

6. Strategic Directions

This section articulates Centre County transportation priorities to advance the stated goals and objectives in light of existing conditions. These policies will guide projects, partnerships, and other actions in the near-term and throughout the planning period.

Highway

Centre County roadways play a critical role in providing mobility via many modes in a safe manner. The roadway network supports a range of travel needs, from interstate travel to regional and local access to jobs, medical care, education facilities, retail trade, and recreation opportunities.

The following priorities will help the CCMPO, PennDOT, municipalities, and other stakeholders to prudently invest in maintaining roadways that are safe, ensure travel time reliability, and have low impacts to important natural and community resources. The policies are intended to guide decision-making in a rapidly changing transportation planning environment that addresses performance measures, resiliency, demographic change, organizational needs, stakeholder preferences, and fiscal constraints.

- *Improve Highway Safety* – Improving safety of the roadway system is the CCMPO's highest priority goal. The MPO is responsible for working with PennDOT to meet federal safety performance measures, which include state and locally owned roadway assets and multiple modes of travel that utilize roadways. The CCMPO adopted PennDOT's highway safety performance measure targets, and should continue targeting resources to projects and programs that will help meet the targets. Planning efforts should include ongoing evaluation of crash data, identification of potential infrastructure-related projects, and programming funding to projects that address crash clusters involving motor vehicles, buggies, pedestrians, bicyclists, and scooters.
- *Maintain Bridges and Roadway Pavement in a State of Good Repair* – The second-highest priority goal of the CCMPO is to preserve the existing transportation system, including roadways and bridges. The MPO will work with PennDOT to utilize Pennsylvania's bridge and pavement asset management systems to guide investments so that state-owned road and bridge assets are maintained based on a "lowest life-cycle cost" approach. The asset management systems are intended to help PennDOT and the MPO ensure that bridge and pavement conditions on the National Highway System meet federal performance measures, consistent with PennDOT's targets as adopted by the MPO, and to ensure that other state-owned roadways and bridges are maintained in a state of good repair. The new asset management approach will be enhanced as more data about bridge and pavement condition data becomes available. The CCMPO should also provide planning and financial support to municipalities to stretch scarce resources and maintain locally owned bridges and roadway pavements in a state of good repair.
- *Maintain Travel Time Reliability for Key Corridors* – Another high-priority goal for the CCMPO is the efficient management and operation of the transportation system. Travel time in key roadway corridors for personal travel and freight movement should be relatively consistent at different times of the day. The consistency, or reliability, of travel time would reflect acceptable levels of service on roadway segments and at intersections, and would indicate that there are few times when congestion becomes particularly severe during peak periods of travel (rush hour).

Centre County is an employment, academic, retail, and recreational center for a large portion of Central Pennsylvania, particularly given affordable housing opportunities that exist in communities outside of the county. There is significant daily commuter travel from Blair, Clearfield, Clinton, Huntingdon, and Mifflin counties to employment centers in Centre County, and travel time reliability is important for employers and employees. Travel time reliability is also an important factor relative to goods movement via truck, from both the interstate and local perspective.

The CCMPO adopted PennDOT's travel time and truck travel time reliability performance measure targets for the National Highway System, and should continue targeting resources to traffic operations projects and programs that will help meet the targets. Capacity enhancements may also be considered where appropriate and when funding is available.

- *Facilitate Access Relative to Environmental Justice and Title VI* – Centre County includes populations that can have mobility challenges, because of age, gender, national origin, disabilities, income, race, and/or limited English proficiency. The CCMPO will continue analyzing how to better serve these populations and to promote participation of all affected populations in the transportation programming and planning process. The MPO will evaluate plans and programs to ensure that they do not result in disproportionately high and adverse human health and environmental impacts on minority and low-income populations. The MPO will also work with other stakeholders to identify barriers to nonmotorized travel, and to improve conditions for walking and bicycling.
- *Improve Connectivity of Modes* – Roadways provide the infrastructure that supports both motorized and non-motorized modes of travel. The CCMPO should encourage the integration of “Complete Streets” principles and elements in projects on the state-owned and locally owned roadway systems. These elements will help provide safe access for pedestrians, bicyclists, persons using mobility devices, and users of other non-motorized modes, and help make the first-mile/last-mile connection to the public transportation system. Physical elements may include traffic calming for motorized vehicle travel, improved crosswalks and ramps to sidewalks, bicycle lanes, and traffic signal operations.
- *Advance the Use of Emerging Technologies* – Given the lack of funding and potential impact of widening existing roadways or constructing new roadways to provide greater capacity, emerging technologies can be utilized to improve the operation of existing roadways and traffic control devices along those roadways. Technologies such as adaptive traffic signals, connected signals where timing can be adjusted remotely in real time, and traveler information systems relative to weather and advance incident warning are some examples that can improve safety and traffic operations. Other emerging technologies that allow vehicle-to-infrastructure and vehicle-to-vehicle communications are anticipated to be implemented as part of the movement to connected and automated vehicles. The CCMPO should partner with PennDOT, municipalities, Penn State University, and other stakeholders to plan and finance the implementation of emerging technologies. The technology-based improvements will help the MPO and PennDOT meet safety and travel time performance measures.
- *Maintain Fiscal Constraint* – The amount of federal, state, and local funding for all modes of transportation that is projected to be available over the time horizon of the LRTP is significantly reduced. The evaluation and prioritization of candidate projects and programs, and ultimately the policy decisions about which projects and programs are advanced to meet transportation and community needs, will be impacted by fiscal limitations. Socioeconomic and environmental conditions will also impact decisions about how to

allocate limited resources. For example, the potential long-term impacts of the COVID-19 pandemic on travel choices and travel patterns may result in reduced transit use, increased vehicle congestion, and increases in pedestrian and bicycle traffic.

The CCMPO should work with PennDOT, CATA and the CCOT, and other transportation providers to develop scenarios that can be used to help guide policy decisions about funding contingencies that both providers may have to address. Providers may consider building reserves to support the provision of mobility services even when unexpected events impact travel patterns.

Overall, the CCMPO should continue to plan for advancing transportation improvements in a fiscally constrained environment. The MPO should work with PennDOT and other providers on an ongoing basis to identify, investigate, and pursue non-traditional funding sources that can be used to rapidly activate and advance projects and programs if opportunities occur.

- *Support Stewardship of the Environment and Resiliency* – Roadways can pose risks to the environment, both by the nature of the travel that occurs on the road, and the physical assets that comprise a roadway system. Expansion of a roadway that requires additional land area may impact plant and animal species, agricultural land, and cultural and historic resources. Air quality is impacted by vehicle emissions, and noise occurs as a result of vehicle traffic. The use of anti-skid materials in winter, and stormwater runoff throughout the year, can potentially impact adjacent lands, surface waterways, and subsurface water resources. For example, as heavy rainfall events have become more frequent and severe in recent years, both state-owned and locally owned roadways have been damaged by washouts and rock slides.

The CCMPO will work with PennDOT to identify potential environmental impacts during transportation planning activities, particularly relative to maintaining conformance with federal air quality standards and encouraging the reduction of greenhouse gas emissions. The MPO will also coordinate with PennDOT, local officials, and other stakeholders during the development of specific projects and programs to minimize impacts to sensitive environmental features. Attention will be given to plans and funding programs that promote resiliency of the roadway system relative to stormwater runoff and flooding events.

- *Strategic Planning* – Rapid advances in technology, the requirement for performance-based transportation planning and programming at the national level, implementation of the PennDOT Connects process, and increased emphasis on asset management at the state level in Pennsylvania are all factors which are significantly changing transportation planning practices. The CCMPO should complete a strategic planning process that will evaluate the MPO's current transportation planning practices and operating structure, and potentially develop a new approach that is more adaptable to rapid changes, and establishes a framework for being more proactive in working with PennDOT and local officials to program resources to maintain and upgrade roadway systems.

Transit

Public transportation plays a critical role in providing mobility, reducing traffic congestion, and improving air quality in the State College area and throughout Centre County. The Centre Area Transportation Authority (CATA) transports well over six million riders annually through a combination of fixed-route, paratransit/demand-responsive, and microtransit services. A significant number of riders are also transported across county lines over longer distances through ridesharing services. Moreover, the Centre County Office of Transportation Services (CCOT) covers all of Centre County through paratransit/demand-responsive service, and also provides selected group trips across county lines.

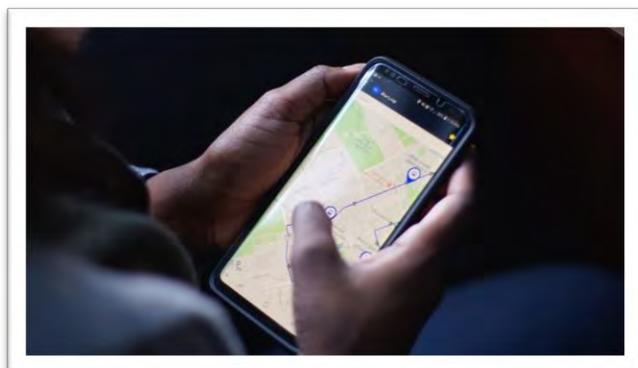
The State College area remains one of the most transit-intensive urbanized areas of any size in the United States, based upon trips taken per capita. In order to continue to accrue the benefits provided by public transportation, Centre County must continue to maintain and prudently invest in systems that are safe, reliable, modern, responsive, and adaptable—among other characteristics.

Ridership and demographic information, organizational needs and preferences, stakeholder interviews, financial capacity data, and the results of recent specialized transit studies (including the CATA Strategic Plan Update) suggest the following broad and overlapping public transportation policies to guide sensible transit investments and actions over the planning horizon of the LRTP:

- *Maintain Adequate Facilities* – CATA recently completed a renovation and expansion of its administrative, maintenance, and bus storage campus into a state-of-the-art facility. The facility has some room for future expansion. To anchor transit service in the region and protect this sizable investment, ongoing upkeep of these fixed assets must be adequately programmed, and regular assessments completed in accordance with transit asset management reporting requirements and to gauge need for expansion. The CCOT should follow similar practices, and may find the need to assess facilities in terms of size and location for current and planned future service levels.
- *Increase Speed, Reliability, and Capacity Through Key Corridors* – CATA carries a significant mode share in the State College area, especially in the North Atherton Street corridor, around downtown and the Penn State University campus, and through other key dense housing corridors. Moreover, the CCOT serves all of Centre County, including the State College and Bellefonte areas. Increasing the effectiveness of transit in these areas may involve a variety of operational techniques, including increased service frequency, elements of bus rapid transit (BRT), intelligent transportation systems (ITS), use of articulated buses, and other methods to meet current and future demand.
- *Preserve a State of Good Repair* – As mentioned earlier in this section, both CATA and the CCOT must meet federal transit asset management reporting requirements. This is not only important in terms of fixed facilities and equipment; it is arguably most important as it pertains to the fleet of rolling stock for each respective agency. Maintaining a state of good repair for all capital assets minimizes cost while maximizing performance. In terms of rolling stock, a state of good repair is particularly important to maintain reliable on-time performance and avoid missed trips and breakdowns.
- *Build Core Capacity and Provide for Long-Term Expansion* – CATA’s recent “Evaluation of Alternative Service Models for Areas of Low Population Density” presented a variety of proposals for mobility outside of the core service area, which—if implemented—would allow the agency to concentrate a limited fleet of rolling stock where it is most needed. Both public transportation agencies within Centre County should place a priority on new and innovative ways to serve riders within their existing service areas. In terms of service expansion, it is

expected that both CATA and the CCOT would pursue a process driven largely by data and public outreach before resources are further deployed outside of the present core service area.

- *Enhance Bus Stop Access* – CATA will continue to work with—and through—local governments and developers to ensure that new land developments and property redevelopments are accessible to transit vehicles and patrons, while acknowledging that changes and enhancements to this process may be beneficial. Moreover, the agency maintains a limited budget for stop improvements in cases where the host property is not being redeveloped. These processes and resulting actions help to address first-mile/last-mile challenges and improve overall mobility. Though CCOT pick-up and drop-off locations are more decentralized, the aforementioned development review and improvement process does provide some benefit at larger public trip generators.
- *Examine and Refine Fare Structures* – CATA is currently participating in a consultant-assisted “Analysis of Fare and Contract Structures and Policies,” the overarching purpose of which is to fit a number of different fare offerings into a cohesive configuration. This effort may include fare changes to better meet what the market will bear or to further build equity, different fare media offerings, and/or recommendations with respect to fare collection technology. Moreover, the CCOT has recently reorganized its fare structure. It is expected that both agencies will continue to evaluate and develop their fare systems and structures to provide appropriate value while yielding a meaningful offset against operating expenses.
- *Maintain Cross-Jurisdictional Commuter Service* – Centre County is an employment, academic, and retail focal point for a large portion of Central Pennsylvania. At the same time, affordable housing opportunities exist in communities outside of Centre County. There is an especially significant daily commute pattern between Centre County and Blair, Clearfield, Clinton, Huntingdon, and Mifflin counties. CATA provides for these patterns through **CATACOMMUTE** ridesharing services, as does the CCOT through providing group trips to out-of-county destinations. Both agencies must continue to consider and implement methods to effectively link Centre County with its neighbors.
- *Use a Data-Driven Approach to System Analysis and Public Information* – As mentioned previously in this section, both CATA and the CCOT are subject to federal transit asset management reporting requirements. Moreover, both agencies are evaluated annually by state regulators on a variety of measures under the provisions of Act 44, and both will soon be subject to federal safety reporting requirements. As both systems continue to evolve, they should continue to increase the use of this data in analysis of operations for decision-making, and conveying information as to the efficiency and effectiveness of transit to partners and the general public.
- *Facilitate Connections Between Modes* – To address first-mile/last-mile challenges and build stronger connections between systems and geographic areas—including newer service offerings such as TNCs and car-sharing, for example—both CATA and the CCOT should work to more closely coordinate operations with other providers, and establish operating agreements



where appropriate to do so. In a very basic sense, this may include transfer agreements, and technology-based applications such as Google Transit. More elaborate configurations may look much like the “Mobility as a Service” concept CATA has expressed interest in pursuing.

- *Cooperate with Partners and the Public to Support Transit Needs and Goals* – CATA enjoys a close working relationship with member municipalities and contract municipalities. The CCOT also works very effectively with other divisions of Centre County government. Both agencies have built successful partnerships with the Centre County MPO, PennDOT, state and federal elected officials, Penn State University, and regional employers. Both are well-regarded by the general public. Each agency, working individually and cooperatively where appropriate, should seek to further strengthen these relationships to effectively communicate the value of public transportation, implement improvements, and build awareness of available services.
- *Furnish an Appropriate Level of Service to At-Risk Populations* – Though CATA maintains a significant level of “choice” ridership from relatively affluent populations, together CATA and the CCOT also serve a significant number of riders from “at-risk” populations—those age 65 and older, persons with disabilities, low-income individuals, minority populations, and those with limited English proficiency, for example. For these populations, public transportation may provide an especially critical linkage to employment, medical, educational, retail, and recreational opportunities, as well as supportive services; it may be the only such linkage available for some individuals. Both CATA and the CCOT should continue to analyze operations relative to the geographic distribution of these populations, taking care to distribute services equitably and further refining methods by which to meet a number of unique mobility needs.
- *Pursue Fare Agreements with Local Entities* – CATA maintains very successful fare agreements with Penn State University and a number of local apartment complexes. The CCOT has implemented similar agreements with the Centre County Office on Aging and the Mental Health/Intellectual Disabilities/Early Intervention (MHIDEI) and Drug and Alcohol offices. Where such agreements can be structured to be mutually beneficial, they can have the effect of lowering the per-trip cost for the rider, while building ridership and filling capacity for the transit agency. CATA’s “Analysis of Fare and Contract Structures and Policies,” which is currently underway, may recommend enhancing and expanding these types of agreements to increase transit effectiveness, as well as operational and financial performance.
- *Support a Responsive and Highly-Trained Workforce* – With respect to agencies large and small—and regardless of mode—the safety, efficiency, and effectiveness of public transit services depends heavily on the competency and care of the workforce. Transit employees who are highly trained and supported with development resources plan and administer an operationally and financially sound system; maintain vehicles in a safe, reliable state of repair; operate vehicles in a prudent manner; and work to build customer satisfaction. Employee training and development will assume a particularly high level of importance in building the next generation of workforce as the current age cohort moves toward retirement, and as industry principles and practices continue to evolve.
- *Advance Internal and External Technologies* – In the recent past, CATA has implemented mobile applications and ticketing, operations and planning software, and vehicle tracking capability, as well as an increasing amount of real-time arrival and departure signage at key stops. Both CATA and the CCOT have deployed new paratransit scheduling and

recordkeeping software as part of a statewide procurement. Such innovations are generally regarded as having a positive effect on the ability to operate and manage transit systems in Centre County. As the pace of technological advances continues to accelerate, both agencies must be prepared to evaluate where new developments may have a beneficial impact, and embrace them where they might fill a strategic purpose for the organization.

- *Maintain Appropriate Financial Reserves* – The level of available federal, state, and local funding for both CATA and the CCOT is generally flat to slightly increasing on a year-to-year basis, but the possibility always remains for an unanticipated drop in ridership and revenue, or a significant capital expense without corresponding availability of grant funds. Each agency should consider methods by which a prudent reserve can gradually be set aside, to guard against such contingencies, and to postpone the need to borrow money and/or implement emergency service reductions that may have a detrimental effect on overall regional mobility.
- *Pursue Innovative Funding Sources and Cost-Saving Measures* – CATA’s adoption of a bus advertising program within the last several years has presented the agency with a new source of revenue to offset expenses. Depending on market conditions and potential net gain for the agency, future expansion of this program may be warranted. Moreover, CATA’s elimination of paper timetables has partially offset the implementation of additional electronic wayfinding features. The CCOT’s delivery of hot meals as part of the Meals on Wheels program creates some efficiencies for Centre County government. Given increasing scarcity of funding resources, both agencies should continue to examine new potential revenue sources, and encourage measures that help to maintain operating and capital costs without sacrificing service quality.
- *Preserve System Safety and Security* – As mentioned previously in this section, both CATA and the CCOT will soon be subject to federal safety reporting requirements. Although both agencies exhibit outstanding safety and security records, it is important that both continue to support safe operations through data tracking, training, technology, and on-road observations. Systems lacking in safety and security present a barrier to transit use that is often pervasive and very difficult to counteract. Conversely, systems that emphasize safety and security encourage ridership, protect capital and human resources, avoid the potential for costly litigation, boost employee morale, and generally enjoy a more positive reputation in their community.
- *Contribute to Improved Air Quality and Sustainability* – Both CATA and the CCOT operate vehicles in revenue service that are propelled by compressed natural gas (CNG). For nearly 25 years, CATA has maintained CNG refueling facilities on-site, and has served as a resource to other agencies and entities seeking to implement alternative fuel vehicles. Moreover, by the very nature of grouped trips, public transportation in general promotes increased transportation efficiency and lower emissions, and reduces needed roadway capacity. Over the planning horizon of the LRTP, it is expected that CATA and the CCOT will continue to play critical roles in the adoption of technologies and practices vital to maintaining air quality conformity and sustainability of the region.

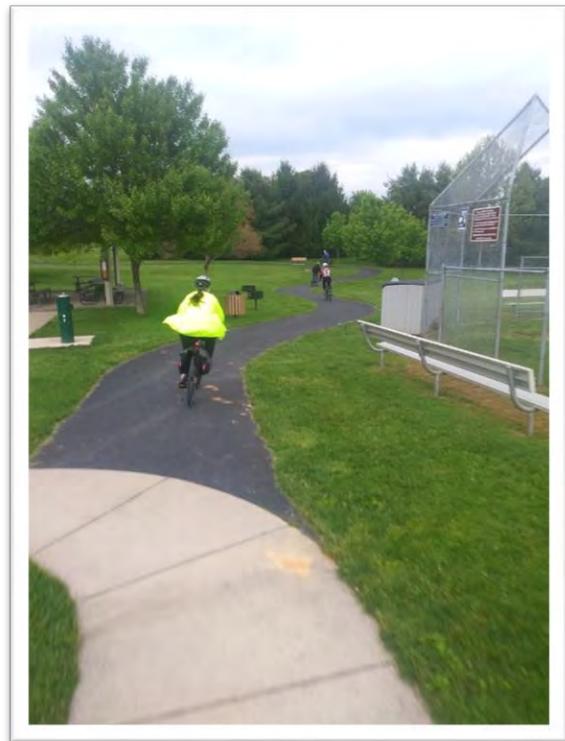
Bicycle and Pedestrian

Walking and biking play a critical role in the transportation system in the urbanized areas of Centre County. According to the most recent American Community Survey Data (2014-2018) 8.9 percent of Centre County resident walked to work and 0.5 percent of residents biked to work. During this same period, 14 percent of Centre Region residents walked to work and 3.5 percent bicycled to work.

In urbanized areas walking and biking are considered a viable option to the single-occupant vehicle and should be encouraged to reduce congestion and improve air quality. Creating a more continuous and connected bicycle and pedestrian network and educating users about safety and laws will benefit everyone by providing more options to the traveling public.

Bicycle Policies

- Consider Municipal Complete Streets Policies and amend necessary policies, plans, and ordinances – Municipalities should consider adopting a Complete Streets Policy to ensure that every transportation project will make the roadway network better and safer for drivers, transit users, pedestrians, and bicyclists.
- Apply for Countywide Bicycle-Friendly Community (BFC) Status – The League of American Bicyclists (LAB) recognizes communities with noteworthy bike-ability. The Centre Region has been designated a Bronze-Level Bicycle-Friendly Community and Penn State University has achieved Silver Bicycle-Friendly University status. BFC status should be sought at the county level. The LAB provides each applicant a feedback report which includes recommendations about steps that can be taken to become more bicycle-friendly.
- Prepare and Adopt a Countywide Bicycle Master Plan – In recent years several bike-related studies have been completed for areas in Centre County. A countywide Bicycle Master Plan should be completed to assess needs in all areas of the county and plan for a countywide interconnected system of bicycle facilities.
- Implement Road Diets in Appropriate Locations – Evaluate and implement road diets in appropriate locations to make streets more efficient and safer for all road users. The newly created space can be used for bicycle and/or pedestrian facilities.
- Expand and Upgrade the Existing Network of Shared-Use Paths – The county's existing system of shared-use paths should be expanded to provide a more connected network and provide opportunities for more residents to ride on off-road facilities. Shared-use paths should fill gaps in the existing trail system.



- *Expand and Upgrade the Existing Network of On-Road Bicycle Facilities* – The county’s existing system of on-road bicycle facilities should be expanded to create a more interconnected network. Facilities should focus on improving comfort and safety and evaluate incorporating best practices in bicycle infrastructure (including protected bike lanes, climbing lanes, bike boxes at intersections, and bicycle signals). In addition to adding new facilities, existing facilities should be improved and maintained whenever appropriate.
- *Improve and Expand Bike Signage for the Bike Network* – Bike route signs should be posted along key bike network routes. Signs should include direction and distance to significant destinations on or near routes.
- *Adopt Bicycle Parking Standards* – Municipalities should consider adopting bicycle parking standards based on the Association of Bicycle and Pedestrian Professionals Bicycle Parking Guidelines, and bicycle parking should be considered at all public spaces.
- *Improve Bicycling in Downtowns* – In Centre County there are areas where bike facilities lead into downtowns and then end, requiring cyclists to utilize the street network. Municipalities should identify routes that traverse downtown areas and provide connections to key locations in downtowns. Supplemental signage to direct bicyclists to destinations and identify through-routes should also be considered.
- *Evaluate and Enhance Safety at Sites of High Concentrations of Bicycle Crashes* – Review bicycle crash locations periodically; evaluate and program improvements.
- *Increase Bike Access through Areas with Limited Connections* – Provide safe and convenient bike connections through areas that are barriers to cyclists. Barriers include freeways, highways, roads with heavy vehicle traffic, and narrow bridges.
- *Develop Procedures for Maintaining Bicycle Facilities* – Municipalities with bicycle facilities should create a schedule for street and trail sweeping, landscape maintenance, repaving, restriping, and snow removal if applicable.
- *Review all Projects to Ensure that They Provide Bicycle Accommodation* – Review land development and transportation projects and studies to ensure that bicycles are accommodated. Projects can provide key bicycle connections to create barriers to bicycle



travel. Consider developing a bicycle checklist to ensure that all transportation projects accommodate bicycle transportation. Bicycle considerations should be included in the planning, scoping, design, and construction phase of projects.

- *Collect More Data on Bicycle Use and Bicycle Facilities* – Collect more data on bicycle use and facilities as this data can be used in reports to demonstrate the impact of bicycle improvements. Consider collecting bicycle counts on trails and streets, as well as counts before and after a bicycle facility is installed.
- *Educate Bicyclists about Safe Bicycling* – Educate bicyclists about traffic safety and compliance with Pennsylvania bicycle laws. Materials should emphasize the importance of helmet usage and using lights at night.
- *Educate Motorists about Safe Operating Behavior around Bicyclists* – Educate motorists about bicycle safety through media campaigns and distribution of written materials. Consider an education program for professional drivers such as taxi cab, bus, and truck drivers.
- *Expand Distribution of Bicycle Facility Mapping* – Expand distribution of existing bicycle facility mapping to a wider audience and ensure the map is easy for residents and visitors to obtain.
- *Evaluate and enhance safety on roads with bicycle traffic* - Study roads with motor vehicle and bicycle conflicts and identify potential improvements to increase safety for all users.
- *Complete a Bicycle Level of Traffic Stress (LTS) Analysis* – LTS aims to describe the comfort level along and across the existing roadway network and trails for bicyclists and ranges from LTS 1 (lowest stress facilities) to LTS 4 (highest stress facilities). The LTS analysis will help identify improvements to reduce stress levels in the network and remove barriers to bicycling.

Pedestrian Policies

- *Apply for Walk-Friendly Community Status* – Individual U.S. cities and towns are eligible to submit Walk-Friendly Communities applications. Designations include Platinum, Gold, Silver, Bronze, and Honorable Mention. All applicant communities receive detailed feedback, which provides a third-party perspective on what they are doing right, what can be improved, and actions to consider in the future.
- *Prepare and Adopt a Countywide Pedestrian Master Plan* – Prepare a countywide pedestrian master plan that inventories existing facilities, policies, and ordinances and makes recommendations about needed pedestrian improvements in the county.
- *Launch Safe Routes to Schools Programs* – Work with Centre County Schools (public and private) to create Safe Routes to School programs that advance safe walking and bicycling to and from schools and in daily life. Through a combination of engineering, education, encouragement, and



enforcement, Safe Routes to School programs can improve traffic safety, traffic congestion, pollution, and air quality status. Involvement from other key partners in the community (CentreMoves, neighborhood groups, parent-teacher associations, and advocacy groups) should be sought to create sustainable programs.

- *Implement Road Diets in Appropriate Locations* – Evaluate and implement road diets in appropriate locations to make streets more efficient and safer for all road users. The newly created space can be used for bicycle and/or pedestrian facilities.
- *Evaluate Pedestrian Amenities as Part of Roadway Reconstruction Projects* – As roadways are reconstructed, consider constructing sidewalks to fill gaps; bring existing sidewalks up to current standards and ensure that convenient pedestrian access is provided during all construction activities.
- *Expand and Upgrade the Existing Network of Sidewalks* – Install sidewalks to make connections in the sidewalk system. This can be accomplished as part of land development activities, roadway reconstruction projects, and/or funded with municipal general or grant funds.
- *Create a Pedestrian Environment that Accommodates People of All Ages and Abilities* – All sidewalks should be constructed in conformance with the latest Americans with Disabilities (ADA) guidelines, and should aim to meet standards of universal design to produce environments that are accessible to people of all abilities. Where sidewalks are not possible, street design should ensure the environment is safe for walking. One example is the inclusion of wide shoulders on bridges. Consideration should also be given to street trees to enhance the walking environment.
- *Evaluate and Enhance Safety at Sites of High Concentrations of Pedestrian Crashes* – Review pedestrian crash locations periodically; evaluate and program improvements.
- *Improve Pedestrian Access and Safety at Controlled Crossings and Intersections* – Make safety improvements at signalized intersections where there is significant pedestrian activity, where there are conflicts between turning motorists and pedestrians, and where there is a pedestrian crash cluster.
- *Improve pedestrian access and safety at uncontrolled crossings and intersections* – At uncontrolled crossings and intersections consider treatments beyond marked crosswalks such as median refuge islands and pedestrian signals to improve safety for pedestrians crossing the roadway.
- *Create New Street Connections to Maximize Connectivity* – Increase street connectivity to maximize the functionality of the pedestrian network. Prioritize connections that can reduce walking distances to and from transit stops and activity centers.
- *Establish Municipal Traffic-Calming Policies as Needed* – Municipalities should consider traffic-calming policies. Traffic-calming is an effective way to reduce negative impacts from vehicular traffic



(speed, accident rates, and through traffic on neighborhood streets).

- *Launch a Pedestrian Safety Campaign* – Launch a pedestrian safety campaign. Safety messages should be broadcast year-round through media outlets including radio, TV, online, and printed materials.
- *Educate Motorists about Safe Operating Behavior around Pedestrians* – Educate motorists about pedestrian safety through media campaigns and distribution of written materials. Consider an education program for professional drivers such as taxi cab, bus, and truck drivers.

Freight Movement

Freight movement in Centre County is primarily focused on interstate, or through, truck traffic utilizing Interstate 80. Trucks moving freight between East Coast ports and terminal facilities and Midwest markets travel across Centre County on Interstate 80. Trucks also utilize Interstate 99 and Route 322 through Centre County to access Interstate 80. Although businesses and industries in Centre County do not generate a high amount of truck traffic compared to other counties with greater manufacturing activities and port and/or terminal facilities, the movement of freight with local origins and destinations is an important element of the economy in the county.

The Nittany and Bald Eagle Railroad, operating on infrastructure owned by the SEDA-COG Joint Rail Authority (JRA) in Centre County, provides high quality rail freight service to several businesses and industries located within Centre and adjacent counties. The use of rail to transport materials helps preserve road and bridge assets because there is less impact from truck traffic. Rail service also provides a significant benefit to the quality of life in communities in the county, by reducing conflicts between trucks and passenger vehicles, pedestrians, and bicyclists within those communities.

Goods movement is also facilitated by air freight activities at the University Park Airport, particularly high-value cargo that is transported by air, and the packages moved daily by FedEx and other couriers.

The following policies are intended to ensure the safe, reliable, and sustainable movement of goods to, from, and across Centre County.

- *Improve Reliability* – Freight movement of all modes is affected by capacity restrictions that result in recurring congestion, and incidents that temporarily stop or delay travel. The CCMPO should work with stakeholders to address capacity needs and improve incident response to mitigate the travel time and energy consumption impacts of delays and stopped traffic. The MPO's primary focus should be on the roadway system because of its role in establishing priorities and programming funding for improvements. Truck travel time reliability on the National Highway System, which includes Interstates 80 and 99 and Route 322 in Centre County, is a federal performance measure that must be addressed by PennDOT and the CCMPO. The MPO should also work with railroad operators and customers to facilitate safe and efficient rail freight service.
- *Maintain Assets and Infrastructure in a State of Good Repair* – A frequent challenge for freight movement is the deterioration of infrastructure that supports various travel modes. Roads with poor pavement condition and posted or closed bridges pose a particularly high risk to goods movement in Centre County, given the rural nature of a large portion of the county and the lack of appropriate alternative routes in the event of a road or bridge

closure. In keeping with federal performance measures for pavement and bridge condition on National Highway System routes, and with new PennDOT approaches for pavement and bridge asset management, the MPO should work with PennDOT to closely monitor pavement and bridge assets, and program funds to ensure that potential obstacles are avoided. The MPO should also work with PennDOT and local officials to identify and mitigate other obstacles on the roadway system, such as inadequate lane widths, intersection turning radii, and overhead restrictions, particularly in more rural areas that serve the agriculture and timber industries.

- *Implement Technology Deployment* – New technologies are being implemented in the freight movement industry, including but not limited to automated vehicle technology that will allow for truck platooning on major roadways, real-time traveler information, and the “last-mile” delivery of packages via drone. The CCMPO should proactively plan for the deployment of new technology, and work cooperatively with other stakeholders to program funding for the installation and ongoing maintenance and replacement of communications infrastructure needed to support the deployment of new technology.
- *Facilitate Connections Between Freight Modes* – Although Centre County is not a large producer of manufactured goods that require inbound movements of raw materials and result in outbound movements of finished products, there are multiple businesses that produce large quantities of stone, lime, and agricultural materials for use in various industries. Other businesses, such as those active in the natural gas industry, require deliveries of materials in large sizes and/or quantities. Existing transload facilities that allow the transfer of materials between rail and truck for “first-mile/last-mile” deliveries are an important part of the logistics chain for certain industries. The CCMPO should work with PennDOT, local officials, and business stakeholders to facilitate road access to existing and proposed transload facilities. The CCMPO should also work with stakeholders to ensure that ground transportation facilities serving the University Park Airport are meeting the needs of as many stakeholders as practical.
- *Increase Communication and Coordination with Stakeholders* – In order to address freight movement more proactively, the CCMPO should increase efforts to communicate and coordinate with businesses, industries, the economic development community, and other entities with a role in freight movement, including stakeholders in the trucking and rail industries. Sharing information more frequently will help identify needs before obstacles arise, and help the MPO, PennDOT, and local officials more effectively align efforts to maintain assets and meet performance measures with freight movement needs.
- *Enhance Safety and Security* – The movement of freight within and through Centre County poses a variety of safety and security challenges. Conflicts can occur between large vehicles moving freight via road and rail and smaller passenger vehicles, buggies, bicyclists, and pedestrians. Some materials being transported have the potential to contaminate sensitive natural resources—particularly high-quality streams and groundwater resources that provide public water supplies—in the event of incidents that result in spills. With the amount of freight being transported projected to increase on a national level, there will be greater need for support services, including parking and service areas that are safe and secure for drivers of interstate trucks. The CCMPO should utilize data and input from the public, local officials, businesses, and industries to identify existing and potential future conflicts that compromise safety and security. Given the wide variety of potential conflicts, the MPO should work cooperatively with PennDOT, law enforcement and emergency services providers, and other federal, state, and county environmental resource review

agencies to assist in developing solutions to improve safety and security associated with the movement of goods.

- *Improve Access and Reduce Conflicts in Communities* – Real and perceived conflicts frequently occur between trucks and trains, passenger vehicles, pedestrians, bicycles, and the public’s quality of life in communities through which freight is moving. The large size of freight vehicles, speed, noise, hours of operation, and materials being moved are all cited by communities as negative impacts from goods movement. However, because the movement of materials and goods is also a key element supporting a vital economy both locally and nationally, the CCMPO and other stakeholders must work cooperatively to identify solutions to conflicts.

The MPO can assist by encouraging municipalities to utilize land use management tools such as comprehensive plans, zoning ordinances, subdivision and land development ordinances, and water and sewer service plans to direct the location of businesses and industries to locations with the road and/or rail infrastructure capable of supporting goods movement and minimizing conflicts. For the agricultural, mining, natural gas and timber industries that are typically located in rural areas little or no rail access and less suitable road access, the MPO should work with PennDOT and local officials to develop an inventory of potential conflict areas that could be addressed by infrastructure improvements, and also provide support to local officials in identifying tools and approaches that can address the operational impacts of freight movement that cannot be solved by infrastructure improvements.

Aviation

The six public-use airports in Centre County provide for general aviation use, commercial airline passenger service, air freight, and air ambulance services. In addition, the headquarters of the Pennsylvania Air National Guard’s 112th Air Operations Squadron is located on the lands of the University Park Airport near State College. Although federal metropolitan transportation planning regulations do not assign the CCMPO with formal responsibilities associated with the operations, maintenance, and capital investments for aviation facilities, the MPO does have a role in ground transportation that serves the airports.

Roadway access to the airports is an important link in the provision of aviation services, including access for airline passengers, employees, and other individual users; first responders; fuel and other supply deliveries; and freight movement. The following policies are intended to help guide the CCMPO’s activities in ensuring that ground transportation is safe and reliable relative to supporting air and ground operations at aviation facilities.

- *Maintain Assets and Infrastructure in a State of Good Repair* – Deterioration of roadway and bridge infrastructure that serves aviation facilities may impact the delivery of fuel and other supplies, and delay first responders during incidents. Because most of the airports in Centre County are in rural areas with limited roadway access, travel limitations or detours are particularly high risk because of the lack of appropriate alternative routes. Several of the airports are served by roadways owned and maintained by municipalities. The MPO should work with PennDOT and local officials to closely monitor pavement and bridge assets, and program funds to ensure that potential obstacles are avoided. The MPO should also work with PennDOT and local officials to identify and mitigate other obstacles that could affect

ground access to airports, including inadequate lane widths, intersection turning radii, and overhead restrictions.

- *Increase Communication and Coordination with Stakeholders* – The CCMPO should increase efforts to communicate and coordinate with airport operators, first responders and emergency management agencies, and local officials regarding ground access associated with aviation facilities. Sharing information more frequently will help identify obstacles and needs, and help the MPO, PennDOT, and local officials more effectively align efforts to maintain roadway and bridge assets that support air operations.
- *Participate in Airport Planning Activities* – Airport operators conduct periodic planning activities as required by the Federal Aviation Administration and the PennDOT Bureau of Aviation. These planning activities can provide key information about current and future ground transportation needs. The CCMPO should participate in airport planning activities and integrate input from airport operators and local officials into the periodic LRTP, PA Twelve Year Program and Transportation Improvement Program (TIP) update cycles.
- *Ground Travel Mobility Options at University Park Airport* – The University Park Airport is owned and operated by Penn State University. Most of the airport lands are in Benner Township, with a small area located in Patton Township. The airport accommodates a high level of commercial passenger air service, delivered through a passenger air terminal owned and operated by the Centre County Airport Authority. Because of the proximity to Penn State’s University Park Campus and many businesses and industries in Centre County that form the economic hub of Central Pennsylvania, there is a high demand for passenger air service. Travelers from a broad geographic area in Central Pennsylvania utilize the airport.

Ground (roadway) access to terminal facilities, parking, hangars, and other aviation support facilities is provided by Fox Hill Road, a two-lane facility owned by Benner Township within the township boundary. The portion of Fox Hill Road adjacent to the airport in Patton Township is a PennDOT-owned facility. On-site parking for passengers is provided by the Airport Authority, and users can also access the airport via taxi and ride-hail services, shuttles provided by hotels and other businesses, and paratransit vehicles operated by the CCOT. There is no scheduled, fixed-route public transit service to the University Park Airport.

As demand for passenger air service increases, the CCMPO, Penn State University, Airport Authority, transit providers, and other mobility providers should coordinate efforts to ensure that passengers have safe and reliable access to the airport. Because the CCMPO’s responsibility is focused on roadway infrastructure and public transportation, the MPO may act as a convener and facilitator of discussions among the various entities.

The CCMPO should also monitor enplanements, general aviation operations, and demand for other air services at University Park Airport, and coordinate with Penn State University, the Centre County Airport Authority, providers of air transport, and local officials to identify and implement improvements in roadway access to the airport.

Resiliency

Incentive for Action

The CCMPO recognizes the substantial consequences that severe weather events and changes to our climate pose to our local environment, public health, economy, and lifestyles. Preparing for climate change and extreme weather events is critical to protecting the integrity of the transportation system and our financial investments. The Pennsylvania Auditor General reported that in 2018 climate-related costs to Pennsylvania totaled at least \$261 million; that number includes record-breaking floods and landslides that caused more than \$125.7 million in infrastructure damages.²

According to the Pennsylvania Department of Environmental Protection (PA DEP) report *The Pennsylvania Climate Impacts Assessment 2020 Update*, climate projections generally indicate that Pennsylvania is likely to become more susceptible to some kinds of extreme weather conditions, such as flooding and extended periods of heat. Extreme weather events present significant and growing risks to the safety, reliability, effectiveness, and sustainability of transportation infrastructure and operations across Centre County.



Purdue Mountain Road in Benner Township experienced significant road damage due to the October 20 storm, which FEMA subsequently dedicated \$1.2 million for the repairs.

Flooding from unusually heavy downpours can disrupt traffic, damage culverts, and reduce service life. Flood damage to roads and bridges has been most prevalent in the Bald Eagle Valley. Storms in October 2016 resulted in over 7 inches of rainfall in many parts of Centre County that damaged several bridges and roadways.

High heat can degrade materials, resulting in shorter replacement cycles and higher maintenance costs.

Climate Change and Weather-Related Hazards

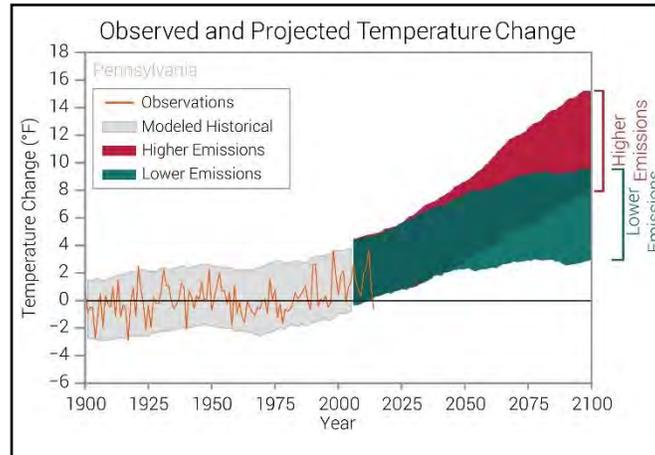
The impacts of extreme weather events and a changing climate (such as higher temperatures, changes in seasonal precipitation, and rain intensity) are affecting the life cycle of transportation systems and are projected to intensify based on recent climate studies.

Since the beginning of the 20th century, temperatures in Pennsylvania have risen around 2°F and temperatures in the 2000s have been higher than in any other historical period (Figure 30).

² PA Auditor General Special Report, *Climate Crisis, The Rising Cost of Inaction* (2019).

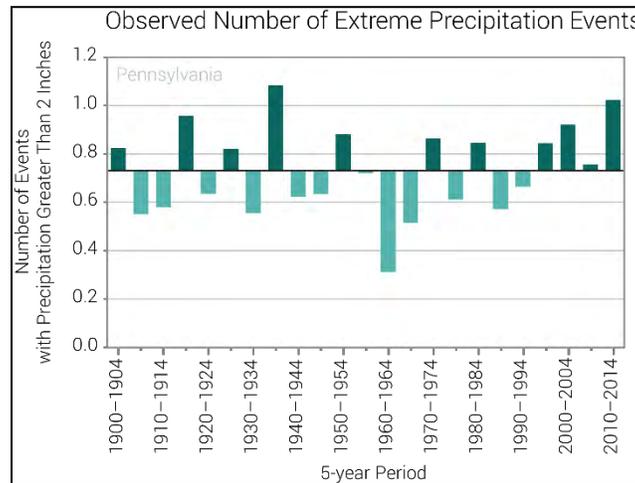
As Pennsylvania gets warmer it is also experiencing abundant precipitation and an increase in the number of extreme rain events, defined as precipitation amounts greater than 2 inches (Figure 31). Average annual precipitation in Pennsylvania has increased about 10 percent in the past 110 years, and 2018 was the wettest year on record, bringing a total of 63.97 inches of rain.³

Figure 30: Observed and Projected Temperature Changes in Pennsylvania, 1900-2100



Source CICS-NC and NOAA NCEFI, Environment and Natural Resources

Figure 31: Number of Extreme Precipitation Events in Pennsylvania, 1900-2014



Source: CICS-NC and NOAA NCEI

Extreme events associated with climate change threaten transportation systems and supply chains, potentially disrupting production and distribution networks required for consumers to access goods and services. Advance preparation and adaptation can help avoid disruptions and minimize

³ K. Kunkel and R. Frankson, *State Climate Summaries*, NOAA National Center for Environmental Information (2017). <https://statesummaries.ncics.org/chapter/pa/> and <https://www.weather.gov/ctp/RecordPrecip2018>

impacts. Better planning for infrastructure and site selection, the use of weather-resistant building materials, increased redundancy of transportation components, and improved post-disruption recovery planning can provide more security for transportation systems and supply chains.

Climate Change and Greenhouse Gas Emissions

Climate change, created by increased greenhouse gas emissions, presents risks to the safety, reliability, and effectiveness of transportation infrastructure and operations across our region. There is a strong link between growth in vehicle miles traveled and greenhouse gas (GHG) emissions from the transportation sector. More miles traveled directly equates to the combustion of more gallons of fuel and the release of more carbon dioxide. Emissions of carbon dioxide, a key GHG, result from the burning of fossil fuels such as gasoline and diesel fuel. Twenty-one percent of the state's GHG emissions result from transportation fuel consumption—the second-largest source sector for GHGs in Pennsylvania, behind electricity production. Environmentally conscientious planning must consider the implications of potential long-term climate change and the role that vehicle emissions play.

Climate Action and Adaptation Plans Under Development

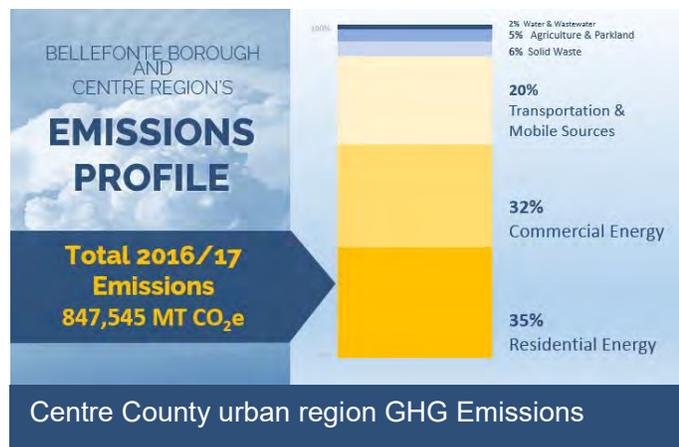
Both Bellefonte Borough and municipalities in the Centre Region of Centre County participated in the PA Department of Environmental Protection Local Government Climate Assistance Program from July 2019 through June 2020. The program supported the completion of a GHG inventory and the framework to develop a Climate Action and Adaptation Plan. The goal is to develop a climate action and adaptation plan that identifies pragmatic, fiscally responsible actions to consider in order to:

1. mitigate the region's contribution to greenhouse gas (GHG) emissions, and
2. adapt to changing climate conditions.

The Centre Region, which includes State College Borough and the Townships of College, Ferguson, Halfmoon, Harris, and Patton, has an estimated population of 96,700 and is roughly 150 square miles of Centre County. Bellefonte Borough has an estimated population of 6,290 and is approximately 1.85 square miles. The Centre Region and Bellefonte Borough, part of the Nittany Valley Region, contain 63 percent of the population within 13 percent of the land area of Centre County. This is the primary urban region of the county (Phillipsburg Borough is also urban).

Bellefonte Borough's calculated GHG emissions for 2017 were 23,336 metric tons of carbon dioxide equivalent (MTCO_{2e}). The calculated GHG emissions for the Centre Region community in 2016 were 824,209 MTCO_{2e}.

Transportation accounted for 20 percent of the urban region's emissions. Bellefonte Borough and Centre Region Council of Governments will rely on the GHG emissions inventory results to set emissions reduction targets, identify tangible actions aimed at reducing GHG emissions, and measure progress toward achieving those targets.



In 2018 the Centre Region and Bellefonte combined Daily Vehicle Miles Traveled (DVMT) was more than 1.2 million miles—31 percent of total DVMT in Centre County. The CCMPO is prioritizing and developing policies in the LRTP Action Plan that encourage more walkable and transit-oriented development to help reduce VMT.

Additional strategies such as riparian buffers and green infrastructure need to be identified to help the region be more resilient to the impacts of climate change. Bellefonte Borough has formed a Task Force that is working to complete its Climate Action and Adaptation Plan. The Centre Region Climate Action and Adaptation Plan is expected to have municipal, stakeholder, and public input and be complete in the first quarter of 2021.

The jurisdictions outside of the Centre Region and Bellefonte Borough, which account for 87 percent of the county's land area and 60 percent of its DVMT, will have opportunities to collaborate and identify action items from the respective Climate Action and Adaptation Plans that are relevant to their region.



Resiliency Efforts Underway

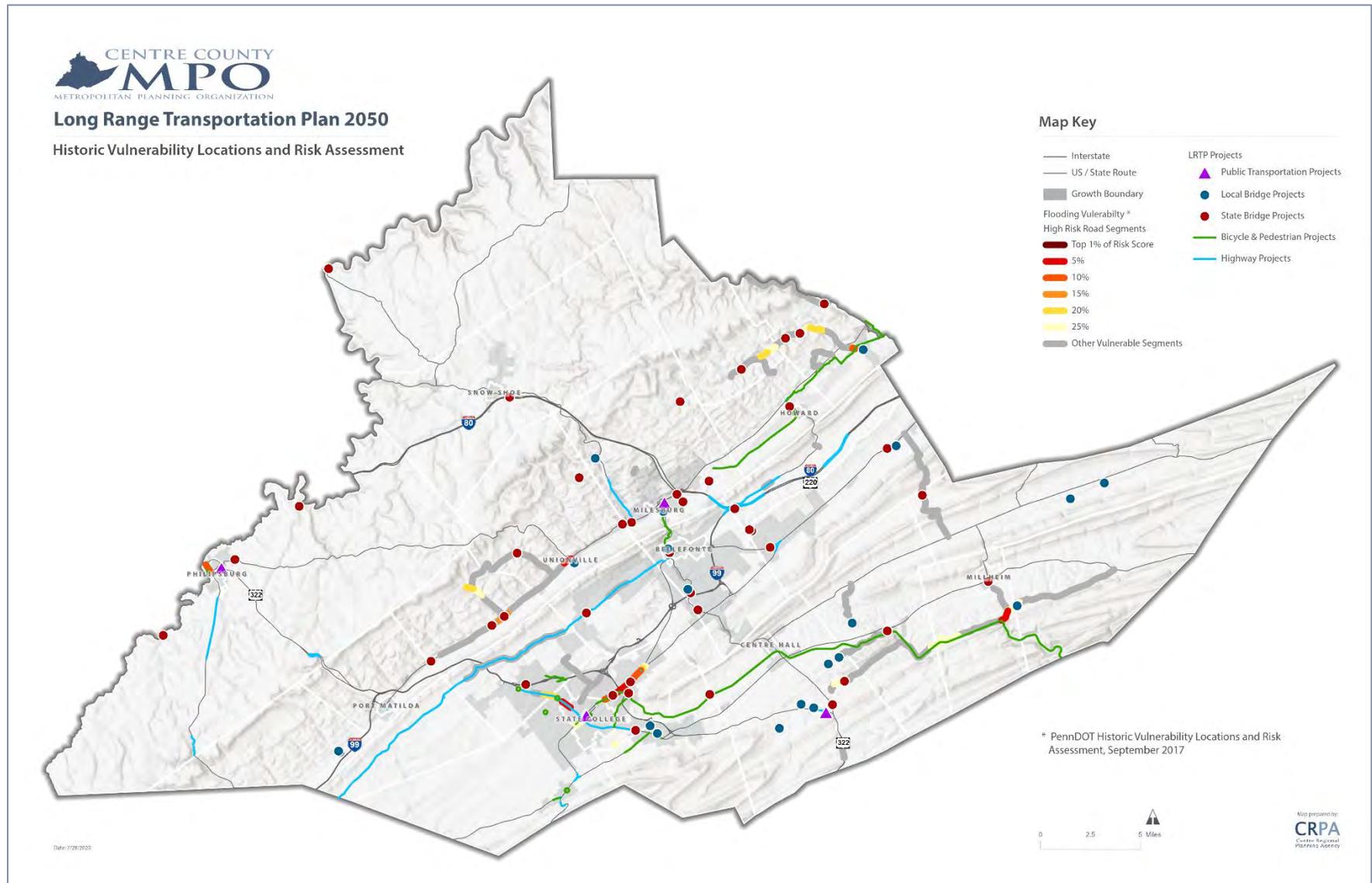
Centre County has several projects underway to address transportation infrastructure that is failing due to extreme rain events. Milesburg Borough is slated for a bridge replacement on Railroad Street and perhaps the bridge on Front Street. The borough is in coordination with SEDA-COG Joint Rail Authority (JRA) as JRA was to resize/replace culverts under the railroad to alleviate floodwater backup. The culverts must be replaced before the bridge work to ensure the problem will be resolved. Port Matilda Borough had a similar issue, also involving SEDA-COG JRA's coordination, near the Borough building where part of the road/tracks washed out.

Bald Eagle Creek water levels are high after rainfall Friday, Aug 3, 2018 at the Milesburg Bridge.
PHOEBE SHEEHAN PSHEEHAN@CENTREDAILY.COM

PennDOT performed an Extreme Weather Vulnerability Study in 2017 which provides a good starting point for identifying vulnerable infrastructure (Figure 32). The CCMPO will analyze the existing information and build upon it with its local knowledge.

Bellefonte Borough and the Centre Region will develop a climate action and adaptation plan that identifies specific strategies to start building more resiliency into those communities. These action plans will be separate but integrated for the resiliency of the County's long-range transportation planning.

Figure 32: Historic Flood Vulnerability Locations and Risk Assessment



Understanding that flooding related to extreme precipitation is the weather-related risk with the most potential future impact on infrastructure in Pennsylvania, Centre County municipalities plan to take steps to improve and build resilience into the communities. This will include understanding the likely impacts of an increase in flood events, making smart investments, and ensuring that our transportation systems are best prepared for future weather events. Many, if not most, effective resilience strategies create multiple benefits across the community, which makes them very low risk to implement, even with an uncertain future. Co-benefits might include reduced traffic congestion, decreased user costs, and increased public safety and health. Resilience strategies that also address the need to reduce negative impacts to air quality and greenhouse gas emissions should be a top priority.

- *Support County Resiliency Planning* – The CCMPO will work to connect with the stakeholders throughout the jurisdictions to support the education and awareness about the local impacts of our changing climate and the benefits of resiliency planning.

This will assist the CCMPO in broadening the county knowledge base and allow the MPO to be a partner and advocate for funding to deal with potential flooding challenges. The premise of education and outreach efforts is that greater awareness will lead to long-term behavior change.

- *Identify Vulnerabilities* – The CCMPO will support efforts to track and identify at-risk transportation-related assets. This will require understanding the potential impact to the assets, and it will be necessary to determine the criticality of transportation assets, that is, to what degree do facilities service a critical function in the network, economy, or community.



- *Resiliency Best Practices* – The CCMPO supports improvements to Centre County and will research and identify case studies and best practices that should be considered as mitigation strategies. The wide-ranging list of strategies would focus initially on those with the highest risks within the county.

Strategies to increase the resilience of the transportation system to flooding will have up-front capital costs, but also represent an opportunity for economic savings if the strategies can reduce flood-related damage and disruptions. Collaboration will be key for development of a plan to identify and invest in transportation programs and projects, including best management practices, that reduce surface runoff and protect water resources.

Residents of Centre County enjoy a high quality of life, with good air and water quality, a growing system of parks, an expanding network of sidewalks and trails, and accessible state forest and game land areas that afford many opportunities to enjoy natural resources. It is important that future transportation facilities and programs have minimal negative impacts on the natural and built environment. This will ensure that transportation facilities and programs improve the quality of life by complementing, protecting, and enhancing the natural and built environment.