) categorized as deficient – versus 60 bridges in 2006. Non-interstate bridge conditions continue to slide as well with 37% of State-owned bridges categorized as deficient, up from 33% in 2006.
- The Capital District Transportation Authority (CDTA) provides public transit service to 2,300 square miles within the region, operating a fleet of 300 vehicles over 60 routes and including Bus Rapid Transit service. CDTA served a record-breaking 16.5 million passengers last year, and ridership keeps on climbing. However, CDTA has had to pursue life-extending repairs on aging buses in the fleet. The average bus age of over 7 years requires continual funding to be maintained or reduced.
- Port, Airport, and Transit owned assets, well in excess of \$0.5 billion in total replacement value, represent additional infrastructure needs which are extremely important and often overlooked.
- The effort and cost to bring the region’s pedestrian facilities into ADA compliance looms large.

Financial Challenges Facing Capital District Infrastructure

Historically, funding has been cyclical, with public and political support for funding initiatives growing when viewed as urgent and worthwhile. In prior New Visions plans, CDTC has believed revenues would at least track inflation – and more likely grow moderately in proportion to the well-documented accumulating needs of the transportation system. However, we have instead seen continually declining receipts in the Highway Trust Fund as well as other unrelieved state, local, and Federal fiscal challenges. Revenues have declined since the passage of MAP-21 – by as much as 50% in our region in a single year. Cyclical funding may no longer be the norm or at minimum the region may be experiencing an indefinitely extended funding trough.

The continued slow decline of pavement and bridge condition in the Capital District is not the result of CDTC’s preference for new facilities over system preservation and renewal, ribbon-cutting over repaving. To the contrary,

New Visions has been extremely careful to remain realistically financially constrained and to limit commitments to those that will not compromise the region's ability to preserve and renew its basic infrastructure. However, CDTC's investment principles also emphasize steady progress across all project types, meaning all systems are vulnerable to deterioration.

As of this writing, Federal legislation extending or replacing MAP-21 is a significant unknown, as are any mechanisms to address the long-range shortfall in the Highway Trust Fund. Also unknown is what share of New York State's limited fiscal plan capacity will be devoted to transportation. While incremental sales taxes dedicated to transportation experience a success rate in ballot measures nationwide of 54 percent, according to an NCHRP Report entitled "Future Financing Options to Meet Highway and Transit Needs," it is assumed that most traditional fuel or sales tax increases would be extremely challenging politically and administratively, and are in any case well beyond the purview and mission of the MPO. Many core aspects of funding stability loom larger than the activities of the regionally-based Infrastructure Task Force, or the scope of the New Visions Regional Transportation Plan. Nonetheless, innovative financing techniques will continue to be explored and evaluated with regard to their projected yield, long-term reliability, equity, and feasibility.

CDTC's 21st Century Approach for Infrastructure Renewal

New Visions has made a strong commitment to keeping the region's transportation system functioning and in good condition. CDTC remains committed to the maintenance, repair, and renewal of the existing passenger and freight transportation facilities in a cost-effective manner that protects and enhances rideability, public safety, accessibility, and serviceability.

Since the passage of MAP-21, the approach to addressing road and bridge needs in the region, and throughout New York State, has changed. The approach to bridges has moved from routine replacement to "element specific" repair whenever possible and road surfaces are being repaved and not reconstructed. This approach dovetails with NYSDOT's "preservation first" strategy which emphasizes the optimization of the existing infrastructure through cost-effective preventative and corrective maintenance activities. The strategy of performing less-expensive and shorter-lasting repairs is likely to be the official policy for the region's pavements and bridges at least in the near term.

Insufficient resources have prevented the programming of necessary reconstruction work on facilities in poor condition. Directing most funds to preserving pavement and bridges also leaves very little available for support of other mobility needs. Within future capital programs focused on preservation, a mature and evolving definition of preservation will be explored and implemented which enables a balanced approach to stewardship of public facilities. Such an approach is likely to include:

- continued focus of resources on existing infrastructure over expansion or new facilities;
- some essential rehabilitation, renewal, and improvement projects within a preservation focused program;
- addressing critical infrastructure elements immediately outside bridge or pavement limit lines (such as complete street features on bridge approaches, or sidewalks adjacent to street paving projects); and
- continued focus on highest used facilities but with some additional attention to equity and to lower travelled facilities that have missed the window of opportunity for preservation funds and that would therefore be "orphaned" by a program with a strict or narrow preservation emphasis.
- Continued alignment with the range of New Visions goals

With NYSDOT's main focus on state-owned facilities, the MPO is an appropriate setting in which to consider the entirety of a region's infrastructure needs regardless of type or ownership. Roads and bridges in the region remain important core elements which will be the most costly in future capital programs. The MPO is also equally concerned with additional assets including those related to transit, freight, ADA compliance, bicycle paths and facilities, sidewalks and striping, culverts, etc. – that is, in all of the infrastructure components related to mobility needs of people in the region.

The Role of Innovation

While many core aspects of funding stability loom larger than the activities of the regionally-based CDTC and its New Visions Regional Transportation Plan, the Infrastructure Task Force will nonetheless continue to explore and evaluate innovative financing techniques with regard to their projected yield, long-term reliability, equity, and feasibility. Particular focus will be directed toward three of the more promising alternative approaches which may contribute to sustainable infrastructure capital improvement: mileage-based user fees; innovation through technology; and shared service agreements. It may be years before the cost-benefits of these new techniques can be quantified. Nevertheless, analyses by universities in the United States, Canada, and Great Britain suggest that these and other innovative materials and techniques can dramatically reduce direct construction and user costs, perhaps by more than 50 percent over the long-term.

Strategies & Actions / Next Steps

Infrastructure planning in the Capital District should be guided by a single strategy which simply states that *maintaining the region's roadways, bridges, trails, sidewalks, transit system, port, and airport in a state of good repair is the smart thing to do*. This overall strategy is supported by the Proposed Short-term Strategies and Actions.

CDTC's Future Efforts

By law, and as a part of responsible and effective planning, a regional transportation plan must be respectful of fiscal constraints and realistic about the resources required to implement the plan. CDTC's 2030 Plan determined that the level of funding fell short of the levels needed to meet basic infrastructure requirements by nearly \$200 million annually. As CDTC staff makes significant efforts in the coming months at reviewing infrastructure finance and needs, and tests several potential scenarios, it will be important above all to set appropriately aggressive goals for conditions while at the same time acknowledging and being guided by realistic fiscally-constrained capital programming.

CDTC's future efforts will be directed toward continued exploration of several issues. In the coming months staff will review costs for recent infrastructure work, and estimate the long-range fiscal impacts of increasing costs on plan implementation. The staff will also investigate the long-term funding needs for the region's streets, highways, and bridges. Because maintaining culverts is essential to the safety, reliability, and longevity of the region's highway system, the infrastructure task force recommended conducting a comprehensive inventory of culverts. Helping CDTC's 78 municipalities develop an approach for ADA compliance will be pursued through a special CDTC working group. Developing a "report card" will be developed to help satisfy performance measurement requirements of MAP-21.

The Infrastructure Task Force White Paper represents a summary of work to date and it is therefore important to note that the work of the infrastructure task force will continue with equal intensity over approximately the next 12 months, with some activities continuing indefinitely thereafter. Particularly given the highly technical, data-intensive nature of such topics within infrastructure as measurement of conditions, determination of need, data-driven decision making, impact of changes in funding, and quantitative effects of policy, the task force plans to dive into much greater detail in the coming months than is required or appropriate within the context of the white paper, which is essentially a summary-level document. It is important to note that the intent is not to pass judgment on communities or practices, nor to point out one community's performance versus another's, but rather to accumulate and assess available data and knowledge, further the data quality in the region, learn collectively from best practices, and ultimately help frame and guide regional policy which puts limited resources to highest and best use. Issues to be explored by the Infrastructure Task Force in the next twelve months include the following.

Proposed Short-Term Strategies and Actions

- Continued emphasis on infrastructure investment in CDTC's TIP
- Renewed attention to routine maintenance
- Focus on bridge and pavement preservation treatments
- Find a way to pursue reconstruction of major roads and bridges
- Consider community context in all infrastructure work
- Build a local coalition to advocate for regional transportation projects
- Pursue local funding mechanisms
- Encourage the use of shared services on a large scale
- Take advantage of technology innovation to reduce costs
- Pay attention to ADA compliance needs

- **Determining Fiscal Constraint:** CDTC's 2030 Plan determined that the level of funding fell short of the levels needed to meet basic infrastructure requirements by nearly \$200 million annually. In the coming months, staff will make a significant effort at reviewing long-range federal, state, and local infrastructure financing. Staff will review previous examination of the components of historic increases in unit costs for infrastructure work, and estimate the long-range fiscal impacts of these costs on plan implementation. Special attention will be given to costs related to recent bridge and pavement preservation actions.
- **Scenario Planning:** As part of this plan update, the Infrastructure Task Force will investigate the long-term funding needs for the region's streets, highways, and bridges. One tool CDTC will utilize is the Highway Condition Projection Model (HCPM). Features of the HCPM allow it to perform several types of 'what-if' analyses when planning for the future. The CDTC staff with the assistance of NYSDOT experts will work the Infrastructure Task Force to assess the impacts potential future funding levels and of alternative pavement and bridge repair policies. For example, the model can be run sequencing repairs in the order of 'worst first', or by a strategy which first preserves facilities above a certain rating, or by other repair strategies vetted by the Infrastructure Task Force. Reviewing existing New Visions 2030 infrastructure goals within the context of NYSDOT's draft Asset Management Plan (TAMP) will be a necessary component of scenario planning.
- **Culverts:** In addition to pavements and bridges, maintaining culverts is essential to the safety, reliability, and longevity of the region's street and highway infrastructure. Many aging culverts have deteriorated beyond the point where they can withstand maximum flow, while others have filled with sediment, reducing their capacity which causes them to overflow prematurely. State-owned culverts are inspected by NYSDOT in a manner similar to bridges. Currently of the 1,109 large culverts maintained by NYSDOT, 228, or 20 percent are rated structurally deficient. Information on locally-owned culverts is severely incomplete and will require a major effort to locate, inspect, and evaluate. The Infrastructure Task Force suggested that consideration be given to conducting a comprehensive inventory of culverts maintained by the region's counties, towns, and villages to supplement the State's inventory.
- **ADA Compliance Requirements:** The CDTC staff, with help from the Infrastructure Task Force, will work with NYSDOT ADA specialists and Region 1 planning staff to develop a specific methodology to assess sidewalk and road crossing condition that would help the region's 78 municipalities meet their obligations under ADA. The CDTC Planning Committee directed staff to form an ADA Working Group to help with this task.
- **Infrastructure Report Card:** CDTC will Develop and Publish an Infrastructure Report Card for Roads, Bridges and Other Assets. The proposed Report Card can be thought of as an asset management tool which will be used to help satisfy performance measurement requirements of MAP-21. The report card will highlight individual components of the region's transportation infrastructure (roads, bridges, sidewalks, etc.), their physical condition, infrastructure TIP and local projects completed during the previous one or two years, and how well individual goals are being met.

Chapter 11: Safety & Security

Safety

Safety and Security – We can significantly save lives and reduce injuries when we decrease traffic crashes and better respond to traffic emergencies.

CDTC and its members need to improve the safety of the regional transportation system by creating a travel environment that is consistent with the community context and reduces risk. Safety considerations will be integrated into all investment decisions.

Roundabouts and road diets will be considered in proposed highway and intersection projects to address safety concerns as well as low cost safety improvements.

Examination of security issues and incorporation of security actions using computer modeling and scenario planning will be considered in transportation planning and investment decisions.

Transportation safety has been and continues to be a national and a statewide priority. Federal legislation, most recently MAP-21 (the Moving Ahead for Progress in the 21st Century Act signed into law on July 6, 2012, requires states to update and maintain a Strategic Highway Safety Plan. The Strategic Highway Safety Plan has a primary objective of reducing fatalities and serious injuries on all public roads. The Plan's emphasis areas are identified through a data driven, collaborative process with the state's safety partners including MPOs. The New York State Department of Transportation is developing an update to its 2010 Strategic Highway Safety Plan. Highway Safety Improvement Program funds are used to implement some of the identified strategies in the Strategic Highway Safety Plan.



The New Visions Plan has always prioritized safety. To support transportation safety and the implementation of the State Strategic Highway Safety Plan, CDTC sponsors many programs, initiatives and projects. Emerging tools such as electronic access to crash data and new safety programs are presenting the opportunity to increase the role of CDTC in safety planning.

CDTC's planning process will be consistent with the State Strategic Highway Safety Plan (SHSP) and with transit safety/security plans and programs. CDTC recognizes engineering, education and enforcement as three key components of safety. CDTC will continue to build on its **existing safety initiatives**, including:

- **The Linkage Program-** CDTC's Community and Transportation Linkage Planning Program (the Linkage Program) is an integrated land use and transportation planning program created to implement the New Visions Plan. The program has been recognized as a national best practice in livability planning and is the cornerstone of CDTC's public outreach efforts. The program provides consultant or CDTC staff technical assistance for joint regional-local planning initiatives that link transportation and land use. Safety is a key element in Linkage studies, including integrated plans for complete streets and pedestrian safety. CDTC has funded a total of 79 collaborative, jointly-funded studies over the past fourteen years. Study sponsors have included 40 separate urban, suburban and rural municipalities and counties as well as not-for-profits and other public entities. Roughly \$5.5 million in federal, state and local funds have been committed to the Linkage Program since its inception in 2000.
- **Bicycle and Pedestrian Safety-** CDTC sponsors the Capital Coexist website, which is a localized education campaign geared towards cyclists and motorists safely coexisting when using the region's roadways. It will be expanded to include pedestrian education and issues. CDTC has also sponsored Law Enforcement Training for Pedestrian and Bicycle Safety. Safety related fact sheets have been prepared for through the NYSAMPO Safety Working Group and Bicycle and Pedestrian working group on Statewide Traffic Safety plans, Complete Streets,

pedestrian signal timing and designing intersections for all users. In addition, NYSAMPO has hosted several training courses including Intersection Safety and Designing Pedestrian Safe Streets.

- **Consideration of Safety in the TIP-** CDTC is responsible for evaluating and programming federally funded transportation projects on the Transportation Improvement Program (TIP). Safety benefits are considered in TIP project selection. The quantitative calculation of safety benefits is based on actual crash history and expected reduction in crashes based on the improvements being made. In addition, qualitative information is considered. For HSIP project applications, a rigorous evaluation is used to ensure consistency with state and federal guidelines. In order to encourage the programming of safety projects, CDTC has established set-aside funding for projects in the following categories: Intersection safety, Intelligent Transportation Systems (ITS), Bicycle/Pedestrian, and grade crossing safety.
- **Safety Partner Collaboration-** CDTC has formed valuable partnerships with statewide organizations to explore ways to improve safety. CDTC’s Regional Operations and Safety Advisory Committee provides a forum for many of these groups to discuss safety planning and safety initiatives.
 - **NYSAMPO Safety Working Group-** Sponsored by the New York State Association of Metropolitan Planning Organizations (NYSAMPO), the Safety Working Group was created to advance safety planning in New York State, and to improve traffic safety for users on all public roads. Representatives from the 14 New York State MPOs, the New York State Department of Transportation, the Governor’s Traffic Safety Committee, Cornell Local Roads Program and many others participate in this working group.
 - **Partnership with NYSDOT-** CDTC is partnering with the New York State Department of Transportation to analyze crash data, to help develop the Strategic Highway Safety Plan, and to develop programs and projects to improve safety.
 - **Partnership with GTSC/NYSP-** CDTC is partnering with the Governor’s Traffic Safety Committee and the New York State Police to plan for safety programs, projects and policies.
 - **Membership in NYSATSB-** The New York State Association of Traffic Safety Boards (NYSATSB) is a statewide association of county traffic safety boards, state and federal agencies, highway engineers, safety professionals, corporations and individuals who share common interest in traffic safety and injury prevention.

Expanding CDTC’s Role in Safety Planning- MAP-21 provides a number of important improvements and challenges for safety planning. MAP-21:

- Requires regular updates of the State Strategic Highway Safety Plan (SHSP)
- Increases safety funding (HSIP)
- Consolidates funding programs:
 - Railway-highway crossings
 - Transportation Alternatives (TA) program
- Requires a state safety data system that:
 - performs problem identification and countermeasure analysis on all public roads
 - advances data collection, analysis, and integration capabilities
 - determines priorities for the correction of identified safety problems
- Safety Performance Measures- New York State will be required to develop safety performance measures and targets at the State level, and CDTC will be required to develop MPO safety performance measures and targets within 180 days of approval of the State performance measures.

According to FHWA guidance, States must also consider additional safety factors when identifying emphasis areas and strategies for their SHSP updates. These factors are:

- Findings of Road Safety Audits (RSA). RSA findings can be analyzed to identify common countermeasure recommendations, which may be particularly appropriate for systemic implementation.
- Locations of fatalities and serious injuries.
- Locations that possess risk factors for potential crashes.
- Rural roads, commensurate with fatality data.
- Motor vehicle crashes that include fatalities or serious injuries to bicyclists and pedestrians.
- Cost-effectiveness of improvements.
- Improvements to rail-highway grade crossings.
- Safety on all public roads, including non-State-owned public roads and roads on tribal land.
- Older Drivers and Pedestrians Special Rule: If there has been an increase in fatalities and serious injuries to older drivers and pedestrians, States must include strategies to address those increases in the SHSP updates.

Addressing the requirements of MAP-21 will be challenging, but will provide a significant opportunity to improve safety. CDTC will carefully consider and develop the best and most effective ways to improve safety in the Capital District.

Security Planning

Examination of security issues and incorporation of security actions using computer modeling and scenario planning will be considered in transportation planning and investment decisions.

The current federal transportation legislation – Moving Ahead for Progress in the 21st Century Act (MAP-21) – continued the metropolitan planning requirements on security planning that were specified in the 2005 legislation, The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

SAFETEA-LU requires that the statewide metropolitan planning process and the metropolitan planning process for a metropolitan planning area shall provide for consideration of projects and strategies that will increase the security of the transportation system for motorized and nonmotorized users [49 USC 5303(h)(1)(C) and 23 USC 134(h)(1)(C)].

Though security was mentioned along with safety in the legislation in the past, the emphasis of plans and programs had been placed on safety with security given little attention. This requirement, along with guidance from Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), must be met prior to MPO and state adoption/approval of transportation plans.

Security planning involves planning and preparing for impacts on transportation system due to natural disasters (e.g. flooding, hurricanes, blizzards), planned events (e.g. July 4th celebration, parade), terrorist attacks, shooting or hostage situations, accidents or technical failures, and cyber threats.

The Role of MPOs

Although the immediate organizational response to security incidents and disasters will be the responsibility of security/public safety agencies, there is an important role that MPOs can play in promoting coordinated planning in anticipation of natural disasters or criminal/terrorism events. This involves regional coordination, data depository, technical support, and funding.

The level of MPO involvement in security planning varies across the country. At one extreme, there are MPOs that minimally incorporates security aspects into their long range plans. They rely on the transit agencies, DOT and other local and state entities for the operations. They include security in their long range plans and may organize committees that focus on Intelligent Transportation Systems. On the other extreme, there are MPOs who are responsible for not only preparing regional security plans but also operate the plans including the 911 system.

CDTC's Approach

Transportation security planning focuses on protecting critical infrastructure by preventing, preparing against, expediting responses to, and aiding in recovery from major natural and man-made events. For the Capital District, any transportation security plan should include the following:

- The interstate highway system, particularly at key nodes, such as the I87/ I90 merge;
- Key roadways (key links, evacuation routes, etc.), bridges, and overpasses, both in the interstate highway system and local road network;
- Albany International Airport and other community airports;
- Capital District Transportation Authority (CDTA) bus transit stations/transfer areas, intercity terminals, and Amtrak stations;
- Critical freight and inter-modal areas, such as major railway lines, Selkirk Rail Yard, The Port of Albany, and the Port of Rensselaer;
- National Highway System (NHS) Inter-modal Connectors, as identified by the FHWA;
- Traffic Management Center (TMC) and its data collection/dissemination assets.

CDTC recognizes that the primary responsibility for transportation security lies elsewhere. NYSDOT, other transportation service providers, state/county/local governments, and emergency responders are tackling security planning from various perspectives. However, there are areas related to security where CDTC is already involved. This includes long and short term planning activities and project funding. Current role of CDTC is somewhere between “traditional” and “convener.” CDTC intends to continue in that role but get more active on various

aspects of technical and non-technical services CDTC can provide to the municipalities as well as the larger security community in the region. The current involvement is briefly described below.

Regional Operations & Safety Advisory Committee- CDTC has established a Regional Operations & Safety Advisory Committee intended to create a platform for operations/ planning people from federal and state transportation agencies, transit agencies, various local municipalities, and law enforcement agencies to coordinate and integrate various traffic and transportation operations activities in the capital region. In addition to operations, the committee is charged with looking into various aspects of transportation safety and security.

The Capital Region Transportation Management Center (TMC)- Established in 1998, TMC monitors and provides responses to incidents and is operated jointly by the New York State Department of Transportation and the New York State Police. The TMC is a focal point for regional traffic incident management, utilizing traffic cameras and road sensors, and it is the originator of NYSDOT regional 511 video and message feeds. The TMC enables State Troopers, DOT HELP Trucks, and other emergency personnel to respond swiftly to crash scenes and other highway problems. CDTC has provided strong support for the TMC and its mission through the Transportation Improvement Program (TIP) funds. The 2013-18 CDTC TIP provides \$2.8 million per year for the TMC.

Intelligent Transportation System (ITS)- ITS is an umbrella term for various technologies and support systems for traffic management. It includes traffic signals, detectors, video surveillance, NY511 system, information and communication technologies, etc. ITS can play important role in security planning by providing detection and management of traffic anomalies. CDTC has developed an ITS priority network that identifies critical locations where ITS technologies are in place or are a priority to be developed. CDTC provides extra credit for projects that addresses ITS components in the network during TIP funding.

CDTC Bridge Working Group- In November of 2013, CDTC formed a Bridge Working Group to address questions and concerns raised by the Planning Committee in response to the NYSDOT and Federal-level paradigm shift from routine replacement to an emphasis on preservation. Since bridges are an important part of 'critical infrastructure,' their preservation is of utmost importance to the security of the transportation infrastructure system. The Bridge Working Group, comprised of members representing four counties, local cities, NYSDOT, and CDTC, developed a mechanism to assist with identification of longer-term bridge replacement and preservation needs, including technically solid scoping and cost information for locally owned bridges. .

Regional Studies and Plans- CDTC conducts or partner with other agencies in conducting various studies and prepare plans that address traffic operations. Recent studies include the I-87/US 9 Integrated Corridor Management Plan (ICM). ICM enables agencies to optimize use of available transportation infrastructure by managing demand on a particular facility or directing travelers to underutilized facilities in a corridor. Strategies could include motorists shifting their trip departure times, routes, or modes, and/or NYSDOT dynamically adjusting capacity on I-87 by or adjusting traffic signal timings to accommodate demand fluctuations.

Participation in Local Emergency Planning Committees (LEPC)- LEPCs are the primary security/hazards coordination forum at the county level. CDTC regularly participates in the LEPC meetings in the region. CDTC has made the committee members aware of its role and service capabilities. These meetings allow CDTC to be aware of hazard planning and operations activities in the region and provide inputs in terms of potential traffic impacts and/or influence on/by other transportation projects/activities in the region.

Evacuation Scenarios- CDTC has collaborated with enforcement officials in the region to develop potential security incident scenarios. These scenarios were then fed into the regional traffic model to analyze the traffic impacts and identify evacuation routes, access routes for emergency vehicles, and overall evacuation plan. These plans recognize the importance of transit, para-transit, and pedestrian environment during a catastrophic event.

Chapter 12: Freight

New Visions and Freight

New Visions advocates congestion management and infrastructure investments that will support the movement of goods throughout the Capital District. Freight movement is about how goods get to your doorstep and to the stores' shelves, but it is also about freight's positive impact on the regional economy, growth, and employment.

Freight – Our freight system is crucial to the economy; it will be efficient and automated, and will minimize its impact to communities.

CDTC's freight planning efforts will be comprehensive enough to encompass all modes, including air, water, rail, and highway. Maintaining the health and improving the efficiency of freight facilities in the region through public/private partnerships is a high priority. CDTC's planning efforts will embrace freight's key contributions to regional prosperity, while also trying to mitigate the negative impacts of all modes of freight movement on local communities.

In 2014, CDTC chose to undertake a Freight and Goods Movement Plan ("Freight Plan") to better understand the role and profile of freight transportation throughout the region. This will in turn contribute to making appropriate investments to support the efficiency and safety of goods movement. The content and recommendations herein were derived from the Freight Plan.

Stakeholder Involvement

An important part of the process of developing this study was input and review provided by key stakeholders and the public. People who own and operate different elements of the freight-related transport business are an excellent source of information. This includes infrastructure owners, including transportation agencies, railroad companies, ports, and airports; carriers; shippers and receivers; and land developers. The primary mechanism for stakeholder involvement was the CDTC Freight Advisory Committee. This standing committee meets regularly and comprises representatives of the freight and logistics industry, developers, and public agencies. The FAC offered valuable input at each stage of study development. In addition, the study team conducted a variety of individual interviews and small group meetings with freight stakeholders in the region and also conducted field visits to several key freight facilities.

Overview of Modern Freight and Goods Movement

Freight moves by five primary modes: truck, rail, water, air, and pipeline. Some trips are by a single mode, others are multimodal and involve transfer at a terminal facility. Globally, shippers and receivers choose modes of transportation based on cost, timeliness and reliability. Each mode has advantages and disadvantages for the shippers and receivers, as well as for the environment and society. Each mode also has different capacity, reliability and cost-effectiveness for different types of shipments.

The term "commodity" is used to describe an item traded in commerce, whether or not it is a raw material or a finished product. Commodities are typically transported in one of three forms:

- **Bulk Cargo** - Cargo that is unbound as loaded.
- **Breakbulk Cargo** - Cargo of non-uniform sizes, often transported on pallets, or in sacks, drums or bags.
- **Containerized Cargo** - Moved in containers that are used primarily for ocean freight shipment, and which can be loaded easily and directly onto truck chassis or rail flatcars.

The 'last mile' is the part of the cargo movement trip that delivers the good to the final destination. It sometimes requires a change in mode. Particularly in densely developed metropolitan areas, this last mile is what distinguishes freight and goods movement from other freight movement.

Land Use and Freight Typologies

Land Use

It is important for local and regional land use decision-making to carefully consider where and how freight-generating operations are sited and may expand. The study team reviewed existing land use patterns using land use data from the Capital District Regional Planning Commission and identified major freight facilities based on information from regional employers and major stakeholders. From these two analyses, the team evaluated common characteristics across freight-related sites to create the following land use typology criteria:

- **Intermodal Center** - Large facilities that handle container goods

- Regional Distribution Hub - Large warehouses served by truck and rail
- Manufacturing Center - Clusters of manufacturers that generate freight trips
- Suburban Commercial Center - Collections of large consumer retail facilities
- Urban Core - Central business district locations in dense downtown areas

Freight Priority Network

The CDTC Freight Priority Network (FPN) provides a logical system of routes that facilitate efficient and safe truck mobility within, to, and from the CDTC region. FPN designation is important because it provides CDTC and its constituent municipalities, counties, and state agencies with guidance on roadway investment, planning, design (e.g., clearances, turning radii), maintenance, pavement, signalization, and access management to help support freight mobility across the region. The study team developed quantitative and qualitative designation criteria for each route type. Table 1 provides an overview of the FPN route classifications and designation criteria.

TABLE 1: SUMMARY OF FPN ROUTE CLASSIFICATION TYPES AND CRITERIA

FPN Classification	Count Requirement	Facility Characteristic Requirement
Major	Greater than 4,000 Trucks/Day Greater than 15% Truck Percentage If count data is unavailable, Interstate classification qualifies	Access-Controlled Highways Major Arterials
Minor	Greater than 3,000 AADT Greater than 1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU Typology, Regional Distribution Hub LU Typology, or Manufacturing Center LU Typology If count data is unavailable, >3,000 AADT and LU connection qualifies	Major Arterials Minor Arterials
Connector	100-1,000 Trucks/Day Greater than 15% Truck Percentage Connects to an Intermodal Center LU Typology	Minor Arterials Collector Routes

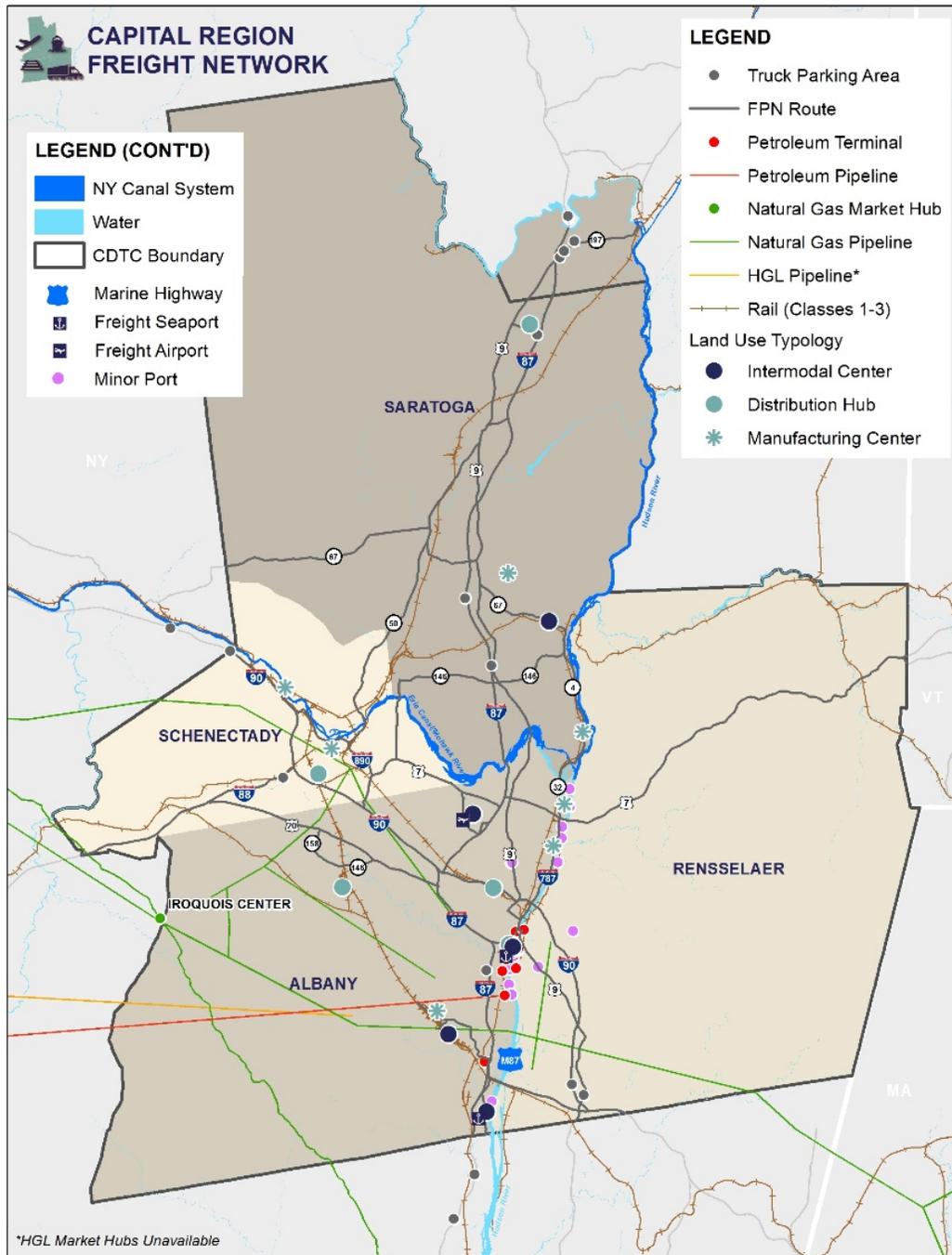
Because the freight network is primarily connected via a regional road network, local governments have a responsibility to work cooperatively at a regional level to foster the safest, most effective network. This report also includes a toolbox for local governments to consider when coordinating or reviewing freight-generating activities.

Existing Conditions

An important first step in determining regional relationships between freight and land use is to identify regional population and employment trends. Forecasts suggest that the region’s four counties will collectively experience a 6% increase in population through 2030, and the CDTC region will gain nearly 69,000 jobs between 2012 and 2022, an increase of 12%. The top three industries in terms of percentage change include “Mining”, “Agriculture, Forestry, Fishing and Hunting”, and “Transportation and Warehousing”. While the overall employment projections for the region are relatively modest, freight-related industries outpace employment projections at the State level in terms of percentage growth.

Next, the evaluation of existing conditions looks at existing freight-related infrastructure. Figure 1 provides an overview of the Capital Region’s existing multimodal freight infrastructure system, including all significant roadways, railways, waterways, air services, pipelines, and freight land use typologies.

FIGURE 1: FREIGHT ROADWAY, RAILWAY, WATERWAY, AIRWAY, PIPELINE, AND LAND USE FEATURES IN THE CDTC REGION



The Freight Analysis Framework (FAF) forecasts that the region will experience a 67% increase in freight movement tonnage between 2012 and 2040. Domestic movements are more than 95% of total freight movements to, from, and within the Albany FAF zone. More tons are moved within the zone compared to inbound/outbound movements.

Highway Conditions

Trucking represents the largest mode share by both weight and value in the CDTC region. According to 2012 FAF data, approximately 91 million tons of freight moved by truck to, from, and within the Albany FAF zone. Intra-zone movements account for 59% of the truck movements. Significant growth in truck movements is expected. Movements to the Albany FAF zone and within the Albany FAF zone through 2040 are also projected to increase in per ton value. The following bullets provide more information on specific features of the highway freight system:

- **2014 Pavement Data:** A majority of 76% of the CDTC’s pavement centerline miles on the FPN have a rating of “Good” to “Excellent,” meaning distress symptoms are absent or only beginning to show. Only 2% of roads on the FPN fall under the categorization of “Poor.” Further, over 75% of roadways in the FPN fall within “Good” or “Acceptable” International Roughness Index (IRI) ranges. Interstates and other principal arterials have significantly fewer rough surfaces compared to the minor arterial and collector roads for both urban and rural segments.
- **Bridge/Crossing Conditions:** The majority of bridges on the FPN (65%) are in good condition. About a quarter of FPN bridges classify as “functionally obsolete,” and seven percent of the FPN’s bridges are “structurally deficient.” CDTC routinely looks at bridge needs; the FPN will assist them in focusing on truck requirements on the FPN. In addition, there are three highway-rail grade crossings on the FPN.
- **Crashes:** Over the past five years, an average of 267 commercial vehicle crashes occurred annually in the CDTC region. Most crashes occur on Interstates, particularly I-787, I-87, I-88, and I-90. I-787 is particularly high in crashes. Crashes are mostly concentrated near downtown Albany. On average, about half of truck crashes occur within the FPN. Most commercial vehicle crashes occur in daylight (72%), but about 18% occur in dark road unlighted conditions. About 53% of crashes occurred under rain, snow, cloudy, or other adverse weather conditions.
- **Truck Parking Conditions:** There are ten truck parking areas (both public and private) in the CDTC region, and seven truck parking areas just outside of the CDTC region. Two facilities are no longer in service. The Thruway offers a significant number of parking opportunities, both within the CDTC study area and adjacent to the area. The Wilton Travel Plaza at I-87 (Northway) Exit 16 provides truck parking in the northern part of the study area, but rest areas closer to the regional core, particularly near the Port of Albany/Rensselaer and Albany International Airport, offer far fewer truck parking spaces.
- **Bottlenecks:** Albany and Schenectady each have beltway roads: I-787 and I-890 respectively. These include significant merge areas that create opportunities for bottlenecks. More common on principal arterial, minor arterial, and collector facilities are lane-drop bottlenecks. While analyzing individual signalized intersections is beyond the scope of this study, as CDTC pursues corridor studies that identify individual intersections requiring capacity improvements, priority should be given to those on the FPN.
- **Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations:** The Capital Region currently has substantial ITS infrastructure installed for Commercial Vehicle Operations technology. Two Transportation Management Centers host the region’s ITS system: (1) The NY State Police and NYSDOT Region 1 jointly operate a TMC located on Troy-Schenectady Road in Latham; ; and (2) NYSTA’s headquarters in Albany – jointly operated by NYSTA and the State Police. The Interstate system within the Capital Region includes various ITS elements to facilitate the operation of commercial vehicles.

Freight Rail Conditions

Rail is an important mode for freight in the CDTC region. According to FAF data, rail moved about 5,607,000 tons of commodities worth almost \$4 billion to, from, and within the Albany FAF zone in 2012. Forecasts for 2040 suggest significant growth in tonnage and low-to-moderate growth in value, resulting in a decrease in the value per ton of freight moved in, out, and through the region. Farm products, chemicals, petroleum and coal products and food products move to the region via rail mode. Wood products, clay, concrete, primary metal products and stone move through the region by rail.

Three Class 1 railroads provide inter-regional freight rail service in the CDTC Region: CSX Transportation (CSX), Norfolk Southern (NS), and Canadian Pacific (CP). These three firms operate freight rail service across North America, providing the region with high-capacity service to major freight nodes such as New York/New Jersey, Buffalo, Chicago, Baltimore, Boston, Atlanta, Montreal, Toronto, Vancouver, and others. In addition, several short line and “switching” railroads operate in the CDTC region.

The 2009 NYS Rail Plan identified the CSX River Line (west shore of Hudson) between Port Authority of New York and New Jersey (PANYNJ) facilities and Chicago as one of the most severe bottlenecks in the State due to single tracking between northern New Jersey Terminals and the Selkirk Rail Yard. This line is also constrained due to outdated tunnel clearances and at-grade crossings. The Hudson Line (east shore of Hudson) also shares track with intercity (Amtrak) and commuter rail services (MTA Metro North), which limits freight rail to off-peak hours.

Water Cargo Conditions

Due to historical dependence on water movements and the presence of navigable rivers and canals, the CDTC region provides an important link for waterborne cargo. In 2012, about 40 million tons of cargo moved by water to,

from and through NYS, of which 56% were domestic movements, 31% were foreign, and 13% were intrastate. The following bullets detail specific features within the CDTC region's waterborne cargo environment:

- **Port of Albany/Rensselaer:** The Port of Albany/Rensselaer is the second most active cargo seaport in NYS and supports over 1,400 local jobs. The Port is located 124 nautical miles north of New York Harbor on the Hudson River. Channel depths reach 32 feet, and deep water facilities exist on both sides of the river. Current Port tenants lease space for both short and long term periods. Major tenants include manufacturers, metal recycling businesses, asphalt producers, and others. The Port of Albany/Rensselaer handled about 7.5 million tons of inbound and outbound waterborne cargo in 2012, according to USACE data. The Port accounts for about 4% of waterborne import tons in NYS, about 18% of waterborne export tons from the State, and about 20% of overall waterborne tonnage movements.
- **Port of Coeymans:** The Port of Coeymans is a privately owned facility located 10 miles south of the Port of Albany on the Hudson and about 100 miles north of key PANYNJ port facilities. Coeymans accommodates ships up to 750-feet and offers stevedoring, tug, barge, heavy lift, and break bulk services. The 375-acre port includes a 300-foot inlet channel and a 30-foot fresh water deep draft. The Port also has warehouse (275,000 square feet) and outdoor storage space available, as well as welding, cutting, grinding, and other services. The Port is also a permitted construction and demolition waste processing facility, equipped to process 1,000 tons per day.
- **Canals & Waterways:** The Erie Canal is part of the NYS Canal System, which provides access to Canada through the Port of Oswego and across New York through the Port of Buffalo. Freight-carrying vessels continue to use the Erie Canal in season. In the Capital Region, the Erie Canal corresponds to the Mohawk River. As it approaches the Hudson River, it follows a dedicated channel. The Hudson River is designated as Marine Highway 87 (M-87) as part of America's Marine Highway Program. The M-87 route provides a critical connection between the facilities of the Port Authority of New York and New Jersey to the Port of Albany, also allowing access to smaller ports in between.

Air Cargo Conditions

The CDTC region encompasses 13 commercial and general aviation airports, of which one -- Albany International Airport (ALB) -- handles regularly scheduled commercial air cargo. The Bureau of Transportation Statistics (BTS) reports that, in 2012, about 1.5 million tons of cargo moved through the State's airports, of which ALB handled 20,971 tons (1.4%).

ALB serves as the region's hub for dedicated air cargo operations, including FedEx and UPS. In 2014, 1,885 aircrafts landed about 164.5 million pounds of cargo at ALB, averaging about five cargo-only plane landings per day and 157 per month. ALB operates a 53,000 square foot Air Cargo Facility, accessed via Kelly Road, in the northeast quadrant of the airport. In addition to cargo-only air carriers, passenger airlines such as American Airlines, Delta Air Lines, Southwest Airlines and United Airlines provide "belly-cargo" services.¹ In 2013, ALB ranked 99th in the nation and fifth in the State landed cargo weight. In 2014, the ALB authorized \$5.4 million for both new construction and improvements to the existing airport infrastructure, including re-pavement and lighting improvements on the main runway and heavy operating equipment for snow removal.²

Pipeline Conditions

The CDTC region is home to pipelines that handle petroleum products, natural gas, and hydrocarbon gas liquid (HGL). Selkirk is the terminus for the Enterprise Pipeline, which carries petroleum products from the Finger Lakes and Southern Tier regions. Enterprise Products also has an HGL line with a terminus in the Clarksville area. A variety of natural gas pipelines extend throughout the study area. A decline is projected for movements to the Albany FAF zone, but a significant increase is projected for movements within the Albany FAF zone.

Gaps and Needs

The gaps and needs assessment couples the knowledge of existing and forecasted conditions with an understanding of stakeholder and community needs to identify where existing facilities, programs and/or policies do not currently meet demand or may not meet future demand. Figure 2 summarizes the region's collective strengths, weaknesses, opportunities, and threats pertaining to freight and goods movement.

¹ Cargo transported in the baggage hold of scheduled passenger flights.

² Albany International Airport, <http://flyalbany.com/airport-authority/development-projects>

FIGURE 2: SWOT ANALYSIS OF THE CDTC FREIGHT NETWORK

STRENGTHS	WEAKNESSES
<p>Industrial Parks Regional Distribution Hubs Generally Healthy Pavements Network Connectivity Support for Major Industries Major Intermodal Centers SMS Short Line CSXT River Line Upward Trends in Rail Shipping Port of Albany/Ren. Market Share</p> <p>Port of Albany/Rensselaer Non-Maritime Business Port of Albany/Ren. Employment Port of Coeymans Growth On-Barge Service from NYC Area ALB Location ALB Capacity Stateshare ALB Site Improvements Growth in Pipeline Movements</p>	<p>Northway Exit 16 Overpass Route 67 Corridor GPS Routing through Residential Lack of Available Trucks Congestion on I-87 and I-90 Tandem Truck Lots Illicit Activity at Truck Stops Roundabouts Inadequate Truck Signage Parking near Intermodal Centers Bridge Adequacy</p> <p>Access Issue at Rotterdam Park Passenger/Freight Shared Lines Selkirk Rail Yard Single Tracking At-Grade Crossings Shared Waterfront Space Dredging at Port of Albany/Rensselaer ALB Capacity Waterway Location No Local Oil Pipeline</p>
OPPORTUNITIES	THREATS
<p>Growth at I-87 Exit 16 in Wilton Urban Area Truck Designation Signage Program for Truck Routing/Parking Oversized Vehicle Toll Pass Regional Dispatch Network Truck Stop Electrification Freight-Sensitive Development Impact Analysis Technology Advancement—Tolls Technology Advancement—Autonomous Trucks</p> <p>Saratoga-North Creek Railroad Sunbury-Schenectady Connection Halfmoon Rail Corridor Lease Opportunities at ALB Growing Tech Industry Capacity to Promote Waterborne Cargo Container On Barge Service Pipeline Proposals</p>	<p>Language Barriers Closed Truck Stops Bridge Signage Inadequate Roadway Lighting Crashes on Major Routes Tolling Bottlenecks Interchange Capacity Bottlenecks Route 146 Congestion Capacity Limitations Oil Train Congestion</p> <p>Transport of Hazardous Materials Short Line Funding & Operations Port Competition Security at Port of Coeymans ALB Trucking Efficiency Pipeline Environmental Safety Citizen Opposition to Pipeline</p>

Recommendations

The recommendations translate the findings from the Gaps and Needs analysis to a set of projects and programs for short, mid, and long term implementation in the CDTC area. The recommendations break out into two general categories: (1) Projects; and (2) Programs, Policies and Studies. Projects involve construction, reconstruction and/or changes to physical transportation infrastructure. Projects separate into early-action projects and long-range actions. Programs, Policies and Studies are non-capital initiatives that seek to employ regulatory, guidance and/or planning tools to facilitate more cost-effective and efficient use of existing and planned transportation infrastructure. Table 2 and Table 3 include descriptions of the early action and long-range projects suggested. Table 4 lists the suggested Programs, Policies and Studies.

TABLE 2: EARLY-ACTION PROJECTS

Project Short Name	Project Description	County/ Muni	Mode(s)	Estimated Cost
NS Intermodal Facility Access Improvements	Provide turning lanes at NS Intermodal Facility entrance on NY 67 to support safe and efficient truck movements between I-87 Exit 11 in Malta and the facility.	Saratoga/ Mechanicville	Highway & Inter-modal	\$.5M - \$1M
Rotterdam Industrial Park Entrance Realignment	Realign and signalize entrance to Rotterdam Industrial Park at NY 7/ Duaneburg Rd. for safer and more efficient truck movements at a major logistics center and improve traffic and non-motorized safety and mobility.	Schenectady/ Rotterdam	Highway	\$.5M - \$2M
Public Official Training and Model Ordinance Development	Develop program that educates local public officials, including planning and zoning boards, about freight movement. Create and disseminate model ordinances and regulations for freight related development.	All	All	TBD

TABLE 3: LONG-RANGE PROJECTS

Project Short Name	Project Description	County/Muni	Mode(s)	Estimated Cost
NY 67 Modernization	NY 67 improvements to support safe and efficient truck movements between Mechanicville and I-87 Exit 11 in Malta (approx. 5.1 miles) <ul style="list-style-type: none"> • Signalization at NS Intermodal Facility entrance • Turning lanes on NY 67 at major intersections • Improved trucker guidance signage throughout corridor • Redesign of roundabouts to facilitate safe and efficient truck movements 	Saratoga / Malta, Mechanicville	Highway & Inter-modal	\$10M
Livingston Avenue Bridge	Replace Livingston Avenue Rail Bridge and Walkway across the Hudson River between Albany & Rensselaer.	Albany, Rensselaer	Rail / Water	\$250M
I-87 Exit 16 Overpass Replacement	Add capacity in each direction to accommodate growing truck traffic in vicinity when NYSDOT initiates replacement of I-87 (Northway) Exit 16 overpass.	Saratoga / Wilton	Highway	\$1M
I-87 Exit 4 Albany International Airport Access Project	Build new ramp off Exit 4 to provide direct access to Albany Shaker Road and airport entrance.	Albany / Colonie	Highway / Air	\$33M
Freemans Bridge Road Grade Crossing Separation	Grade-Separate Pan Am (ST) Railway Crossing at Freemans Bridge Road.	Schenectady / Scotia	Highway / Rail	\$10M
Port of Albany Wharf Expansion	Extend Port of Albany wharf by 2000 feet.	Albany / Albany	Water	\$25M
Port of Albany Expansion	Acquire 80 acres of industrial-zoned waterfront land.	Albany / Albany	Water / Highway	\$10M
Port of Albany Cargo Handling Capacity Upgrade	Construct storage building on Port grounds for heavy lift cargo.	Albany, Rensselaer / Albany, Rensselaer	Water, Highway, Rail	\$8M
Container on Barge Service	Provide investments in facilities and operations to support container on barge service between NY/NJ and the Port of Albany.	Albany/ Albany	Water	TBD
Port of Coeymans Rail Extension	Extend rail service to waterside at Port of Coeymans.	Albany / Coeymans	Rail, water	\$2M
Port of Albany Dredging	Conduct river dredging at south side of Port of Albany.	Albany / Albany	Water	\$1M
Cargo-Supportive Improvements to Canal System	Identify and prioritize investments in NYS Canal System facilities that support and facilitate cargo movement within, to, from and through the Capital Region.	Regional	Water	TBD
Urban Area Hazardous Material Rail Transportation Mitigation	Identify and prioritize safety infrastructure and mitigation strategies where trains carrying hazardous materials (HazMat) travel close to residential neighborhoods and areas in the urban core of the Capital Region.	Regional	Rail	TBD

TABLE 4: PROGRAMS, POLICIES, AND STUDIES

Project Short Name	Project Description	County/Muni	Mode(s)	Estimated Implementation Cost
Tandem Trailer Lots Relocation Study	Research and identify new locations for existing tandem trailer lots at Thruway interchanges	Albany, Rensselaer, Schenectady	Highway	\$200,000
Port Truck Parking Expansion	Identify and implement opportunities to improve truck parking adjacent to Port of Albany.	Albany / Albany	Highway / Water	TBD
Truck Stop Restoration	Conduct planning to reopen closed truck stops on I-87 and I-90 corridors that would provide relief to truck parking demand in Capital Region.	Rensselaer, Saratoga / Schodack, Gansevoort	Highway	TBD
FPN Bridge Improvement Prioritization	Prioritize the reconstruction of bridges on the FPN to decrease those classified as "functionally obsolete" or "structurally deficient" in the CDTC Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).	All	Highway	TBD
Interstate Lighting Program	Add lighting infrastructure on I-90, I-87, I-88, and I-787 based on objective assessment of needs	All	Highway	<\$1M
I-787 Rail Relocation Feasibility Study	Coordinate with existing I-787 study to consider removing the existing CP Rail track in downtown Albany that serves the Port of Albany	Albany / Albany, Mechanicville, Watervliet, Cohoes, Bethlehem	Rail	TBD
Capital Region ITS CVO Enhancement	Identify and implement opportunities to improve truck parking adjacent to Port of Albany.	All	Highway	TBD
Local Delivery Optimization	Research and identify policies, procedures and actions municipalities can employ to support and facilitate safe and efficient goods deliveries in dense urban zones.	Various	Highway	\$150,000
CDTC Freight Data Collection Program	Build on existing regional traffic and transportation data collection systems and procedures to include more detailed and multimodal freight data, including data from state facilities (e.g., WIM stations) and from the pending CDTC SHRP2 study report.	All	All	TBD

Chapter 13: Performance Measures

The CDTC New Visions Plan has always used performance measures and objectives to describe the outcomes of the Plan, and New Visions performance measures have been used in project evaluations, corridor studies, and project development. Several new developments underscore the importance of performance measures for the New Visions Plan. MAP-21, the Moving Ahead for Progress in the 21st Century Act, provides a strong emphasis on performance measures and requires states and MPOs to incorporate performance measures, objectives and targets into planning and programming. In addition, a number of new data sets that are emerging provide CDTC with the opportunity to refine the set of performance measures used and to provide more extensive and accurate reporting on trends and conditions.

The process being used to implement the requirements of MAP-21 for performance measures and targets will not be completed in time for the New Visions Plan update approval in September 2015. Once federal rule making is complete, State Departments of Transportation will have one year to development measures and targets consistent with the federal guidance. After that, MPOs will have an additional six months (180 days) to develop measures and targets consistent with the State measures and targets. The CDTC New Visions Plan will develop measures and targets that are consistent with anticipated federal guidelines and State measures and targets as much as possible, but clearly further development of measures and targets will be required after the Plan is approved in September. Consistent with MAP-21 requirements, it is anticipated that the New Visions Plan will provide measures that go beyond the required measures and that support the consensus vision for the Capital District that the Plan represents.

An important next step will be setting targets for each of the objectives. Targets should be aggressive but also achievable. One possible approach will be to set describe two different levels of achievement for some objectives: realistic targets and aspirational targets. Aspirational targets can represent targets which may be dependent on some factors which are beyond CDTC's control, yet represent the direction that the region wants to move in.

Below are objectives and performance measures developed related to the work of each Advisory Committee and Task Force.

Quality Region Task Force White Paper

1. **Objective:** Evaluate projects and investments to improve Community Quality of Life. Funding should be programmed so that projects with positive quality of life impacts are favored over projects with neutral or negative impacts.
Measure: Measure the percentage of programmed projects with positive quality of life impacts, rating each project by using objective, qualitative, and descriptive criteria.
2. **Objective:** Evaluate projects and investments to improve the economy. Funding should be programmed so that projects with positive economic development impacts are favored over projects with neutral or negative impacts.
Measure: Measure the percentage of programmed projects with positive economic development impacts, rating each project by using objective, qualitative, and descriptive criteria.
3. **Objective:** Evaluate projects and investments to improve all communities. Funding should be programmed fairly to all populations (urban, suburban, and rural, disadvantaged populations, people with disabilities, etc.).
Measure: Measure the percentage of programmed projects with positive environmental justice impacts, rating each project by using objective, qualitative, and descriptive criteria.

Environment And Technology Task Force White Paper

1. **Objective:** Reduce greenhouse gas emissions and energy consumption in the Capital District at the regional level and at the municipal level
Measure: Greenhouse gas emissions, by municipality
Measure: Energy consumption, by municipality
2. **Objective:** Reduce emissions that contribute to ozone pollution in the atmosphere

Measure: Volatile Organic Compound (VOC) emissions

Measure: Nitrogen Oxide (NOx) emissions

3. **Objective:** Working in support of Capital Clean Communities, increase petroleum displacement from VMT reduction, hybrid electric vehicles, idle reduction, fuel economy, off-road vehicles, alternative fuels and vehicles (including Ethanol, Biodiesel, Propane, Electric and Natural Gas). Capital District Clean Communities displaced 1.6 million gallons of petroleum in 2013.

Measure: Petroleum Displacement (Gallon Gas Equivalents)

Bicycle and Pedestrian Advisory Committee White Paper

1. **Objective:** Improve safety; reduce the number of vehicle crashes involving bicyclists and pedestrians.
Measure: crashes involving bicyclists and pedestrians
2. **Objective:** Increase the number of bicycle and pedestrian trips (esp. commuting trips) in the Capital Region.
Measure: rate of bicycling and pedestrian commuting (Census & local counts)
3. **Objective:** Reduce obesity rates, heart disease and other chronic illnesses related to inactivity.
Measure: rate of obesity, heart disease and other chronic illnesses in the Capital Region
4. **Objective:** Increase economic activity related to biking and walking.
Measure: combine expenditures for major running and bicycling events in the Capital Region with those at bicycle-pedestrian-oriented businesses (ex. bicycle shops, running/hiking shoe stores).
5. **Objective:** Increase funding for bicycle and pedestrian projects, particularly on the on-road portions of the bicycle and pedestrian priority networks.
Measure: dollars in the TIP program
6. **Objective:** Improve access to walking and biking. Evaluate projects based on bicycle and pedestrian access provided.
Measure: Number of residents (and trips) within one mile with access to improved walking.
Measure: Number of residents (and trips) within five miles with access to improved cycling.
Measure: Develop a regional measure of bicycle and pedestrian access based on a regional inventory of facilities.

Complete Streets Advisory Committee White Paper

Objective: Make transportation investments based on a complete streets framework which supports the convenient and safe travel of all people — of all ages and abilities as appropriate to a facility’s community context.

Measure: Number of communities in the region adopting complete streets policies via governing body action

Measure: Number of complete streets training sessions held and number of attendees from the following targeted groups:

- Policy and decision makers
- Planners
- Roadway designers, operators and maintainers (city engineers, town highway superintendents, DPW staff, NYSDOT traffic and safety, design and operations staff, consulting firm staff)
- Residents/Citizens, other stakeholders
- Real estate developers

Measure: Number of projects including complete streets features

Measure: Number of project development, operations and maintenance practices that utilize a complete streets approach

Transit Task Force

1. **Objective:** Increase Access to Transit
Measure: Percent of the population residing within ¼ mile of a transit stop/station
Measure: Percent of the population residing within ½ mile of a transit stop/station
2. **Objective:** Increase Transit Use
Measure: Total boardings
3. **Objective:** Increase Transit Cost Effectiveness
Measure: ridership productivity. This refers to boardings per revenue hour of service. CDTA’s routes are designed to perform the above productivity thresholds of their service classification.

4. **Objective:** Increase Transit Quality Of Service

Measures: As follows:

- *Headways* - Headways refer to the interval of time between vehicles moving in the same direction on the same route.
- *Span* - Span refers to the hours over which the service is operated.
- *Passenger Loads* - Average load factor is the mean of the number of customers on a vehicle at all stops divided by the maximum seating capacity of the bus. It indicates passenger comfort and convenience during travel, and reflects express routes operating on the highway.
- *Bus Rapid Transit* - Each prospective bus rapid transit corridor must attract a minimum of 2 million annual riders on existing services.
- *On-Time Performance* - To bring CDTA on-time performance in line with industry standards, at least 85% of trips should arrive on time, defined as arriving between 1 minute earlier or 5 minutes later than the scheduled arrival time.
- *Street Amenities* – Provision of shelters, benches, and trash receptacles.
- *Bus Stop Spacing* –Space between stops.

Regional Operations

The CDTC New Visions Plan has used performance measures in evaluating congestion delay and traffic reliability as part of the Congestion Management Process (CMP). The CMP performance measures will need to be updated once guidance for MAP-21 is received and corresponding statewide measures are developed by NYSDOT. In addition, technologies for measuring traffic reliability and congestion are evolving rapidly.

Objective: Reduce travel delay and improve travel reliability by implementing congestion management actions and operations.

Measure: Vehicle Hours of Congestion

Measure: Reliability (Planning Time Index)

Measure: Average speed

Infrastructure Task Force

Objective: Maintain the region's roadways, bridges, trails, sidewalks and transit system in a state of good repair using a performance-based management strategy. This provides baseline support to the regional economy.

Performance Measures:

Pavements:

For these categories:

- National Highway System-
 - All Roads
 - Interstate Only
- Federal Aid System
 - State Owned Roads and Highways
 - Non-State Owned Roads and Highways
- Local (Non-Federal Aid System)

Measures:

1. Percent poor pavements.
2. Percent fair pavements.
3. Percent good pavements

Bridges:

For these categories:

- NYSDOT Interstate
- NYSDOT Non-Interstate/OGS
- NYS Thruway
- Local

- Other

Measures:

4. Percent number of deficient bridges.
5. Percent number of structurally deficient bridges.
6. Percent deck area of deficient bridges.
7. Percent good condition deck area.
8. Percent poor condition deck area

ADA Compliance:**For these categories:**

- Sidewalks and
- intersections

Measure: percent ADA compliant

Safety

USDOT issued a Proposed Rule for the National Performance Management Measures for the Highway Safety Improvement Program under MAP-21 in March 2014. Once finalized (expected in late 2015), safety performance measures and targets will be under development by NYSDOT in coordination with the MPOs for New York State. MPOs will then be required to either adopt the state's measures or develop their own that are consistent with MAP-21 requirements. Four measures that are likely to be established are:

1. Measure: Number of fatalities
2. Measure: Number of serious injuries
3. Measure: Rate of fatalities per vehicle mile traveled (VMT)
4. Measure: Rate of serious injuries per vehicle mile traveled

In addition, a new law passed in December 2014 as part of a federal funding bill included a provision that requires FHWA to "establish separate, non-motorized safety performance measures for the highway safety improvement program and define performance measures for fatalities and serious injuries from pedestrian and bicycle crashes". A final rule on these measures is required to be published no later than September 2015.

Freight

Objective: Maintain a State-of-Good –Repair for infrastructure on the Freight Priority Network (FPN)

Measure: Bridges - percent Good/Fair/Poor bridges on the FPN.

Measure: Pavement – percent Good/Acceptable/Unacceptable pavements on the FPN.

Objective: Safety - provide for safe movement of goods and freight

Measure: Number of fatal and serious injury Commercial Vehicle crashes on the FPN.

Objective: Mobility - Recurring congestion on the FPN interferes with the efficiency of goods movement.

Measure: Vehicle-hours of delay applied to truck percentage.

Objective: Reliability - Non-recurring congestion can cause large and measurable costs to goods movement. The causes are incidents (including crashes), work zones, weather events, and special events (like concerts or fairs). With carriers expected to meet specified delivery windows, or constructing driver schedules to meet hours of service regulations, an unplanned delay can make adherence impossible.

Measure: Planning Time Index/Travel Time Index

Objective: Environmental Impact - Consider the impacts of truck-related emissions and energy consumption on the region's environment and quality of life

Measure: Truck-related Emissions and Energy Consumption

Objective: Shipping Mode – understand the dynamics and trends unique to that each mode of freight movement. It is important to track the utilization of the regional transportation system in terms of tonnage and value shipped by each mode over time.

Measure: Collect Tonnage and Value Shipped by each mode from available data sources

Chapter 14: Recommendations

Quality Region

1. **Continue to Seek Adequate Funding to Fully Implement the Plan** – CDTC should program adequate funding to maintain the existing infrastructure and to make small improvements as our population and our needs grow. Currently we are assuming flat funding (no significant funding increase or decrease) in the near future, and probably for the next several years (5-6 years). This flat funding will lead to serious, unacceptable declines in physical and service conditions and make even modest improvements difficult to accomplish. Securing adequate funding is clearly going to require cooperative efforts, innovative thinking, and a lot of public support.
2. **Increase funding for transit, travel demand management, bicycle/pedestrian, complete streets, traffic operations, freight, and human services transportation** – Our country and our region are changing. We are moving to the cities, driving less, buying fewer vehicles and homes, using more transit and bicycles, becoming older and more disabled, and buying more goods from all over the world. In order to address the issues that evolve from these trends, we need to increase funding in the above programs.
3. **Explore the Use of Innovative Funding Sources** – Because federal funding is not keeping up with transportation needs, other sources of funding should be explored, including impact or mitigation fees, user fees, dedicated transportation fees, public/private partnerships, etc. In addition, technological advances will permit time-based (higher for congested times) and impact-based (higher for heavy vehicles) fee structures. Legal authority would be required to extend these fee structures beyond current toll roads. The new funding sources will be needed to go beyond maintenance and repair needs and to improve our region’s transportation system.
4. **Improve CDTC Public Outreach and Marketing Efforts** – Too many transportation users, municipalities, businesses, etc. are not aware of the scope and impact of CDTC’s long-range transportation plan (New Visions Plan). CDTC should improve and increase efforts to engage all users, to educate them and to obtain their input. New ways of obtaining truly representative public input beyond, but including public information meetings, must be utilized such as targeted small group meetings, videos, and social media.
5. **Update and Upgrade Project Selection Criteria** – The existing project selection criteria is relatively technical, relies too heavily on the benefit/cost ratio, does not reflect current priorities or recently emphasized criteria (e.g. economic development, freight, environmental justice, etc.), and is not easily understood by all members. It also needs to be more directly related to the implementation of the current New Visions principles. In order to accomplish this goal, staff should conduct an analysis which reviews the current criteria, compares current criteria to criteria used by other MPOs and to current New Visions principles, and recommends changes.
6. **Multi-modal and Equitable Funding** – Funding should be programmed fairly to all transportation modes – vehicles, transit, bike, pedestrian, air, marine, and rail. It should also be programmed evenly to all municipalities (state, cities, towns, villages) and to all populations (urban, suburban, and rural, disadvantaged populations, people with disabilities, etc.).

DEVELOPMENT AND LAND USE

7. **Encourage Cooperation and Coordination with Local Planning Departments** – CDTC should continuously engage local planners to ensure whenever possible that CDTC’s planning efforts and local planning efforts do not conflict. Local Comprehensive Plans should contain transportation elements that are consistent with New Visions. CDTC should encourage inter-municipal planning and information sharing, and should assist local planners whenever possible. CDTC should also encourage zoning and site design guidelines that create a coordinated pattern of land use that limits direct access to major roadways, is transit friendly, supports pedestrian circulation, contributes to the safety of the traveling public, and enhances the environment.
8. **Continue to promote our Community and Transportation Linkage Planning Program and to seek adequate funding to implement study recommendations** – CDTC’s Linkage Program serves several objectives:
 - a. Provides federal funding to help municipalities conduct local planning.
 - b. Reduces the conflicts between land use and transportation.
 - c. Improves local planning and helps ensure that local planning is consistent with community goals.
 - d. Develops strong relationships between CDTC and local planning departments.

- e. Improves coordination, information sharing, and cooperation among local planning departments and between CDTC and local planning departments.
- f. Helps implement many CDTC's goals and principles.
- g. Provides opportunities for public input and educates the public about local planning and CDTC's regional planning.
- h. Recommends local improvements which can be funded in CDTC's Transportation Improvement Program (TIP).

For all these reasons and more, the CDTC Linkage Program has been successful, has received national recognition, and should be supported, promoted, and enhanced whenever possible.

- 9. Require Travel Demand Management (TDM) Plans from Developers** – Currently most local municipalities require large residential and commercial developers to complete a Traffic Engineering Study when they develop properties within their boundaries. Based on the information submitted by the developer, these studies forecast the increase in the number of vehicles which results on adjacent roads and which are attributed to the construction of the development. This vehicle increase is then added to the existing traffic, and its impacts on traffic operations on adjacent roads and intersections is determined. Since these studies only deal with vehicles, the recommended solutions also only deal with vehicles, and ignore the other modes and travel demand management strategies which can decrease the number of vehicles and still provide transportation to and from the development. These strategies include carpooling, vanpooling, walking & biking, carshare, bikeshare, transit, commuter buses, park & ride lots, etc. Considering vehicle traffic, other modes, and these strategies in a TDM Plan would increase the number of solutions and give municipalities and developers the ability to choose the most cost effective strategies.

PLAN DEVELOPMENT

- 10. Develop a Training Program that specifically targets local planners, local planning board members and other local decision makers** – CDTC should provide training to local decision makers so that they can make informed and educated planning decisions. Potential training topics should include:
- a. Bicycle and Pedestrian Planning & Strategies
 - b. Transportation Safety Planning & Strategies
 - c. Smart Growth
 - d. Complete Streets
 - e. Road Diets
 - f. Transportation and Land Use
 - g. Transportation Economic Development
 - h. Environmental Justice

This training program must be consistent with and promote New Visions principles. Local officials educated on these topics will help CDTC further implement our New Visions principles.

- 11. Refine and further articulate the Big Idea/Big Ticket Initiatives for the Capital District** –The interest, support, and reasons for Big Idea/Big Ticket Initiatives change over time. CDTC should continue to evaluate the needs for these initiatives and their status, and should foster the discussion of these initiatives with the Planning Committee and the Policy Committee members, and the public to measure interest. CDTC should also be prepared to implement these initiatives, partially or completely, if and when the need arises.
- 12. Improve the collection of transportation data to support regional transportation planning and analysis** – Good planning must be supported by good data. As technology improves, the sources of data and the data itself are also improving. CDTC should continuously look to develop new and better sources of data either on its own or in cooperation with other MPOs, and state, regional, and federal agencies. Some areas of improvement include:
- a. Freight data
 - b. Local pavement and safety data
 - c. Traffic congestion data
 - d. Pedestrian and bicycle counts

ECONOMIC DEVELOPMENT

- 13. Maintain a program for transportation projects directed explicitly at community enhancement or regional economic development** – Transportation projects have impacts beyond transportation, such as improving the environment and promoting economic development. Whenever possible CDTC should program projects with multiple objectives including economic development and community enhancement. Well-designed projects

with multiple objectives can improve traffic flow, help create a town center, create a walkable and bikeable community, even provide space for business development, and more.

14. **Include economic development criteria in project selection** – Project sponsors and their projects should receive “credit” in CDTC’s project selection process for an economic development element. In our analysis of project selection process, CDTC should encourage sponsors to consider economic development in their project planning and programming, and should develop and include such criteria in our project selection.
15. **Complete the I-87 Exit 4 Airport Connector Project Phase II**– Albany International Airport is a regional facility, and Phase II of this project would significantly improve access to the airport. CDTC has a long history of supporting this very important project.

REGIONAL EQUITY

16. **Regularly update CDTC’s Environmental Justice (EJ) Analysis** – CDTC’s EJ Analysis should be updated after every Transportation Improvement Program (TIP) update. The analysis should be well publicized and public input should be sought, especially from affected populations.
17. **Include environmental justice criteria in project selection** – Project sponsors and their projects should receive “credit” in CDTC’s project selection process for an environmental justice element. In our analysis of project selection process, CDTC should encourage sponsors to consider environmental justice in their project planning and programming, and should develop and include such criteria in our project selection.
18. **Reach out for full participation** – Reach out to local communities, policy makers, businesses and individuals through an open, participatory process with information, technical assistance and on-going opportunities to assist CDTC and its members in their planning and programming decisions. Partnerships should be built among all transportation stakeholders so that transportation investments achieve multiple community objectives.
19. **Emphasize public participation in transportation planning, programming and implementation** – Transportation planning, programming, and project implementation must have a high level of representative and meaningful public participation. CDTC should encourage municipalities to plan for public participation. Traditionally underrepresented and poorly served communities, such as the mobility-impaired, low income, minorities and senior citizens, deserve special outreach efforts as well as those in rural towns and villages that are not often directly involved with CDTC. CDTC will continue to find new and better ways to engage these populations.

Environment

20. **Project Review Process**- CDTC should continue its project review process to evaluate environmental impacts during project selection. Use geographic information systems data (GIS) to overlay limits of candidate TIP projects, of project types that have a significant potential for environmental impacts, against natural and cultural resources mapping as part of the evaluation process for candidate projects during the next and subsequent TIP updates. Opportunities to improve the process will be considered.
21. **Focus on Greenhouse Gas Emissions**- CDTC should consider expanding its project review process to further evaluate greenhouse gas emission impacts during TIP project selection.
22. **Smart Growth**- The CDTC New Visions Plan supports sustainable development patterns and site design, urban reinvestment, and community-based land use planning. While the impacts of totally automated vehicles, other emerging technologies, and alternative fuels on smart growth are uncertain, the region should continue to develop as an attractive region with vibrant urban and suburban communities that are walkable; and rural character and open space should continue to be protected. As the impacts of automated vehicles unfold, the regional vision can prevail and technology should be used to enhance communities.

Technology

23. **Consider the significant impacts of totally automated vehicles.** The potential for future increased capacity resulting from totally automated vehicles should be strongly considered in highway and bridge design. Operational capacity increases related to automated vehicles may result in less congestion without adding physical capacity. Designing a larger footprint to anticipate 2040 traffic conditions may be totally unnecessary if automated vehicles are fully established in the fleet by then. Designing a larger footprint that is unnecessary is not only prohibitively expensive but can work against the New Visions policies to encourage complete streets and demand management. The New York State Department of Transportation should consider if changes to the current design approach are needed to reflect potential changes in future demand as well as

potential changes in the congestion threshold that triggers a need for increased capacity. As these changes emerge, the New York State Department of Transportation should work with its partners within AASHTO and the Federal Highway Administration to consider implications to design standards.

- 24. Anticipate Technology with Flexibility and Smart Near Term Investments-** While future technologies may lead to dramatic improvements, that potential will not lessen the need for making the best use of transportation investments in the near term. In the near term, transportation investments will be needed to improve safety and mobility for all residents. The New Visions Plan must proceed with short term and medium term investments, while maintaining flexibility to implement technology as it arrives. Further study will be necessary to anticipate the impacts of new technologies as they come on line.

Bicycle and Pedestrian

- 25. Promote the development of dedicated bicycle and protected bicycle lanes** – Many bicycle riders do not feel safe in a shared use travel lane, and many vehicle drivers are not considerate of bicycle riders in a shared use travel lane. In order to provide a safer environment to ride and to encourage more bicycle riders, we need to construct more of these bicycles lanes.
- 26. Explore working with local bicycling organizations to establish annual City Bike Tours in our major cities.** City bike tours are family-friendly, annual events which could include bicycle training classes and local business support. In order to ensure safety, roads or travel lanes are usually closed to vehicular traffic.
- 27. Update TIP evaluation methodology.**
- 28. Develop bicycle and pedestrian priority matrix** – help prioritize projects that have greatest potential impact on New Visions goals
- 29. Develop and maintain inventories** - ADA Transition Plans, sidewalks, bicycle infrastructure, highway shoulders, etc.
- 30. Measure the economic impacts of bicycling, walking, and transit infrastructure in the Capital District.** The beneficial impacts of bicycling, walking, and transit to businesses and public health are well understood, but not well quantified. We will use the latest analytical techniques to better measure and consider these benefits:
- a. Business
 - b. Health – work with state and county health departments
 - c. Evaluate existing projects
- 31. Develop and distribute a potential user survey** – what types of infrastructure are desired and what are the perceived and real barriers to biking and walking in the Capital District.
- 32. Find local project champions**, especially to help garner support to close gaps in regional bicycle and pedestrian networks, like trails.
- 33. Research and establish a program managed by CDTC to leverage dollars** by coordinating group purchases for amenities such as bike racks, signage, and materials for pavement markings for pedestrians and/or bicyclists.
- 34. Research the feasibility of and potential fund source(s)** of a regional revolving loan fund specifically for bicycle and pedestrian infrastructure projects.
- 35. Support the Complete Streets Advisory Committee in developing a Complete Streets guidebook** that outlines specific types of improvements by street typology, including retrofits, and a Complete Streets user checklist.
- 36. Recommend funds be carved out in the New York State Consolidated Funding Application (CFA)** specifically for bicycle and pedestrian infrastructure and education projects.
- 37. Inventory parking and utilization in the Capital District** to help establish new parking maximums, which consider access to alternative modes of transportation.
- 38. Continue to incrementally increase funding available for bicycle and pedestrian projects** through the CDTC Bicycle/Pedestrian Network Set-Aside.
- 39. Complete the following trail/greenway projects:**
- a. Uncle Sam Bikeway
 - b. Patroon Creek Greenway
 - c. Mickey Mahar Trail
 - d. Zim Smith Trail
 - e. Albany County Rail Trail with a connection to the Corning Preserve trail
 - f. Livingston Avenue Bridge bicycle/pedestrian facility
 - g. The Watervliet connection to the Mohawk Hudson Bike Hike Trail/Canalway Trail
 - h. A connection from the western end of the Mohawk Hudson Bike Hike Trail/Canalway Trail in Rotterdam Junction (at the RR tracks) to the continued trail in Amsterdam

Complete Streets

40. Develop and adopt an explicit Complete Streets Policy and encourage the region’s municipalities to adopt their own policies

– while the New Visions Plan, the Linkage Planning Program, and the TIP Project Justification Package each support a complete streets framework, other MPOs around the country have adopted explicit Complete Streets Policies. It is recommended that:

- a. A CDTC Complete Streets Policy be developed and modeled after the current effort being undertaken by the Binghamton Metropolitan Transportation Study (BMTS), the MPO for the Binghamton/Broome County area in NYS. This policy would be developed with the assistance of the CDTC Complete Streets Advisory Committee in partnership with NYSDOT and the Planning Committee. Examples of other MPOs around the United States that have adopted Complete Streets Policies and Complete Streets Design Guidelines include IndyMPO, Broward County MPO, and MORPC (Columbus, Ohio), among others. Adopting a Complete Streets Policy would help provide consistency with New York State policy and law and the growing number of local municipal policies, as well as provide a foundation for further complete streets implementation activities such as those recommended below.
- b. CDTC develop incentives for municipal and county adoption of complete streets policies. One incentive would be that a project sponsor’s proposed Linkage Program project would receive points and a higher project ranking if that entity had an adopted complete streets policy.
- c. As part of CDTC’s complete streets policy development, the safety, public health, and economic benefits of complete streets will be explored and documented. **Information on benefits will be explored using resources such those listed below, among others:**
 - o NYC Measuring the Street Report
 - o Bikes Mean Business report
 - o Active Living Research’s Economic Impacts of Walkable Shopping Areas,
 - o Economic Impact of Bicycling and Walking in Vermont 2012

41. Develop a Complete Streets Training and Education Program in partnership with NYSDOT tailored to those who use, plan, approve, fund, design, construct and maintain transportation facilities at all levels of government, the private sector and the broader community

- Regionally tailored training and education materials, targeted to each audience, should be developed through this effort that can then be used in the future and updated as needed. As recommended in its Complete Streets Report (February 2014), NYSDOT recognizes the importance of continued training to a variety of agencies and stakeholders. CDTC will partner with NYSDOT and other state agencies, such as the Department of State, to provide training and outreach. It is recommended that:

- a. Utilizing available national training resources, develop a yearly training and education program to assist local, regional and state practitioners and policy makers implement complete streets across the region. It is widely acknowledged that successfully integrating complete streets features into different types of projects and at different project stages, including operations and maintenance, requires an understanding of recently crafted tools and techniques. A focus of this training will be to ensure local communities have an understanding of both the elements of the most up to date complete streets design guidance available, and the flexibility in their application. Use of regional and local examples and case studies will be critical in developing a successful training and education program.

To communicate the availability of training opportunities and educational resources a calendar of events, websites and social media should be developed and used.

- b. An audit of available training and education resources is conducted. Organizations such as AASHTO (American Association of State Highway and Transportation Officials), ITE (Institute of Transportation Engineers), NACTO (National Association of City Transportation Officials), APBP (Association of Pedestrian and Bicycle Professionals), Smart Growth America, PBIC (Pedestrian and Bicycle Information Center), Cornell Local Roads Program, APA (American Planning Association) and others offer training and education opportunities that will be explored and utilized as part of the training and education program.

Significant efforts to communicate the benefits of complete streets to key decision makers and the public should be incorporated into the early stages of the Education Program.

- c. In consultation with CDTC’s Planning Committee, develop and institute a series of incentives for participation in complete streets training. Ensure that continuing education credits such as PDHs

(professional development hours) and CM credits (AICP certification maintenance) for professional engineers and planners are available for training participants.

- d. **Promote the use of Complete Streets design and implementation guidelines**– The number of entities developing and adopting complete streets design standards and guidance continues to grow across the US. Some of these standards and guidelines include:
- o National Association of City Transportation Officials (NACTO) Urban Street Design Guide
 - o FHWA Guide for Maintaining Pedestrian Facilities for Enhanced Safety
 - o AASHTO Bicycle Facilities Design Guide, 2012
 - o NACTO Urban Bikeway Design Guide
 - o Cornell Local Roads Program Complete Streets Manual

These standards and guidelines can be standalone documents or integrated into existing roadway design standards and project development and operations processes, with those undertaking these changes to implement complete streets ranging from states, to municipalities, to MPOs. It is recommended that:

- o Working with state, local and MPO partners, and utilizing the rich set of resources currently available, develop a complete streets toolkit to assist agencies in planning, designing and operating transportation facilities consistent with complete streets policies. To accomplish this task, complete an analysis of barriers to implementation, including:
 - Current language/requirements in the NYSDOT Highway Design Manual, and identification of potential solutions. This is crucial since all locally sponsored federal aid projects funded through the TIP are required to comply with the Highway Design Manual.
 - Current municipal site plan and highway access permitting and approval processes.
 - Less straightforward barriers such as social, political, and even psychological barriers.
- o Guidelines and associated materials should:
 - Provide sufficient detail to ensure understanding of specific design treatments and how they fit into and can feasibly be implemented in various contexts: urban, suburban or rural. Detailed case studies comprised of examples from around New York State, and locally where available, illustrating implementation of complete streets features into a variety of project types and roadway/land use contexts should be included.
 - Incorporate information on FHWA’s Proven Safety Countermeasures related to complete streets elements such as Road Diets, Roundabouts, HAWK signals and other treatments as appropriate. In addition, these materials should include information on implementation of signal technology improvements as these have the potential to improve traffic mobility and safety at low cost. Signal technology also can enhance pedestrian, bicycle and transit access and provide an important component of complete streets. The CDTC Regional Operations and Safety Advisory Committee is developing recommendations for implementing and operating signal technology.
 - Include specific tools to assist the region’s local communities to implement complete streets projects.

42. Develop a method to track progress and measure performance of complete streets policies focused on TIP project outcomes. It is recommended that:

The Complete Streets Advisory Committee convene working sessions with other representatives of CDTC’s Planning Committee that have experience with TIP project implementation. The purpose of these working sessions will be:

To devise a process and associated tools to both keep the Planning Committee informed on progress and to help ensure that projects that were proposed to include various complete streets elements at the conceptual level as described in Project Justification Packages are on track to include those elements or the intent of those elements into built projects.

The idea is to have some type of “report back” to the Planning Committee on TIP projects as they move through the scoping, design, NEPA (National Environmental Protection Act) steps. The overriding purpose would be to enhance communication and coordination and to assist project implementers in integrating complete streets elements into projects by providing support from others who may have encountered similar situations/barriers/constraints and by providing research support from staff on potential solutions.

43. Incentivize implementation of complete streets by modifying the TIP Project Candidate Merit Evaluation Process. It is recommended that:

The TIP Project Justification Package (PJP) and Merit Evaluation Process be modified to give additional credits to project proposals that:

- a. Include complete streets features where potentially feasible and appropriate
- b. Have been submitted by project sponsors that have attended a complete streets training conducted by a professional organization such as the training proposed in Recommendation 41 above.
- c. Any future PJP Training Workshops that may be conducted by CDTC staff for prospective TIP project sponsors include a module on complete streets using the training and education materials developed in Recommendation 41 above.

Modifications are made to the TIP Project Justification Package to include a certification by the project sponsor that complete streets training was attended by project sponsor staff responsible for project implementation.

44. **Coordinate with the Bike/Ped Advisory Committee to identify potential on-road connections to the Regional Trail and Greenway System (a New Visions “Big Ticket Initiative”)** that could be addressed through roadway improvement projects that incorporate appropriate complete streets elements depending on project type.

Transit

Short Term (1-5 years)

45. Continue to support CDTA in implementing its 2014 Transit Development Plan
 - a. **Expand BusPlus** to include the Washington/Western and River corridors and continue to enhance the Route 5 corridor to improve reliability and efficiency.
 - b. **Strengthen the system** beginning with trunk routes, express routes, and commuter/neighborhood routes.
 - c. **Implement fare changes** on express and BusPlus routes
 - d. **Improve the fleet** by reintroducing articulated buses on BusPlus and trunk routes, providing commuter coaches on all express routes, and installed Intelligent Transportation System components on all vehicles.
 - e. **Plan for and begin to construct transit centers.**
 - f. **Improve transit infrastructure** by implementing BusPlus infrastructure throughout the CDTA system, bus only lanes, transit signal priority, pedestrian access, more shelters and improved snow clearing, additional park and ride lots, a new Computer Aided Dispatch and Automatic Vehicle Location systems, and a new fare collection system.
 - g. **Better integrate pedestrian, transit, and bicycle infrastructure.**
46. **Investigate new funding mechanisms** to support CDTA transit operations
 - a. Novel sales tax concepts such as an alcoholic beverage pouring fee.
 - b. Appropriate level of fare increase for base fare on fixed route services to increase the share of revenue provided by transit customers.
 - c. New and expanded transit access agreements for employees in the technology, casino, and non-profit sectors.
47. **Revise the Transportation Improvement Program project evaluation** process to ensure that transit is being considered in the benefit/cost ratio developed for all projects. Support the Environment and Technology Task Force’s recommendation to further evaluate greenhouse gas emission impacts during project selection. Research inclusion of maintenance agreements in the TIP evaluation or programming process.
48. **Promote bus/transit only travel lanes**, beyond those planned for the Washington/Western BRT Corridor, in various locations throughout the region. Particular attention should be paid to roadways included in the 40 miles of Bus Rapid Transit.
49. **Use established national criteria to identify transit corridors** that may have the potential to support streetcar or light rail transit.
50. **Coordinate with municipalities, the counties and the state in the development of Complete Street design guidelines**, standards and/or ordinances that incorporate the needs of the regional transit system (including articulated buses). Encourage inclusion of transit access for pedestrians in state and municipal ADA conformance plans (universal design elements such as sidewalks in good condition, curb ramps, etc.).
51. **Ensure that ADA (Americans with Disabilities Act) requirements are being met** adjacent to all transit routes, on regular route vehicles and on paratransit vehicles through the implementation of universal design techniques (those that accommodate the widest range of users). Explore further use of audio and video based technologies on buses.
52. **Continue to work with and promote integrated land use and transportation planning that supports transit oriented development and land use projects that encourage transit use** (especially for seniors and lower

income housing). Improve local understanding of development finance in real estate markets for transit oriented development.

53. **Encourage improved intermodal connections** (among transit providers) including Amtrak, intercity bus carriers, and the Albany International Airport as well as walking, bicycling, and driving. Work with CDTA and regional transit carriers, including Amtrak, on the development of shared intermodal stations.
54. **Continue to engage major public and private stakeholders** in transportation demand management initiatives and monitor significant new development in order to structure future transit service, transit access agreements (employer/institution financial partnerships with CDTA), and opportunities to influence development in transit supportive ways.
55. **Develop marketing or education materials** targeted to elected officials, developers, financiers, etc. about the benefits of transit and the cost to provide transit service.
56. **Continue to encourage open communication between NYSDOT and transit providers.**

Longer Term (5-20 years)

57. **Explore new funding mechanisms** for both capital and operations funding
 - a. Explore best options and mechanisms for developer contributions, mitigation fees, transit oriented development (TOD), and a variety of value capture mechanisms.
 - b. Continue to explore parking pricing options.
58. **Explore new technologies** which may be deployed to improve the reliability and efficiency of transit (such as light rail styled vehicles, off board fare collection or proof of payment system for every transit vehicle, traffic signal coordination, etc.). Consider a working group which coordinates management of transit signal priority/coordination across jurisdictions.
59. **Explore the potential impacts that automated vehicles may have on transit** as well as the potential for automated transit vehicles.
60. **Continue to work with New York State on the development of a high speed rail program.**
61. **Implement additional BRT corridors** in the Capital Region.
62. **Further explore opportunities to upgrade BRT corridors to fixed guideway.**

Coordinated Public Transit-Human Services Transportation Plan

63. **Prioritize projects for Section 5310 funding that will address previously identified gaps and barriers.** A draft list is below, followed by more detail on the type of funding within the 5310 Program (i.e. “traditional capital” (minimum 55% of funds) or “other eligible capital and operating” (maximum 45% of funds)) that could fund projects.

Draft List:

- a. Shared maintenance (opportunities currently exist in the region)
- b. Pooled resources - Vehicle washing, Gas purchases, Replacement parts
- c. Insurance
- d. Driver/Mechanic Training (*Current New Freedom project sponsored by Center for Disability Services addresses this*)
- e. Sharing seats
- f. Other Shared services
- g. Shared dispatching (has occurred but less so currently than in the past)
- h. Information sharing
- i. Travel/mobility training
- j. Coordinated emergency management
- k. Census of available vehicles
- l. Call center

According to the FTA 5310 Final Circular (see:

http://www.fta.dot.gov/documents/C9070_1GFINAL_circular.pdf) the following activities are eligible under the 5310 program and would be consistent with the types of projects that would help to meet needs identified for the Capital District:

5310 Program Eligible Capital Expenses (i.e. “traditional” projects that meet the 55% minimum)

- a. Purchase accessible buses or vans;
- b. Vehicle rehabilitation;
- c. Radios and communication equipment;
- d. Computer hardware and software;

- e. Transit-related Intelligent Transportation Systems (ITS), to enhance and expedite the coordination of transportation operations, management of information, and customer service
- f. Mobility Management (including call centers)

5310 Program Other Eligible Capital and Operating Expenses

(up to 45% of regional allocation may be used on these types of projects)

- a. Purchase accessible taxis;
- b. Joint procurement of vehicles, fuel & services (consider fuel efficient);
- c. Diversify and expand funding sources by partnering or contracting vehicles and transportation services through an existing transit operator;
- d. Purchase transportation trips in volume from vendors;
- e. Transit amenities that enhance rider experience and play an important role in attracting and keeping riders (i.e. storage racks, security cameras, bus shelters, accessible paths to bus stops that may currently be inaccessible);
- f. Travel training;
- g. Volunteer driver programs; and
- h. Expansion and enhancement of transportation services (curb-to-curb, curb-to-door, door-to-door, door-through-door service).

- 64. Reach out to NYS Department of Health, OPWDD and Veteran’s groups to participate in the RTCC** and to learn more about their policies and practices that impact transportation needs and services for transportation disadvantaged populations.
- 65. Verify the method to be used to prioritize the strategies within the competitive selection process for federal funding.**
- 66. Organize and hold a Workshop** (within 6 months focused on Tools to Improve Human Service Agency Transportation Service Quality and Efficiency). The RTCC recommends holding a day-long workshop with multiple sessions to support providers of human services transportation in providing quality and efficient services. The new focus on managed care and dwindling public funding for human services, including for transportation, is prompting agencies to strengthen efforts to improve efficiency without sacrificing quality. A workshop will assist each agency to achieve their goals. It will also provide an excellent opportunity for creative partnerships to emerge. Suggested presenters and topics are listed below:
- a. CDTA
 - o Contracting opportunities
 - gas purchase
 - maintenance
 - o Travel Training – how to help the people you serve use fixed route transit
 - Market-rate Taxis
 - b. Center for Disability Services
 - o Regional Driver Training Facility and Standard Driver Training Curriculum
 - c. Catholic Charities Senior Services of Schenectady
 - o Joint scheduling and dispatch software (2008/2012 NF)
 - o Digital mobile radio technology (2011 NF)
 - d. Rensselaer ARC
 - o Transportation Planning Process
 - e. Medical Answering Services
 - o Procedure for determining mode
 - f. 211 NY Northeast Region and 511 NY Capital Region Albany and Saratoga
 - o Services and information provided
 - g. Independent Transportation Network
 - o Benefits of becoming an affiliate
 - h. Mobility Management Programs in NYS – Steuben County
 - o Should a similar program be developed and implemented in the Capital District?
- 67. Restructure the RTCC meetings to foster better communication, information sharing and coordination among service providers.** Consider holding meetings bi monthly, using the Steuben County Transportation Coordination Committee as a model: at each meeting one or two transportation providers would detail the services they provide and issues they encounter. In addition, invite groups that support individuals in the community who may not be transportation providers to detail their clients’ needs. Develop a template for the presentations and information to be shared. At the conclusion of presentations invite the RTCC to brainstorm on how to help with issues and ways to connect with others that could assist them and that they could coordinate with.

- 68. Ensure that listings of available paratransit services within the Capital District’s four counties are included in the 511NY paratransit services listings.** Currently only Saratoga County’s list seems complete. Explore use of 211 as a resource for human service agency transportation.
- 69. Assist Communities** (facilitate completion of ADA Transition Plans and associated physical improvements) to continue to work toward an accessible regional transportation system. Include a method to incentivize and prioritize inclusion of accessible features in federally funded transportation projects through changes to CDTC’s Transportation Improvement Program (TIP) merit evaluation process for candidate projects.
- 70. Smart Growth** – Identify mechanisms, such as education and outreach, potential incentives and other means to improve decision making for Location Efficient Siting of Facilities/Housing serving transportation disadvantaged populations.
- 71. Explore utilization of A Framework for Action** - a self-assessment tool that states and communities can use to identify areas of success and highlight the actions still needed to improve the coordination of human service transportation. This tool has been developed through the United We Ride initiative sponsored by FTA, and can be found on FTA’s website: http://www.unitedweride.gov/1_81_ENG_HTML.htm
- 72. Explore opportunities for coordination for other federal programs that fund transportation components but are not funded through FTA or FHWA.**
(See: http://www.unitedweride.gov/NRC_FederalFundingUpdate_-_Chart.pdf Dated 12/2012). According to the Federal Funding Update there are about 80 federal programs that have some transportation funding and service components, with the largest of these being Medicaid followed by Aging.) Also see: <http://www.gao.gov/assets/670/667375.pdf> . Appendix II lists: Identified Programs from the Department of Health and Human Services, Department of Transportation, and Department of Veterans Affairs That Fund or Provide Transportation for Older Adults.

Regional Operations and Travel Reliability

- 73. Not Support increasing road capacity by constructing new lanes** – Americans are driving less, not obtaining drivers licenses, not buying cars, moving to urban areas, and biking and using transit more. These trends along with the deployment of totally automated vehicles will decrease traffic congestion and decrease the need for more road capacity.
- 74. Right-size our existing roadways** – Because some of the roads in our region were built years ago based on higher-than-actual forecasted traffic, some of these roads have unused capacity. These roads should be right-sized so that underutilized right-of-way can be used to improve access for other modes of transportation, such as pedestrian, bicycling, and transit.
- 75. Encourage use of Intelligent Transportation Systems (ITS) and Active Traffic Management Strategies (ATM) to address congestion** - These systems and strategies can reduce traffic congestion without constructing new lanes. CDTC should further evaluate and eventually recommend ITS and ATM strategies, including speed harmonization and Dynamic Lane Assignment (DLA) for local interstate highways as national experience increases.
- 76. Development of New Performance Measures**- Because expected national guidance is not yet available, and because new data sources are under development, it is recommended that CDTC postpone the development of new traffic reliability and congestion performance measures until after the proposed federal rule making is issued in December 2014. After the national guidance is developed, CDTC will be in a position to update the CDTC “Congestion Management Process” (CMP).
- 77. Project Selection**- The Regional Operations and Safety Advisory Committee recommends that CDTC consider expanding its project review process to further evaluate operational needs and impacts during project evaluation and selection. Projects that improve operations can provide significant benefits at a relatively low cost. In addition, projects should be consistent with the ITS Priority Network. One purpose of the priority networks is to help set priorities for TIP project selection. Another purpose is to give guidance for project development to make sure that individual projects address important needs on each priority network.
- 78. Funding for Operations**- CDTC should continue to support funding for operations, including the TMC, traffic signals, ITS innovations, improved project selection process for ITS/signals. At a minimum, funding should continue at existing levels. While existing funding at the federal and state level is often set up for capital projects, funding for operations provides essential improvements to traffic flow and traffic reliability, as well as improvements to transit systems. CDTC should continue its strong policy that congestion management is much more cost effective than highway capacity increases or new lanes; and that congestion alone does not justify increasing highway capacity or adding new lanes. Because of other less expensive strategies, and because of changing transportation technologies, major highway expansion (adding through lanes for several miles or more) should not be considered.

- 79. Community Traffic Engineering Services Program-** CDTC should explore the option of establishing a community traffic engineering services program. Under this potential program, CDTC would partner with a municipality to hire a traffic engineering consultant to provide intersection signal analysis, traffic counts, or analysis of potential operational improvements or ITS improvements. Municipalities would need to apply for funding for this program. The result could be the identification of candidate projects for future improvements.
- 80. Active Traffic Management Strategies-** CDTC should further evaluate active traffic management (ATM) strategies, including speed harmonization and Dynamic Lane Assignment (DLA) for the Northway as national experience increases. Further national experience will help NYSDOT and CDTC determine if ATM strategies are a good fit for the Capital District.

Infrastructure

- 81. Develop and publish an Infrastructure Report Card for roads, bridges and other assets –** Our citizens, leaders, elected officials, and CDTC members cannot bring about change unless they know change is needed. The report card will provide that knowledge and will highlight individual components of the region’s transportation infrastructure (roads, bridges, sidewalks, etc.), their physical condition, infrastructure TIP and local projects completed during the previous one or two years, and how well individual goals are being met.
- 82. Regularly publish transportation summary sheets (bullets) –** Transportation needs advocates and advocates need tools. These transportation summary sheets can be used by our citizens, leaders, elected officials, and CDTC members when they advocate for transportation projects and funding for the various transportation programs described in this document, such as infrastructure, bike/ped, transit, freight, etc.
- 83. Devote significant TIP resources to infrastructure preservation and renewal,** including continued local and State investment in routine maintenance.
- 84. Given the atmosphere of a shortage of funding, the strategy to perform less costly and shorter-lasting road and bridge repairs should continue for the foreseeable future.** This maximizes the pavement and bridge benefit, at least for the short term.
- 85. The region cannot solely rely on preservation treatments to reverse the decline in pavement and bridge condition.** Lower-scale repair (preservation) treatments alone may not be sufficient to maintain good pavement condition on local roads; the importance of many of these roads warrants more significant work to produce a longer repair life, safer operations, and other benefits. Pursuing an effective highway and bridge reconstruction program will be necessary to some degree. (The optimum mix of preservation and renewal treatments will be derived from a comprehensive evaluation using the HCPM and other models). Currently the work on both State and local roads is limited.
- 86. Preservation and renewal treatments must seriously consider community context regardless of facility ownership.** The design process must incorporate complete street features wherever possible.
- 87. Regularly provide infrastructure summary sheets (bullets) to CDTC members so that they can advocate for regional transportation projects.** CDTC and its members must communicate regularly with the region’s representatives in Congress and other governmental bodies. Success in achieving support for “big ticket” initiatives and other road and transit expansion projects can “free-up” scarce State and federal formula-based resources for maintenance and preservation projects.
- 88. Pursue local funding mechanisms, especially small-scale public-private financing opportunities.** In this constrained funding environment, undertaking major highway or transit initiatives must include local and private investment. The use of mitigation cost, developed through the GEIS process, can free-up public resources for more routine kinds of projects.
- 89. Encourage the use of shared services on a larger scale.** For every million dollars saved, the region can replace 3.3 miles of road, repair 3-5 bridges, or build one mile of new sidewalk and bike path.
- 90. Technology innovation should be encouraged within New York.** Even though it may take years to “make the switch” to new ways of designing and building our bridges and highways, the long-term savings cannot be minimized.

Safety

- 91. Safety Performance Measures-** A major task for CDTC in the coming year will be the development of safety performance measures and targets. The new federal rulemaking on safety performance measures gives MPOs the option of creating their own targets or following State targets. CDTC anticipates working closely with NYSDOT in developing performance measures and targets that are consistent with statewide measures and

targets. However, CDTC will need to consider that State crash and fatality averages might not be appropriate for our area since the majority of population/crashes are in downstate.

- 92. Develop a Regional Safety Plan-** Other leading MPOs in the country have instituted Safety Task Forces/Advisory Committees and prepare Regional Safety Reports and Action Plans. These plans present goals, emphasis areas, statistics, and initiatives. CDTC uses different data sources for identifying the depth and breadth of safety issues. One of the main sources CDTC has access to is NYSDOT's Accident Location Information System (ALIS). This has been used extensively for various analyses, particularly at the County level. CDTC can build on these efforts to develop a regional safety plan.
- 93. Community Safety Evaluation Program-** CDTC should explore the option of establishing a community safety evaluation program. Under this potential program, CDTC would partner with a municipality to hire an engineering consultant to provide safety evaluations for potential problem locations identified in the municipality. This problem identification phase of this program could be modeled after the safety evaluation process followed by NYSDOT Region 1. NYSDOT staff evaluates high accident locations every year, screens out those already evaluated in the past 2-3 years, and evaluates the rest in detail (including developing collision diagrams). CDTC could similarly prioritize the work with the help of consultants. The local decision makers would need to agree that these locations/projects are their priority, based on crash data and other local considerations, in their request for evaluation funding through the program. A variation on this proposal would be that CDTC would hire an on-call consultant to evaluate high crashes locations, but selection of locations would still be dependent on municipalities applying for consideration.
- 94. Safety Education Programs-** CDTC should explore expanding its existing safety education programs and potentially develop/support new programs and partnerships. CDTC currently maintains the Capital Coexist website which educates both bicyclists and drivers about bicycle safety and sharing the road. This website should be expanded to include education for pedestrian safety as well as additional topics as identified in the NYS Strategic Highway Safety Plan or the future regional safety action plan. CDTC could also use programs such as the NYS Route 5 Pedestrian Safety Education initiative as a blue print and expand them to other corridors as well as the broader Region. In addition, CDTC will explore partnering with and supporting the enforcement community on safety education campaigns. CDTC could use the New Visions public participation process to assist in the identification of safety education topics of regional concern. CDTC will also explore the need for additional FHWA training programs for local government officials. CDTC will continue to partner with the Governor's Traffic Safety Committee, National Highway Traffic Safety Administration, New York State Department of Transportation and the other Metropolitan Planning Organizations in NYS on the development and implementation of safety education initiatives.

Security

- 95. Foster communication and provide a forum-** The Regional Operations and Safety Advisory Committee is an excellent forum to further enhance the communication among various agencies in the security planning realm. State agencies, Police, and local operational and planning community are members of this committee and provide various inputs. This collaborative effort is further enhanced with CDTC's participation in LEPCs since LEPCs have a more diverse group including fire districts, health department, and private industry representatives who are outside the traditional transportation and planning entities. These collaborative efforts provide direct communication and interaction with key security-related groups incorporating them into the regional planning process. This Committee as well as CDTC's Planning Committee and Policy Board allows for direct links with CDTA, the Port of Albany, and the Albany International Airport since they are members of one or more of these forums. CDTC can further expand its activities within these committees by:
- a. Providing a forum for discussions on coordinating incident/emergency response
 - b. Providing a forum for emergency agencies to coordinate surveillance and prevention strategies
 - c. Coordinating public information dissemination strategies
- 96. Funding-** One of the MPO's responsibilities is to provide funding strategies and projects that will improve the performance of the transportation systems. CDTC has a substantial history of providing funding the operations of the regional Transportation Management Center (TMC) and the Highway Emergency Local Patrol (H.E.L.P) as well as cooperatively funding key initiatives at rail, port, air, and inter-modal facilities. To further assist with funding security related strategies and projects, CDTC could take action in the following:
- a. Continue funding of TMC and ITS technologies
 - b. Funding new strategies/technologies/projects that can help prevent events
 - c. Collaborate with local emergency response community in securing other federal funds through State Homeland Security Grants and the Urban Area Security Initiative (UASI) Grant.

- 97. Increase Technical Support and Information Dissemination-** CDTC’s regional role and technical strength place it in a unique position to provide technical support to emergency agencies and local communities on transportation system analyses such as vulnerability assessments, evacuation scenario development, data compilation and analyses, and best practices and public information dissemination. CDTC has potential access to many operational data on highways and safety data on streets. This knowledge base could be enhanced by linking these datasets with other emergency related datasets within the region. CDTC has already used its traffic demand model to develop evacuation scenarios. This kind of technical support could be extended to the local communities and made into a regular aspect of collaboration. CDTC could also coordinate different local governments to develop collaborative plans. Some of the areas CDTC could take action are:
- a. Compile data on transportation system vulnerability and vulnerability analyses on regional transportation facilities and services
 - b. Disseminate (and possibly coordinate) research on structural integrity (CDTC Bridge Working Group is currently undertaking an assessment of local bridges in the CDTC region)
 - c. Disseminating best practices in incident-specific engineering design and emergency response
 - d. Coordinating public information dissemination strategies
 - e. Analyzing transportation network for emergency/hazardous route planning
 - f. Conducting targeted studies on identified deficiencies
 - g. Coordinating collaborative efforts among municipalities.
- 98. Vulnerability Planning-** Global climate change has been affecting the weather patterns across the globe. It is predicted that frequency and severity of storms and blizzards could increase drastically in the future making our transportation infrastructure vulnerable to flooding, etc. It is important for our region to understand the vulnerability of our infrastructure and plan for critical failures or disruptions in the system. NYS DOT has been conducting flood vulnerability assessment of their system across the state. Similar assessment could be carried out of our local system in collaboration with Counties and municipalities that will give a comprehensive understanding of vulnerability in our region. This would allow CDTC and its members to develop projects and allocate funds for protecting critical infrastructure and develop resiliency. CDTC could apply for competitive grants from Federal Highway Administration (FHWA) to carry out such studies. Activities CDTC could take up in the future include:
- Conduct vulnerability survey/assessment of local transportation system.
 - Develop options for improving resiliency of transportation facilities or systems

Freight

The recommendations below are from CDTC’s Regional Freight & Goods Movement Plan (“Freight Plan”). Please reference the Freight Plan for additional information.

The recommendations break out into two general categories: (1) Projects; and (2) Programs, Policies and Studies. Projects involve construction, reconstruction and/or changes to physical transportation infrastructure. Projects are separated into early-action projects and long-range actions. Programs, Policies and Studies are non-capital initiatives that seek to employ regulatory, guidance and/or planning tools to facilitate more cost-effective and efficient use of existing and planned transportation infrastructure.

99. Early Action Projects:

- a. NS Intermodal Facility Access Improvements - Provide turning lanes at NS Intermodal Facility entrance on NY 67 to support safe and efficient truck movements between I-87 Exit 11 in Malta and the facility.
- b. Rotterdam Industrial Park Entrance Realignment - Realign and signalize entrance to Rotterdam Industrial Park at NY 7/ Duanesburg Rd. for safer and more efficient truck movements at a major logistics center and improve traffic and non-motorized safety and mobility.
- c. Public Official Training and Model Ordinance Development - Develop program that educates local public officials, including planning and zoning boards, about freight movement. Create and disseminate model ordinances and regulations for freight related development.

100. Long Range Projects:

- a. NY 67 Modernization - NY 67 improvements to support safe and efficient truck movements between Mechanicville and I-87 Exit 11 in Malta (approx. 5.1 miles)
 - i. Signalization at NS Intermodal Facility entrance
 - ii. Turning lanes on NY 67 at major intersections

- iii. Improved trucker guidance signage throughout corridor
- iv. Redesign of roundabouts to facilitate safe and efficient truck movements
- b. Livingston Avenue Bridge - Replace Livingston Avenue Rail Bridge and Walkway across the Hudson River between Albany & Rensselaer.
- c. I-87 Exit 16 Overpass Replacement - Add capacity in each direction to accommodate growing truck traffic in vicinity when NYSDOT initiates replacement of I-87 (Northway) Exit 16 overpass.
- d. I-87 Exit 4 Albany International Airport Access Project - Build new ramp off Exit 4 to provide direct access to Albany Shaker Road and airport entrance.
- e. Freemans Bridge Road Grade Crossing Separation - Grade-Separate Pan Am (ST) Railway Crossing at Freemans Bridge Road.
- f. Port of Albany Wharf Expansion - Extend Port of Albany wharf by 2000 feet.
- g. Port of Albany Expansion - Acquire 80 acres of industrial-zoned waterfront land.
- h. Port of Albany Cargo Handling Capacity Upgrade - Construct storage building on Port grounds for heavy lift cargo.
- i. Container on Barge Service - Provide investments in facilities and operations to support container on barge service between NY/NJ and the Port of Albany.
- j. Port of Coeymans Rail Extension - Extend rail service to waterside at Port of Coeymans.
- k. Port of Albany Dredging - Conduct river dredging at south side of Port of Albany.
- l. Cargo-Supportive Improvements to Canal System - Identify and prioritize investments in NYS Canal System facilities that support and facilitate cargo movement within, to, from and through the Capital Region.
- m. Urban Area Hazardous Material Rail Transportation Mitigation - Identify and prioritize safety infrastructure and mitigation strategies where trains carrying hazardous materials (HazMat) travel close to residential neighborhoods and areas in the urban core of the Capital Region.

101. Programs, Policies, and Studies:

- a. Tandem Trailer Lots Relocation Study - Research and identify new locations for existing tandem trailer lots at Thruway interchanges
- b. Port Truck Parking Expansion - Identify and implement opportunities to improve truck parking adjacent to Port of Albany.
- c. Truck Stop Restoration - Conduct planning to reopen closed truck stops on I-87 and I-90 corridors that would provide relief to truck parking demand in Capital Region.
- d. FPN Bridge Improvement Prioritization - Prioritize the reconstruction of bridges on the FPN to decrease those classified as "functionally obsolete" or "structurally deficient" in the CDTC Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).
- e. Interstate Lighting Program - Add lighting infrastructure on I-90, I-87, I-88, and I-787 based on objective assessment of needs
- f. I-787 Rail Relocation Feasibility Study - Coordinate with existing I-787 study to consider removing the existing CP Rail track in downtown Albany that serves the Port of Albany
- g. Capital Region ITS CVO Enhancement - Identify and implement opportunities to improve truck parking adjacent to Port of Albany.
- h. Local Delivery Optimization - Research and identify policies, procedures and actions municipalities can employ to support and facilitate safe and efficient goods deliveries in dense urban zones.
- i. CDTC Freight Data Collection Program - Build on existing regional traffic and transportation data collection systems and procedures to include more detailed and multimodal freight data, including data from state facilities (e.g., WIM stations) and from the pending CDTC SHRP2 study report.

Appendices

- **Bicycle and Pedestrian Action Plan**
- **Complete Streets Advisory Committee White Paper**
- **Coordinated Public Transit-Human Services Transportation Plan for the Capital District**
- **Environment and Technology Task Force White Paper**
- **Infrastructure Task Force White Paper**
- **Quality Region Task Force White Paper**
- **Regional Freight & Goods Movement Plan**
- **Regional Operations and Safety Advisory Committee White Paper**
- **Transit Task Force White Paper**
- **New Visions 2040 Public Participation Process**