state college area
CONNECTOR

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Final Purpose and Need for the State College Area Connector Planning and Environmental Linkage (PEL) Study

pennsylvania
DEPARTMENT OF TRANSPORTATION

U.S. Department of Transportation
Federal Highway Administration

February 16, 2021

Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms

AADT	Average Annual Daily Traffic
ADTT	Average Daily Truck Traffic
ASA	Agricultural Security Area
BLOS	Bicycle Level of Service
CATA	Centre Area Transportation Authority
CCMPO	Centre County Metropolitan Planning Organization
CCPCDO	Centre County Planning and Community Development Office
CFR	Code of Federal Regulations
CRPA	Centre Regional Planning Agency
FAST ACT	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
HCM	Highway Capacity Manual
HSM	Highway Safety Manual
I-	Interstate
LAB	League of American Bicyclists
LOS	Level of Service
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
mph	Miles per Hour
NEPA	National Environmental Policy Act
NHFN	National Highway Freight Network

NHPP	National Highway Performance Program
NHS	National Highway System
NRHP	National Register of Historic Places
PA	Pennsylvania Route
PCIT	Pennsylvania Crash Information Tool
PEL	Planning and Environmental Linkage
PennDOT	Pennsylvania Department of Transportation
PSI	Potential for Safety Improvement
SCAC	State College Area Connector
SCCCTS	South Central Centre County Transportation Study
TDM	Travel Demand Model
TIP	Transportation Improvement Program
US	U.S. Route
VPD	Vehicles per Day

Executive Summary

The Pennsylvania Department of Transportation (PennDOT), in cooperation with the Federal Highway Administration (FHWA) and in coordination with the Centre County Metropolitan Planning Organization (CCMPO), is conducting a State College Area Connector (SCAC) Planning and Environmental Linkage (PEL) Study. The SCAC PEL Study is a collaborative and integrated study approach to transportation planning that considers the environment, community, and local and regional economic goals early in the planning phase of transportation decision making. Planning decisions and outcomes will inform the National Environmental Policy Act (NEPA) environmental review process for the independent transportation project(s) identified during the PEL Study. This report identifies and documents the transportation challenges within the SCAC PEL Study Area while considering the vision and aspirations of the study area communities in the development of the purpose and need statements.

This PEL Study will identify transportation problems and improvement solutions within a 70 square mile geographic area called a subarea for planning purposes. **Appendix A** provides information regarding the establishment of the limits and boundaries for the PEL Study. The PEL Study Area (i.e., subarea) extends through the southern portion of Centre County and includes all or parts of six municipalities: Centre Hall Borough and Potter, Spring, Harris, College, and Benner Townships.

The study area environmental setting is characterized as primarily rural with many productive farming operations interspersed with small villages located between Seven Mountains near Potters Mills and Nittany Mountain near Pleasant Gap and from Centre Hall Borough west towards Boalsburg. The topography is characterized by well-defined steep mountains and two broad, gently sloping valleys, drained by two primary watersheds, Sinking Creek and Spring Creek. The Penns/Brush Valley Rural Historic District encompasses a large portion of the study area and is eligible for listing in the National Register of Historic Places (NRHP).

Pennsylvania is in a strategic position relative to the transportation network with interstate highways traversing the state and serving national and international trade routes and Centre County is centrally located within the Commonwealth. This geographic position makes the county's roadway network important for interstate, statewide, and regional traffic and commerce in addition to local travel. The study area includes key Centre County transportation routes that provide access to regional destinations via major transportation routes such as U.S. Route (US) 322, Pennsylvania Route (PA) 144, PA 45, and Interstate 99 (I-99) which, in turn, provides access to I-80.

The PEL Study process, like the environmental (NEPA) process, begins with the identification of transportation challenges in the area which leads to the establishment of the purpose and need. In general, a review of the SCAC transportation network and local planning interests identified problems associated with recurring congestion from high volumes of truck traffic and commuter traffic which are

considered in the identification of the study area needs. Non-recurring congestion associated with special events, crashes, adverse weather, and other incidents also occurs frequently in the study area. While non-recurring congestion events are not specifically identified, it is anticipated that in addressing the recurring traffic congestion issues, non-recurring congestion events would also be addressed. Traffic congestion often creates conflicts that result in crashes and safety issues. Based on the information presented in the purpose and need document, the following purpose and need statements were developed for the PEL Study.

Study Area Needs

- High peak hour traffic volumes cause congestion and result in unacceptable Levels of Service (LOS) (LOS D [rural only], E, or F) on US 322, PA 45 and PA 144 roadways and intersections within the study area.
- Existing roadway configurations and traffic conditions contribute to safety concerns in the study area.
- The roadway network and configuration in the study area lacks continuity and does not meet driver expectations.

Study Purpose

The purpose of this study is to develop and evaluate a range of alternatives to improve mobility and meet interstate and regional through traffic and local needs by reducing congestion, addressing safety, and improving system continuity within the study area while accommodating other modes of traffic (bike, pedestrian, horse and buggies, farm equipment traffic, and public transit) where appropriate, and supporting regional land use visions and goals.

Logical Termini and Independent Utility

Logical termini and independent utility will be defined in the PEL Study as part of the identification and evaluation of the range of alternatives. Logical termini may be refined for any future independent transportation projects anticipated to result from this PEL Study. These future NEPA studies would be advanced when project funding becomes available.

Conclusion

This Purpose and Need for the State College Area Connector PEL Study report documents transportation challenges within the study area and provides the foundation for the development and evaluation of a range of alternatives at the planning level.

1.0 Introduction

The Pennsylvania Department of Transportation (PennDOT), in cooperation with the Federal Highway Administration (FHWA) and coordination with the Centre County Metropolitan Planning Organization (CCMPO), is conducting a State College Area Connector (SCAC) Planning and Environmental Linkage (PEL) Study. The SCAC PEL Study is a collaborative and integrated study approach to transportation planning that considers the environment, community, and local and regional economic goals early in transportation decision making during the planning phase that will inform the National Environmental Policy Act (NEPA) environmental review process for project(s) identified in the PEL Study.

This report documents the transportation purpose and needs in the SCAC PEL Study Area. The PEL Purpose and Need has been developed in accordance with Title 23 Code of Federal Regulations (CFR) Part 771 as well as the PennDOT Needs Study Handbook (PUB-319, May 2020) and PennDOT Design Manual 1, Transportation Program Development and Project Delivery Process (PUB-10, May 2020).

1.1 Study Description

The PEL Study is intended to identify the transportation purpose and needs of the study area while considering the vision and aspirations of the study area communities. Understanding the study area communities' visions not only helps determine if community-related features are justified to be incorporated into transportation proposals but also helps to establish outcomes beyond the transportation issues in the study purpose that could be included as study goals and objectives. For the purposes of this PEL Study, the initial data collection area is depicted in **Figure 1 – PEL Study Area for Initial Data Collection**. It is approximately 70 square miles, extends through the southern portion of Centre County, and includes all or parts of six municipalities: Centre Hall Borough and Potter, Spring, Harris, College, and Benner Townships. The study area includes key transportation routes that provide access to regional destinations and beyond via major transportation routes such as U.S. Route (US) 322, Pennsylvania Route (PA) 144, PA 45, and Interstate 99 (I-99) which, in turn, provide access to nearby I-80. The initial data collection area is also shaped by the topography of the area. In general, the study area encompasses the southwestern portion of Penns Valley that extends between the Nittany Mountain to the north and the Seven Mountains area of the Tussey Mountain range to the south (see Figure 2). Parts of Nittany Valley on the north side of the Nittany Mountain are also included within the study area, as is the more urbanized Centre Region that connects both valleys at the southern end of the Nittany Mountain. **Appendix A** provides a more detailed description of how the study area was defined. The limits of the study area will be refined as the process advances. It will be modified to ensure that any relevant factors that may influence the study needs (and the development of the range of alternatives that would address these needs) are incorporated, including identification of logical project termini, assessment of environmental impacts, and development of potential mitigation.

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SNOW SHOE TWP
CURTIN TWP
LIBERTY TWP
HOWARD
HOWARD TWP
BOGGS TWP
CLINTON COUNTY
MARION TWP
WALKER TWP
MILES TWP
UNION TWP
MILESBURG
RUSH TWP
UNIONVILLE
BELLEFONTE
SPRING TWP
BENNER TWP
HUSTON TWP
GREGG TWP
MILLHEIM
HAINES TWP
PENN TWP
CENTRE HALL
PATTON TWP
COLLEGE TWP
NITTANY MOUNTAIN
EGG MOUNTAIN
POTTER TWP
STATE COLLEGE
HALFMOON TWP
HARRIS TWP
SEVEN MOUNTAINS
FERGUSON TWP
TUSSEY MOUNTAIN
MIFFLIN COUNTY
HUNTINGDON COUNTY
JUNIATA COUNTY

0 9,000 18,000 27,000 Feet

LEGEND

- Initial Data Collection Area
- Potters Mills Gap Transportation Project
- County Boundaries
- Municipal Boundaries
- Regional Growth Boundary

Regional Planning Areas

- Centre Region
- Nittany Valley
- Penns Valley

Roadway Functional Class

- Interstate Highways
- Other Freeways and Expressways
- Other Principal Arterial
- Minor Arterials
- Major Collector
- Minor Collector
- Local Roads

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DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

INDEX MAP

November 2020

State College Area Connector

PEL STUDY AREA FOR INITIAL DATA COLLECTION

CENTRE COUNTY, PENNSYLVANIA

Figure 1	1 Inch = 18,000 Feet

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The PEL Study, including the Purpose and Need Statement, will be used to develop and evaluate a range of alternatives which will result in transportation project(s) to address the transportation needs in the study area. The identified transportation project(s) could then be considered for program funding in the Centre County Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) and carried forward into the NEPA process. The SCAC PEL purpose and need statements will:

- Identify area transportation issues or problems to address.
- Provide a foundation for the alternative analysis process.
- Provide a vision for future projects within the study area.
- Aid in the identification of short-term and long-term transportation priorities.

The collaborative planning efforts being undertaken for the SCAC PEL Study, including the early outreach to local governments and communities, will also fulfill PennDOT's requirements to consider community needs at the beginning of the planning process, as defined in the PennDOT Connects initiative and policy. This approach will ensure the decision-making process for the study is transparent and, in turn, provides opportunities for better planning at the local and regional levels, better understanding of local contextual issues and visions, and earlier community input into the scope of future projects.

1.2 Previous Area Transportation Studies and Improvements

Historically, many transportation improvement studies and projects have occurred that have influenced travel within and immediately adjacent to the initial PEL Study Area. Studies for transportation improvements along the US 322 and PA 144 corridors have been undertaken at various times since the 1970s. Due in part to a 1985 fatality resulting from a runaway truck in Centre Hall, PennDOT placed a weight restriction on PA 144 from Centre Hall, north over Nittany Mountain, to the Village of Pleasant Gap in Spring Township. As a result of this weight restriction, all trucks in excess of 10 tons traveling to and from I-80 are routed around Nittany Mountain by way of US 322 and PA 26.

In the 1990s, a study of the US 220 corridor west of the State College area led to the development of a major improvement project for a new north-south interstate through Centre County that culminated with the construction of I-99 extending from Blair County to US 322 (the Mount Nittany Expressway). During that time, a separate study of the PA 26 corridor north of the State College area resulted in the construction of I-99 from US 322 (the Mount Nittany Expressway) north towards I-80. The existing I-80 Exit 161 (Bellefonte Interchange) is currently part of a project (now in the final design phase with a let date for construction in 2022) to replace the existing interchange with a new high-speed interchange and complete the I-99/I-80 connection. Construction of the interchange improvements will complete the goal for a major north-south interstate (I-99) through the center of the Commonwealth that connects two major east-west interstates, the Pennsylvania Turnpike (I-76) and I-80.

In 1998, the South Central Centre County Transportation Study (SCCCTS) evaluated transportation improvements along the US 322, PA 144, and PA 45 corridors from the vicinity of the top of Seven Mountains in Potter Township and west to the Village of Boalsburg in Harris Township and north to the Village of Pleasant Gap in Spring Township. The study was stopped in 2004 due to a statewide transportation funding shortfall. The FHWA later rescinded the Notice of Intent to prepare an Environmental Impact Statement for the project (Federal Register, Vol. 84, No. 145, July 29, 2019). The SCCCTS project needs identified specific transportation problems in each of the three corridors and on the local road system, as well as needs associated with regional travel patterns. The regional travel pattern need statement addressed the high percentage of through trips (in particular the high volume of truck traffic), high crash rates (including fatalities), poor Level of Service (LOS) including LOS associated with heavy truck traffic and its conflicts with local traffic and increases in travel demand associated with local and regional planned development.

In 2013, PennDOT and FHWA initiated the Potters Mills Gap (PMG) Transportation Project to improve the 3.75-mile long section of US 322 in Potter Township within the area locally known as "Potters Mills Gap" in the Tussey Ridge formation. This project area is within what was the southeastern portion of the SCCCTS study area. It was determined that this project had independent utility and addresses a defined purpose and need even if no other projects are constructed. The project includes the construction of a new four-lane roadway section that starts from the Sand Mountain Road intersection (the first at-grade intersection to the west of Harrisburg), and extends west, tying back into existing US 322 with a new interchange at a point west of the PA 144/US 322 intersection that in turn alleviates traffic concerns at this intersection. The project is currently under construction with an overall completion date of July 2021; however, the new interchange and four-lane section of US 322 is scheduled to be open to traffic by November 2020.

In 2019, PennDOT completed an update of traffic and environmental data within the former SCCCTS study area to identify changes to the transportation network and environmental conditions (from 2004 to 2018), including:

- Implemented safety measures and roadway improvements
- Current traffic data and conditions
- Updated secondary source environmental data
- Changes to environmental regulations, policy, and guidance

The data refresh effort did not include development of alternatives nor evaluation of the previous SCCCTS alternatives.

Multiple safety related transportation improvements occurred in the study area vicinity. Table 1 lists the various safety improvements that have been undertaken since 2006. Many of these safety improvements addressed some of the specific needs identified during the SCCCTS study.

Table 1 – Safety Improvement Projects, 2006 To Present

Project	Completion Date (Open to Traffic)
Intersection improvements at US 322 and PA 144 intersection and left-turn lanes at the US 322 and Mountain Back Road intersection	2006
Added turn lane and intersection improvements at US 322 and Bear Meadows Road intersection	2007
Added vehicle spacing pavement marking "dots" and signage along US 322: • Elks Club Road to Sharer Road • Harley Davidson to Wagner Road • Dogtown Road to Tusseyville Road (closed)	Summer 2009
Added Centerline and Edgeline Rumble Strips along US 322 (Elks Club Road to Potters Mills)	Summer 2010
Intersection improvements and center turning lanes completed at the PA 45 and PA 144 intersection	2010
Removed passing zones at select sections of US 322 east of Elks Club Road and west of Dogtown Road	Summer 2011
Added intersection warning pavement markings at US 322 and Cider Press Road intersection	Summer 2011
Added center turn lane along US 322 (Harley Davidson to Wagner Road)	Fall 2014
Adjusted S-curve alignment and profile along US 322 (vicinity of Wagner Road and Taylor Hill Road intersections)	Fall 2014
Constructed new bridge over US 322 in area of Sand Mountain Road	September 2015
Construction of a new US 322 limited access roadway section from a new Sand Mountain Road interchange (included elimination of the existing at-grade intersection that was completed in October 2017) to a new Potters Mills interchange, west of the existing US 322 intersection with PA 144 (PMG, Sections B05 and B06 Project)	Construction began Spring 2018; to be completed July 2021
Upgrade the I-80 Exit 161 (Bellefonte Interchange) to a high-speed interchange that will complete the I-99/I-80 connection (State Route 80 [SR 0080], Section B18 Project)	Anticipated construction let date in 2022

1.3 Regional Planning Context

Centre County includes seven separate planning regions, three of which are within, in part, the PEL Study Area: the Penns Valley Region, the Centre Region, and the Nittany Valley Region. The planning regions were developed by the County to be comprised of municipalities that were identified as having common traits, including socioeconomic traits, school districts, and topography. Each region has undertaken planning initiatives, to varying degrees, to ensure the communities and resources within their jurisdiction are developed and protected to maintain the quality of life for their residents. These initiatives have been documented in official plans that the County also incorporates into the overall countywide comprehensive plan, including the transportation component. A review of county and regional planning documents and initiatives was conducted to understand the transportation and land use visions and goals in the study

area communities for consideration in the development of the PEL Study's purpose and need. In particular, a review of the following plans was conducted:

- Centre County LRTP 2044 (adopted in 2015 and updated in 2018)
- Centre County LRTP 2050 (adopted on September 22, 2020)
- Centre County Comprehensive Plan Phase I (2003) and Phase II Implementation Strategies (2016 to 2020)
- Centre Region Comprehensive Plan (November 2013) – includes State College Borough and College, Ferguson, Halfmoon, Harris, and Patton Townships
- Harris Township Comprehensive Rural Rezoning Report (March 2019)
- Boalsburg Small Area Plan (June 13, 2016)
- Nittany Valley Region Comprehensive Plan (adopted September 2004) and Plan Update 2020-2030 (adopted October/November 2019) – includes Bellefonte Borough and Benner, Marion, Spring, and Walker Townships
- Penn Valley Region Comprehensive Plan (adopted January 2006) – includes Centre Hall and Millheim Boroughs and Gregg, Haines, Miles, Penn, and Potter Townships

A summary of the plans and the local goals and visions related to transportation and land use are summarized in Appendix B – County and Regional Planning, Visions, and Goals.

The CCMPO is responsible for developing and adopting a short-range, four-year TIP that details the planned expenditure of federal funds and some state capital funds for specific projects within specified limits of fiscal constraint. In order to be included on the TIP, projects must also be included on the CCMPO's adopted LRTP. (The LRTP 2050 was adopted on September 22, 2020.) The CCMPO's FY2021-2024 Centre County TIP (adopted June 23, 2020) includes $26 million in discretionary (spike) funds for the SCAC PEL Study and future transportation projects. The FHWA, Federal Transit Authority (FTA), and the U.S. Environmental Protection Agency approved the State TIP and it became the official State TIP on October 1, 2020. The TIP notes that no specific alternative improvements have been developed for the SCAC study at this time. The commitment of funding for the preliminary engineering phase is intended to enable the PEL process and preliminary engineering work to be completed, which is anticipated to result in the documentation of a specific "purpose and need" statement(s) for the project(s), and the development and evaluation of alternative(s). Therefore, the commitment of state funds for the PEL Study and preliminary engineering work is intended to lead to the future investment of federal and state funds for improvements that contribute to meeting the study purpose and need in addition to identifying proposed alternatives that are determined effective based on performance measure to be developed (e.g., travel time performance).

2.0 Study Area Conditions

2.1 Environmental Setting

Transportation infrastructure can influence community growth and facilitate land use changes. While existing or planned transportation facilities are rarely the sole factor for development and land use changes, transportation projects can affect development and land use changes through the access they provide or limit. Given this, it is important to identify the environmental setting of the PEL Study Area early on and how the existing land uses, along with regional and local planning goals and visions, may affect the need for transportation improvements.

The PEL Study Area and initial data collection area covers approximately 70 square miles (about 45,000 acres) and approximately extends from Seven Mountains near Potters Mills to Nittany Mountain near Pleasant Gap and from Centre Hall west towards Boalsburg (see **Figure 1 – PEL Study Area for Initial Data Collection**). The topography is characterized by well-defined steep mountains and two broad, gently sloping valleys. Both the valleys and ridges are oriented northeast to southwest. Natural resources include streams and wetlands throughout the two valleys (Penns Valley and Nittany Valley) and flow from the forested mountain ridges of Seven Mountains and Nittany Mountain ranges that separate the valleys.

Environmental features in the study area have been mapped using a comprehensive Geographic Information Systems (GIS) database (see **Figure 2 – Resource Features**). The study area is primarily rural with many productive farming operations interspersed with small villages such as Potters Mills, Centre Hall, Linden Hall, Lemont, Tusseyville, and Pleasant Gap, which are typically positioned along well-established travel ways. Forest cover is the largest land cover/use in the study area and encompasses approximately 47% of the study area whereas productive farmland makes up the second-largest (approximately 36%) land use in the study area, with 59% of the farmland within Agricultural Security Areas (ASAs) and 13% preserved in Agricultural Conservation Easements (ACEs). Given the large expanse of farmland and number of active farm operations, the roadways within the PEL Study Area are often used by farmers to access various land parcels and generate slower-moving farm equipment traffic that then mixes with faster-moving cars and trucks.

More modern developments, in particular residential subdivisions, are scattered throughout the study area but are primarily concentrated closer to the State College area in the Centre Region and adjacent to or near PA 45 and US 322. Modern commercial and industrial development is also found along these corridors and, to a lesser degree, along PA 144, with the exception of the PA 144/PA 26/PA 64 intersection area to the north in the vicinity of I-99 that has multiple industrial establishments, including quarries that generate truck traffic. These developed areas are minimal, making up only 9% of the study area in residential use and 3% in commercial and industrial use, including quarries. The remaining 5% of the study area includes land uses such as private country club golf courses, large ponds/lakes, transportation facilities, etc.

Penns and Brush Valleys include a large Old Order (Amish) community primarily outside the PEL Study Area. However, the Amish community has thrived, and some of their farms and one school are within the PEL Study Area in the northeastern part of Potter Township, just east of Centre Hall, along PA 192 and PA 45. Nittany Valley also includes a large Amish community, primarily within Marion and Walker Townships, outside and north of the PEL Study Area. Given the proximity of these large Amish communities, the roadways within the PEL Study Area frequently have horse-and-buggy traffic that must compete with faster-moving cars and trucks.

A large portion (58%) of the study area is also encompassed by the Penns/Brush Valley Rural Historic District that was determined eligible for listing in the National Register of Historic Places (NRHP) in March 2002. The Penns/Brush Valley Rural Historic District is eligible for its agricultural patterns and associated landscape features established during the nineteenth and twentieth centuries as well as its architecture found on farms and villages within the district. The study area includes multiple historic properties that have been identified as listed or eligible for listing on the NRHP. However, many historic properties (properties over 50 years of age) have not been surveyed to determine if they are eligible for listing and/or if they contribute to the Penns/Brush Valley Rural Historic District.

The timing of development and future land use changes are influenced by the state of the economy, particularly the local economy. The specific location of development and future land use changes are influenced not only by the availability of land but also by the extent of infrastructure and utilities servicing the land and protections put in place to dictate or manage the type and size of development to occur, if at all. Influences related to potential future land use and development in the PEL Study Area and that may, in turn, affect transportation needs are summarized below.

- **Proximity to State College Borough and the Pennsylvania State University** – The employment and educational opportunities of the University, along with the relatively high quality of living standard, make the County (and hence the study area) attractive for planned development. Population within the study area is currently expected to have only nominal growth. Population and households had annual linear growth rates of 0.6% and 0.7%, respectively. Employment is expected to grow at a higher rate (2.0% per year), generating over 10,000 additional employment trips by 2050. The 2050 traffic volumes developed for this study reflect 2050 population and employment projections provided by the CCMPO.

- **Agricultural Preservation** – The County has an active preservation program for protecting farmland from development. It is particularly active in Penns and Nittany Valleys that make up a large part of the PEL Study Area as illustrated in Figure 2. This not only includes the ASAs created by local municipalities to extend benefits to farmers to ensure the viability of their operations, it also includes ACEs that preserve the land for farming uses in perpetuity. In Centre County, there are three entities that purchase ACEs (development rights): Centre County Farmland Trust (private, non-profit), ClearWater Conservancy (private, nonprofit), and Centre County Agricultural Land Preservation Board (public).

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BELLEFONTE
Zion
Bush Addition
WALKER TWP
Bellefonte Airport
Fishermans Paradise
SPRING TWP
BENNER TWP
State Gamelands No 333
GREGG TWP
Pleasant Gap
Farmers Mills
Peru
MOUNTAIN
University Park Airport
CENTRE HALL
Potter-Greg Center
Hall Park
Old Fort
PATTON TWP
Dale Summit
NITTANY
Houserville
Pennsylvania University
COLLEGE TWP
Centre Hill
Lions Paw Alumni Association
POTTER TWP
Red Mill
Lemont
STATE COLLEGE
Linden Hall
Centre Hills Country Club
Fruittown
Boalsburg
HARRIS TWP
Shingletown
Pennsylvania University
Seven Mountains Boy Scout Camp
TUSSEY MOUNTAIN
SEVEN MOUNTAINS

0 3,000 6,000 9,000 Feet

LEGEND

- Initial Data Collection Area
- Potters Mills Gap Transportation Project
- Penns Valley & Brush Valley Rural Historic District
- Municipal Boundaries
- Streams
- Parks and Public Recreation Areas
- Agricultural Easements
- Conservation Easements
- Agricultural Security Areas
- Wetlands
- Rockview State Correctional Institute Historic District
- Rockview State Correctional Institute
- State Forest
- PA Bike Route G
- Bike Trails

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DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

INDEX MAP

November 2020

State College Area Connector

RESOURCE FEATURES

CENTRE COUNTY, PENNSYLVANIA

Figure 2	1 Inch = 6,000 Feet

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Service Layer Credits: NAIP: Esri, USDA Farm Service Agency, Community: Centre County Government, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

- **Regional Growth Boundary and Sewer Service Area** – The Centre Region is one of the County's previously described planning regions; it extends into the western edge of the PEL Study Area. Through the establishment of a Regional Growth Boundary, shown in Figure 1, the County uses the approval of public sewer service extensions to influence where growth occurs in the Centre Region. The adopted Regional Growth Boundary extends into the western end of the PEL Study Area and includes Lemont to the north then follows the Mount Nittany Expressway to then extend eastward to encompass the residential subdivisions along both the PA 45 and US 322 Corridor up to and including the residential subdivision, Huntridge Manor. Only 7% of the PEL Study Area lies within the Regional Growth Boundary, and the availability of public sewer service is limited as well. While there are no adopted Regional Growth Boundaries in the other planning regions of the study area, there are small public sewer facilities that service limited, higher density, small communities including the Centre Hall/Old Fort area, Country Club Park, and the Village of Pleasant Gap. A small community sewage treatment system was also recently installed to serve the Village of Potters Mills to address the need of 43 properties with malfunctioning on-lot septic systems. These community systems may also affect the location and extent of future development in the study area but with limitations associated with the capacity of the respective treatment facilities.

PennDOT recognizes its role as a partner with counties and local communities to ensure that transportation improvement projects are developed through a collaborative planning process that links transportation planning decisions with regional and community land use decisions. A summary of the county and regional plans and local goals and vision affecting transportation planning in the PEL Study Area is provided in Appendix B – County and Regional Planning, Visions, and Goals.

2.2 Existing Transportation Network and Services

2.2.1 Transportation Network and Conditions

Centre County's roadway network includes I-80 and I-99, United States traffic routes (including US 220 and US 322), and state traffic routes (such as PA 26, PA 144, PA 45, and PA 64) that are within or near the PEL Study Area. I-80 traverses east and west across the United States from California to New Jersey, and I-99 is a north-south route that links the Pennsylvania Turnpike (I-70/I-76) with I-80. Pennsylvania is in a strategic position with interstate roadways traversing the state and serving national and international trade routes and Centre County is centrally located within the commonwealth. This geographic position makes the county's network of roads important for interstate, statewide and regional traffic and commerce in addition to local trips. **Figure 1** illustrates the federal functional classifications for the study area roadways, which are defined below in Table 2.

Table 2 – Federal Functional Classifications

Federal Functional Classification	Classification Description	Centre County Roadways
Interstate Highway	Network of limited access, divided highways offering high levels of mobility while linking major urban areas of the USA	I-80, I-99
Other Freeways and Expressways	Divided highways with partial (expressway) or full (freeway) control of access that serve through traffic and maximize mobility; abutting land uses not directly served	US 322 (Mount Nittany Expressway)
Other Principal Arterial Highways	Serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. Unlike access-controlled roads, abutting land uses can be served directly.	US 322/Business US 322, PA 144, PA 26
Minor Arterial	Provide service for trips of moderate length, serve geographic areas smaller than their higher arterial counterparts and offer connectivity to the higher arterial system. In rural areas are typically designed to provide relatively high overall travel speeds, with minimum interference to through movement.	PA 45
Major Collector	Gather traffic from Local Roads and funnel it to the arterial network, generally serve primarily intra-county travel (rather than statewide) – collector that offers more mobility	PA 192, SR 3010 (Boalsburg Road/Warner Boulevard), SR 2006 (Linden Hall Road)
Minor Collector	Gather traffic from Local Roads and funnel it to the arterial network, generally serve primarily intra-county travel (rather than statewide) – collector that offers more access	SR 2006 (Brush Valley Road/Rock Hill Road), SR 2010 (Georges Valley Road)
Local Roads	Not intended for long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land. Bus routes generally do not run on Local Roads and they are often designed to discourage through traffic.	SR 2004 (Linden Hall Road/Cedar Run Road), SR 2001 (Bear Meadows Road)

Provisions in the federal transportation legislation, Moving Ahead for Progress in the 21st Century (MAP-21), significantly expanded the roadway miles previously included on the National Highway System (NHS) and supported by the National Highway Performance Program (NHPP) that provides funding for the construction of new facilities on the NHS, and ensures that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. The NHS now includes all principal arterial routes identified on the federal functional classification system. In Centre County, these routes include I-80, I-99, US 322, Business Route US 322, and sections of PA 26, PA 144, and PA 150, PA 504, and PA 3040, totaling 161.6 miles. Centre County is primarily a “through” county for truck freight movements. I-80 is a route on

the National Highway Freight Network (NHFN) and is classified as a Primary Highway Freight System (PHFS) roadway. The NHFN was established by the Fixing America's Surface Transportation Act (FAST ACT) and is intended to strategically direct federal resources and policies toward improved performance of highway portions of the United States freight transportation system. I-99 in Centre County is classified as a non-PHFS Interstate roadway under the NHFN.

The CCMPO has identified two key trucking corridors (portions of US 322 and PA 350) as two-lane roadways that do not meet modern design standards desirable to accommodate the high truck volumes present on these roadways (CCMPO LRTP 2044, 2018 Update and LRTP 2050). The County's primary concerns related to freight movements in these corridors involve safety and the impact to road and bridge conditions. Also, within the PEL Study Area, the CCMPO identified sections of roadway as Critical Urban and Rural Freight Corridors as defined by the NHFN:

- PA 45 – includes the entire route within the study area because it provides access to a quarry, a foods processing plant, and the largest agricultural area in the County.
- PA 26 – includes roadway sections in vicinity of College Avenue and the I-99 interchange and PA 64 and I-99 interchange that service multiple quarries and other industrial facilities.

The SCAC PEL Study Area is comprised of the following major roadways: US 322, PA 144, and PA 45. The US 322 corridor carries both local and regional through traffic and a mix of all vehicle types (automobiles, medium trucks, and heavy trucks). It is classified as a principal arterial, indicating that the intended purpose of the facility is to convey traffic throughout the region (i.e., the purpose of the facility is not solely for local trips, but to carry through and regional traffic). Due to substantial roadside land development and the sparse local street network, US 322 in the study area also operates as a collector route. On a local level, US 322 serves as a key connection to the State College area, providing access to the County's economic hub and to Penn State University's main campus. On an intrastate level, the US 322 corridor serves as the prime connection between many cities to the east and west of Centre County. When traveling between cities to the east of Centre County to I-80 and other locations to the midwest and west, US 322 serves as an important connection. There are currently several alternate routes for travel to I-80 and I-76 from the Harrisburg area in southcentral Pennsylvania. One of these options uses US 322 as a through route that includes travel between Harrisburg and I-80. Another involves traveling east on I-76 towards Pittsburgh and beyond. A third option is to use US 11/15 north to I-80 westbound.

While PA 144 is also identified as a principal arterial roadway, a posted weight restriction for trucks (10 tons, except for local deliveries) is in place from its intersection with PA 192 in Centre Hall, over Nittany Mountain, to its intersection with PA 26 in Pleasant Gap. This stretch of PA 144 also includes a section of reduced speed limit (20 miles per hour [mph]) for trucks, a southbound runaway truck ramp at Centre Hall's northern boundary, and a northbound runaway truck ramp at the southern end of the Village of Pleasant Gap.

PA 45 is identified as a minor arterial roadway and is intended to service trips of moderate length and provide connectivity to the arterial system with minimum interference to through movement. From the eastern end of the study area on the south side of Centre Hall, PA 45 is a two-lane roadway that travels through large areas of productive farmland with scattered residential development. As it extends westward, closer to Boalsburg and the State College area, the roadway fronts more residential areas, including large residential subdivisions, with multiple driveway access points and local cross roads. The roadway has become a major east-west thoroughfare, linking Penns Valley to Lewisburg in the east and, more importantly, the Centre Region in the west, particularly the local residents to the State College area. As documented in the Penns Valley Region Comprehensive Plan (2006) the local officials expressed the desire to protect the roadway's ability to efficiently move vehicles that, in turn, requires careful location and configuration of planned growth areas with limited points of property access.

The design team evaluated existing horizontal and vertical alignments along the US 322, PA 144, and PA 45 corridors within the PEL Study Area. The vertical alignment of a road consists of a series of straight grades and vertical curves. Steep vertical grades can affect the efficient and safe movement of vehicles traveling either uphill or downhill by introducing speed variations in vehicles, particularly passenger cars and heavy trucks. Too flat vertical grades can affect proper drainage from the road and can lead to ponding in warm weather storms or icing in the winter months. The vertical curves of a roadway smooth the passage of vehicles from one grade to another. Curves that do not meet criteria could limit a driver's sight distance whether over the summit of a rise or nighttime headlight sight distance in a sag curve condition. Horizontal curves provide the transition between two straight sections of roads and a curve that is too sharp may impact the ability of a driver to safely negotiate the turn at the posted speed limit. This roadway alignment deficiency evaluation was based on as-built plans and the posted speed limits. The findings of this evaluation identified sections of the roadway that do not meet current design criteria as illustrated in **Figure 3 – Safety Analysis and Roadway Alignment Deficiencies** and summarized below.

- **US 322 (posted speed limits ranging from 45 mph to 55 mph)** – the alignment meets the various horizontal design criteria throughout the corridor from the existing US 322/Mount Nittany Expressway to the proposed end of the new four-lane section of US 322 near PA 144 at Potters Mills currently in construction (SR 0322, Section B06). This corridor has one identified deficient vertical curve at the western end in the vicinity of its intersection with Bear Meadows Road in Harris Township.
- **PA 45 (posted speed limits ranging from 45 mph to 55 mph)** – the alignment from the existing interchange with US 322/Mount Nittany Expressway in Boalsburg to the existing intersection with PA 144:
    - Meets the horizontal design criteria throughout the corridor
    - Includes 6% of the alignment with grades steeper than the maximum grade criteria
    - Includes 20% of the alignment with grades flatter than the minimum grade criteria
    - Includes 9% of the alignment with vertical curves that do not meet the required stopping sight distance criterion.

N

WALKER TWP

SPRING TWP

GREGG TWP

BENNER TWP

PLEASANT GAP

CENTRE HALL

OLD FORT

CENTRE HILL

COLLEGE TWP

STATE COLLEGE

HARRIS TWP

BOALSBURG

POTTER TWP

TUSSEYVILLE

POTTERS MILLS

FISHERMANS PARADISE RD

PARADISE RD

HARRISON RD

SHUMAN RD

HOUSERVILLE RD

PIKE ST

ELMWOOD ST

BOALSBURG RD

SR 3010

BRANCH RD

MT NITTANY EXPY

LINDEN HALL RD

SR 2004

ROCK HILL RD

LINDEN HALL

CEDAR RUN RD

SR 2006

WARNER BL

BUS 322

BOAL AV

WEST BRANCH RD

WOODSIDE DR

ELKS CLUB RD

BEAR MEADOWS RD

SHARER RD

KENWALKE LN

BRUSH VALLEY RD

WILLIAMS RD

WAGNER RD

NEFF RD

TAYLOR HILL RD

RED MILL RD

MOUNTAIN BACK RD

UPPER GEORGES VALLEY RD

SR 2010

99 26 64 144 150 192 45 322

0 4,800 9,600 14,400 Feet

LEGEND

- Potters Mills Gap Transportation Project
- Municipal Boundaries

Intersection Safety Analysis

- Signal Intersection - Evaluated
- Signal Intersection - Potential for Safety Improvement
- Stop Intersection - Evaluated
- Stop Intersection - Potential for Safety Improvement

Route Safety Analysis

- Evaluated
- Potential for Safety Improvement

Posted Speed Deficiencies

- Horizontal
- Vertical

pennsylvania
DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

INDEX MAP

November 2020

State College Area Connector

SAFETY ANALYSIS AND ROADWAY ALIGNMENT DEFICIENCIES

CENTRE COUNTY, PENNSYLVANIA

Figure 3 | 1 Inch = 4,800 Feet

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Service Layer Credits: Community: Centre County Government, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

When combined, 35% of the total alignment fails to meet vertical criteria for the various posted design speeds.

- **PA 144 (posted speed limits ranging from 25 mph [20 mph for trucks] to 55 mph)** – the alignment from the existing intersection with US 322 in Potters Mills to the existing intersection with PA 26:
    - Includes 7.5% of the alignment that has horizontal curves sharper than the maximum defined by design criteria
    - Includes 27% of the alignment with vertical grades steeper than the maximum grade criteria
    - Includes 11% of the alignment with vertical curves that do not meet the required stopping sight distance criterion
    - Includes a posted weight restriction for trucks (10 tons, except for local deliveries) from its intersection with PA 192 in Centre Hall, over Nittany Mountain, to its intersection with PA 26 in Pleasant Gap.

  When combined, 28% of the total alignment fails to meet either horizontal or vertical criteria for the various posted design speeds.

2.2.2 Bicycle and Pedestrian Facilities

Currently, just over 5.4% of the Centre County labor force uses another commuting method (e.g., bicycles, electric scooters) beyond a motor vehicle (e.g., car), public transit, or walking. This is more than triple the Pennsylvania average of about 1.4%, which is indicative of the high number of bicycle facilities present in the County, particularly within the Centre Region that includes College, Ferguson, Halfmoon, Harris, and Patton Townships and State College Borough. Workers in the County also walk to work at a higher rate than other Pennsylvania workers; however, much of the pedestrian and bicycle travel is directly related to residents accessing workplaces at Penn State University, downtown State College, and other employment centers in the Centre Region outside of the PEL Study Area.

Within the Centre Region, there has been progress toward developing a comprehensive and interconnected bicycle network. The Centre Region Council of Governments prepared the Centre Region Bike Plan (adopted December 15, 2015; amended May 23, 2016). The Bike Plan identifies future linkages and programs to further expand the existing network. The Bike Plan is also expected to enhance the Region's application to the League of American Bicyclists (LAB) to maintain its Bicycle Friendly Community designation and raise the current designation from Bronze Level to Silver and ultimately Gold designation. Recommendations in the Bike Plan specific to the PEL Study Area include a recommended bicycle corridor in Harris Township, referred to as Corridor Hh. It would extend along PA 45 from the Mount Nittany Expressway to Rosslyn Road. Harris Township also has an adopted Official Map that includes a proposed bicycle facility along Spring Creek from Boalsburg to Elks Club Road and another one connecting Kaywood Park to the residential development of Aspen Heights. Bicycle Pennsylvania Route G (see Figure 2), which extends through the PEL Study Area, is part of the statewide bicycle routes that serve as touring routes

for travel, tourism, and recreation. It extends through Potter Township and Centre Hall (using Brush Valley Road, including PA 192), extending into Harris Township (using Brush Valley Road to Rock Hill Road and Linden Hall Road) and then into College Township (using Linden Hall Road to connect to Boalsburg Road and Warner Boulevard) and then out of the PEL Study Area south by way of PA 45.

Pedestrian facilities are located in the urban and village areas of the County and given the rural nature of the PEL Study Area; they are disconnected. In Centre County, municipal planning departments, the Centre Regional Planning Agency (CRPA), and the Centre County Planning and Community Development Office (CCPCDO) routinely require or encourage developers to include pedestrian amenities as part of proposed land development site plans and subdivisions in locations where the facilities are appropriate. These entities view individual facilities as integral to the development of an overall interconnected pedestrian system. The CCMPO staff is actively involved in land development plan reviews at county, regional, and municipal levels and also works with PennDOT to include pedestrian facilities in transportation improvement projects.

Centre County completed a feasibility study for The Penns and Brush Valley Rail Trail (2015). This study evaluated the feasibility of a 27-mile trail on the former Lewisburg to Tyrone rail line extending from the Union/Centre County border through the Penns and Brush Valleys and terminating in Lemont in College Township. It was determined that the original proposed 27-mile regional trail would refocus on four community-based trails that would be designed using the abandoned rail line in select areas and principally serve the needs of a local community without including the use of or impacts to any major roadways.

A Bicycle Level of Service (BLOS) analysis was conducted for the study area for both the Existing (Base Year 2017) and No Build (Design Year 2050) scenarios. BLOS is a measure that is used to predict a bicyclist's perception of a specific roadway environment based on its ability to accommodate motor vehicles and bicycle traffic, the roadway's geometric design, and traffic conditions. Similar to the LOS ratings used to evaluate motorized vehicle traffic, the BLOS ratings include A, B, C, D, E, and F that are intended to reflect users' perception of the road segment's LOS for bicycle travel. Table 3 provides an overview of the BLOS criteria and what they generally mean for a cyclist.

Table 3 – Bicycle Level of Service Descriptions

LOS	General BLOS Description
A	These roadways are generally safe and attractive to all bicyclists.
B	These roadways are adequate for all bicyclists.
C	These roadways are adequate for bicyclists with some degree of experience.
D	Bicyclists can anticipate an interaction with motor vehicles and should be experienced riders.
E	Bicyclists can anticipate a high level of interaction with motor vehicles and should be experienced riders.
F	These roadways do not provide any bicycle facility and would be difficult to navigate safely.

BLOS A, B, and C are perceived as comfortable enough for less experienced cyclists; however, BLOS A or B is considered comfortable for most adults. Roadways with BLOS D, E, and F should be used only by more experienced riders or not used by bicyclists at all. The findings of this analysis indicated that in the Base Year (2017) scenario within the study area, PA 45, PA 144, and US 322 all currently operate at BLOS D or worse, and all BLOS scores are anticipated to deteriorate in the Design Year (2050). Overall, the roadways within the study area do not operate at acceptable BLOS due to narrow lane widths and shoulders, high truck volumes, high travel speeds, and pavement conditions which are undesirable for cyclists. It should be noted that this finding would most likely apply to horse-and-buggy traffic that prefers to use eight-foot-wide paved shoulders rather than the travel lanes that serve faster moving motorized vehicles.

2.2.3 Transit and Park-and-Ride Lots

The Centre Area Transportation Authority (CATA) is a joint municipal authority, comprised of State College Borough and College, Ferguson, Harris, and Patton Townships. CATA conducts public transportation operations within the boundaries of the participating municipalities. However, the CATA Board of Directors extends public transportation services to three municipalities outside of the Centre Region on a contract basis. Currently, public transportation services are provided by contract to areas in Bellefonte Borough, and Benner and Spring Townships. CATA operates service directly (CATABUS fixed route service and CATAGO! Microtransit service); purchases services from a subcontractor (CATARIDE shared ride/demand responsive service); and administers some services that use a decentralized, volunteer driver model (CATACOMMUTE ridesharing services for individuals whose trip either begins or ends in Centre County). The service area for CATABUS fixed route service and CATARIDE shared ride/demand responsive service is approximately 1,035 square miles. The CATACOMMUTE program provides services to users traveling to/from Centre County and eleven surrounding counties (Bedford, Blair, Cambria, Clearfield, Clinton, Huntington, Indiana, Juniata, Lycoming, Mifflin, and Somerset Counties).

CATABUS fixed route service to, from, and within the PEL Study Area currently includes the following routes (see also Appendix C – CATABUS Community Service System Map):

- **Route B (Boalsburg)**
  - Extends to the Willowbrook Estates and Elksview Townhomes developments in addition to the Mountain View Country Club
  - Services only Harris Township within the study area
  - Uses both US 322 and PA 45
- **Route C (Houserville)**
  - Services Clover Highlands in College Township
  - Uses PA 26

- **Route HM (Toftrees and Nittany Mall)**
  - Services Lemont in College Township
  - Uses PA 26
- **Route P (Tussey Mountain)**
  - Extends to the Boalsburg Technology Park and Tussey Mountain Ski and Recreation area
  - Services only Harris Township within the study area
  - Uses US 322
- **Route XG (Pleasant Gap)**
  - Extends to Pleasant Gap
  - Services College, Benner, and Spring Townships
  - Uses PA 26

The 12-county (including Mifflin and Juniata Counties, southeast of the study area) ridesharing services provided through CATACOMMUTE includes four offerings: vanpool program, carpool program, emergency ride home program, and park-and-ride program (the latter program is only associated with University Park campus commuter parking lots at this time). Current usage of the regional services is limited as indicated by the following systemwide data:

- Vanpool Program – initiated in October 2007 with six vanpool groups and grew during Fiscal Year 2018-19 to 37 vanpool groups with approximately 481 participants.
- Carpool – During Fiscal Year 2018-19, carpool participation included approximately 184 persons.
- Emergency Ride Home Program – During Fiscal Year 2018-19, Emergency Ride Home use remained relatively low at about 37 trips provided.

The Centre County Office of Transportation also provides transportation services to Centre County residents, clients, and other social service agencies. The Transportation Office maintains the County's vehicle fleet, and services include a “shared-ride” and demand-response door-to-door service.

Park and ride activities in the county are primarily informal. One formal program uses Penn State’s University Park Campus commuter parking lots at Jordan East, Stadium West, and Medlar Field and is available to eligible individuals who work in downtown State College. No other parking lots are formally designated as park and ride lots.

A countywide park-and-ride study is proposed as part of the CCMPO’s LRTP 2050 to develop a strategy to ensure the County’s transportation system has an adequate mix of travel modes. This proposed study will account for changing commute patterns in the area, provide the opportunity to reprioritize sites listed in a previous 1996 regional park-and-ride study, add new sites as needed, identify potential environmental issues early in the design process, and allow CCMPO to work with PennDOT District 2-0 and other local stakeholders to maximize opportunities for use of public right-of-way.

Related to the PEL Study Area, the 1996 regional park-and-ride lot study identified the intersection of PA 45 and PA 144 as a high-priority location to help meet Penns Valley commuter demand. Environmental review and design efforts were initiated for a site in the Village of Old Fort in Potter Township. However, issues related to culturally and historically significant features resulted in the CCMPO deciding to stop work on the project.

2.3 Safety Issues

2.3.1 Crash Summary

Crash data from January 2014 through December 2018 (five years) was obtained from PennDOT and analyzed for the various roadways within the PEL Study Area. The data was obtained from PennDOT's Open Data Portal through the Pennsylvania Crash Information Tool (PCIT). The crash data collected within the PEL sub-area reflects the completed safety improvements described in Table 1 – Safety Improvement Projects, 2006 To Present (Section 1.2). A total of 396 reportable crashes were reported within the study area over the five-year period. This includes five fatal crashes (1%), 168 injury crashes (42%), and 223 property damage-only crashes (no injuries or fatalities; 56%). Table 4 summarizes the crash severity by corridor. PA 45 (143 crashes) experienced the highest number of crashes of all the corridors followed by PA 144 (111 crashes) and US 322 (108 crashes). Out of the five total fatalities, four occurred along PA 144. When compared to PA 144 and US 322, the PA 45 corridor experiences a higher percentage (almost 50%) of injury crashes.

Table 4 – Crash Severity by Corridor [1]

Roadway	PDO[2]	Injury	Fatal	Total
PA 45	72 (50%)	70 (49%)	1 (1%)	**143 (36%)**
PA 144	68 (61%)	39 (35%)	4 (4%)	**111 (28%)**
PA 192	0	1 (100%)	0	**1 (0%)**
US 322	69 (64%)	39 (36%)	0	**108 (27%)**
Linden Hall Road/Cedar Hill Road (SR 2004)	1 (100%)	0	0	**1 (0%)**
Brush Valley Road/Rock Hill Road (SR 2006)	3 (50%)	3 (50%)	0	**6 (2%)**
Boalsburg Road/Warner Boulevard (SR 3010)	3 (23%)	10 (77%)	0	**13 (3%)**
Boal Avenue (SR 3014)	5 (45%)	6 (55%)	0	**11 (3%)**
Brush Valley Road	2 (100%)	0	0	**2 (1%)**
Total	**223 (57%)**	**168 (42%)**	**5 (1%)**	**396 (100%)**

1 Crash frequencies represent number of crashes (5-year total) involving injuries or fatalities and not the number of injuries or fatalities
2 PDO: Property Damage Only (no injuries)

An analysis of the crash types indicates rear-end crashes (97 crashes; 24%) occur most frequently within the study area, followed by angle crashes (95 crashes; 24%). Rear-end crashes are the most frequent along US 322; that is most likely due to the mix of local traffic, through traffic, and uncontrolled access along the corridor. Along PA 45, angle crashes (49 crashes; 34%) are most prevalent and are most likely due to higher travel speeds, substandard roadway elements, and uncontrolled access points. Additionally, angle crashes tend to lead to more severe crashes. Hit Fixed Object crashes (52 crashes; 47%) is the #1 crash type along PA 144. This is most likely due to topography which consists of a significant number of substandard horizontal and vertical curves.

Weather and lighting did not seem to be a factor in most crashes in the study area as 313 crashes (80%) occurred in conditions classified as "clear." There were 43 crashes (11%) in the rain and another 30 crashes (8%) in the snow. Additionally, 276 crashes (70%) took place in the daylight with 16 crashes (4%) taking place in areas with streetlights, accounting for 74% of the total crashes.

Within the study area and as reported in the State Police crash reports, 130 crashes (33%) involved at least one heavy vehicle, and approximately 22% of all crashes within the study were **caused** by a heavy vehicle. There were no reported crashes involving a horse and buggy. There were six (2%) bike/pedestrian crashes with 66% of the bike/pedestrian crashes occurring along PA 45.

2.3.2 Highway Safety Analysis

A Highway Safety Manual (HSM) analysis was completed for the Base Year (2017) and Design Year (2050) to evaluate the safety performance of the existing roadway network. The HSM provides analytical tools and techniques for quantifying potential effects of crashes for decision-making during the planning, design, operations, and maintenance process. The HSM evaluates how design elements could impact safety. The analysis was performed using PennDOT's HSM Safety Analysis Tool. The methodologies were used to calculate the following within the study area:

- **Predicted Average Crash Frequency (Baseline)** – estimate of long-term average crash frequency
- **Expected Average Crash Frequency (Normalized)** – estimate of long-term average crash frequency, calculated based on the observed crash frequency (the study area crash data)
- **Potential for Safety Improvement (PSI)** – estimates of how much long-term crash frequency can be reduced at a site and is represented as the Expected Average Crash Frequency minus the Predicted Average Crash Frequency (According to the Publication 319 – Needs Study Handbook, a project has a safety need if the expected crashes are higher than the predicted crashes in the study area.)

The HSM analysis conducted by roadway and by scenario indicates that the resultant PSI for the entire study area shows that there is not currently an overall safety need. However, when evaluating the roadways by segment and intersection, there are sites within the study area where the expected number of crashes is greater than the predicted number of crashes (i.e., showing a safety need). **Figure 3 – Safety Analysis and Roadway Alignment Deficiencies** illustrates the results of the HSM analysis by segment and

intersection. This figure also illustrates that the sites identified for PSI through the HSM analysis correlate with some of the areas identified as not meeting vertical or horizontal criteria based on the posted speed limits, particularly along PA 45. There are PSIs along PA 144 for the segment that travels from the top of Mount Nittany into Pleasant Gap, along PA 45 between Elks Club Road and PA 144, and along Boalsburg Road north of Linden Hall Road. There is also a PSI at the US 322/Elks Club Road intersection and the intersection of US 322 and Red Mill Road/Mountain Back Road. It should be noted that this was a high-level screening analysis, and not every intersection/driveway was evaluated individually; therefore, it would be possible that PSIs could exist at other similar unsignalized access locations. Along PA 144, PSIs exist at Airport Road/Sinking Creek Road, PA 45 (signalized), and Harrison Road in Pleasant Gap. In Boalsburg, there is a PSI at the signalized intersection of Business US 322 and PA 45.

On average, during the Design Year (2050), crashes within the study are predicted to increase by 24%. However, the number of crashes along PA 144 is predicted to increase by 33% due to the anticipated traffic growth in the area. Of the other major corridors within the study area, crashes along US 322 are predicted in increase by 17% and crashes along PA 45 are predicted to increase by 20%. These predicted increases in crashes, paired with increased congestion, may exacerbate the crash frequencies experienced within the study area.

2.4 Traffic and Operational Analysis

An Operational Analysis was conducted using the traffic volumes obtained from the 2019 Data Refresh Report for the Route 322/144/45 Corridors. Manual turning movement counts and automatic traffic recorder counts were collected in 2017 and were used to develop Base Year (2017) traffic volumes. Additionally, the Centre County Regional Travel Demand Model (TDM) was used to generate the Design Year (2050) traffic projections. The base year model was refined and validated using updated demographic data, network and roadway updates, zonal refinements, and improved model processes. The TDM considers planned/programmed transportation improvements, future land uses changes, regional travel patterns, transit service, and commercial/freight forecasts. The No Build traffic volumes were determined using the Design Year (2050) TDM. The Base Year (2017) and Design Year (2050) represent traffic conditions of a typical weekday. However, based on the location of the PEL Study Area in relation to Penn State University, regional events occur that influence mobility.

Traffic congestion is either defined as recurring or non-recurring. Recurring traffic congestion refers to travel delays experienced usually during the peak hours (“rush hour”) virtually every day. There are many examples of recurring congestion, but simply put, it is when the number of vehicles using the highway system exceeds the available capacity. Non-recurring congestion is caused by crashes, work zones, adverse weather events, special events, and other incidents (i.e. disabled vehicles). Recurring congestion is traditionally the focus of roadway improvements, while non-recurring congestion is traditionally managed using strategies and techniques to minimize impacts.

Penn State University, located in State College Borough, holds or sponsors events such as football games, concerts, arts festival, and graduations that attract a substantial amount of traffic that travels through the PEL Study Area. While this traffic is not the focus of the operational analysis for this Purpose and Need, non-recurring traffic impacts (includes all types of non-recurring) may be considered in the development and evaluation of the range of alternatives. Additionally, any alternative that meets the study's Purpose and Need would likely provide benefit during non-recurring congestion events.

2.4.1 Traffic Volumes

Table 5 – Traffic Volume Summary lists the Average Annual Daily Traffic (AADT) and Average Daily Truck Traffic (ADTT) for both the Base Year (2017) and Design Year (2050) scenarios along key links within the study area. **Figure 4 – Existing (Base Year 2017) Average Daily Traffic Volumes** and **Figure 5 – No Build (Design Year 2050) Average Daily Traffic Volumes** illustrate the AADT and ADTT for the Base Year (2017) and Design Year (2050) scenarios, respectively, for the study area roadways.

Truck volumes are anticipated to continue to increase throughout the study area and are consistent with the prevailing national freight trends. Unique regional factors that may contribute to the increase in travel include more truck generators in the region including the areas around Bellefonte, Pleasant Gap, Centre Hall, Potters Mills, and Boalsburg and increases in the Pennsylvania Turnpike tolls for east/west travel through Pennsylvania. Additionally, travel patterns indicate a substantial amount of truck traffic traveling to and from northwestern Pennsylvania. Progressive improvements to the US 322 corridor between Harrisburg and State College have made the route more desirable for both truck and automobile traffic.

Table 5 – Traffic Volume Summary

Roadway	Segment		Base Year (2017)		Design Year (2050)		Growth Rate	
	From	To	AADT	ADTT	AADT	ADTT	Total	Truck
US 322	Boal Avenue	Elks Club Road	**13,000**	3,800 (29%)	**15,700**	4,850 (31%)	**0.60%**	0.81%
	Elks Club Road	Neff Road	**15,400**	3,150 (20%)	**18,600**	4,200 (22%)	**0.62%**	0.98%
	Neff Road	Mountain Back Road/ Red Mill Road	**13,400**	4,250 (32%)	**17,900**	5,950 (33%)	**0.76%**	0.92%
PA 45	Boalsburg Road	Boal Avenue	**11,700**	1,650 (14%)	**13,500**	1,800 (13%)	**0.46%**	0.29%
	US 322	Elks Club Road	**8,100**	950 (12%)	**10,900**	1,500 (14%)	**1.01%**	1.64%
	Williams Road	PA 144	**7,800**	1,350 (17%)	**9,600**	1,700 (18%)	**0.71%**	0.89%
PA 144	US 322	PA 45	**5,400**	750 (14%)	**8,500**	1,200 (14%)	**1.28%**	1.37%
	SR 0045	Brush Valley Road	**10,700**	1,650 (16%)	**14,100**	2,150 (15%)	**0.86%**	0.84%
	Brush Valley Road	Harrison Road	**8,600**	1,300 (15%)	**13,400**	1,850 (14%)	**1.26%**	0.92%

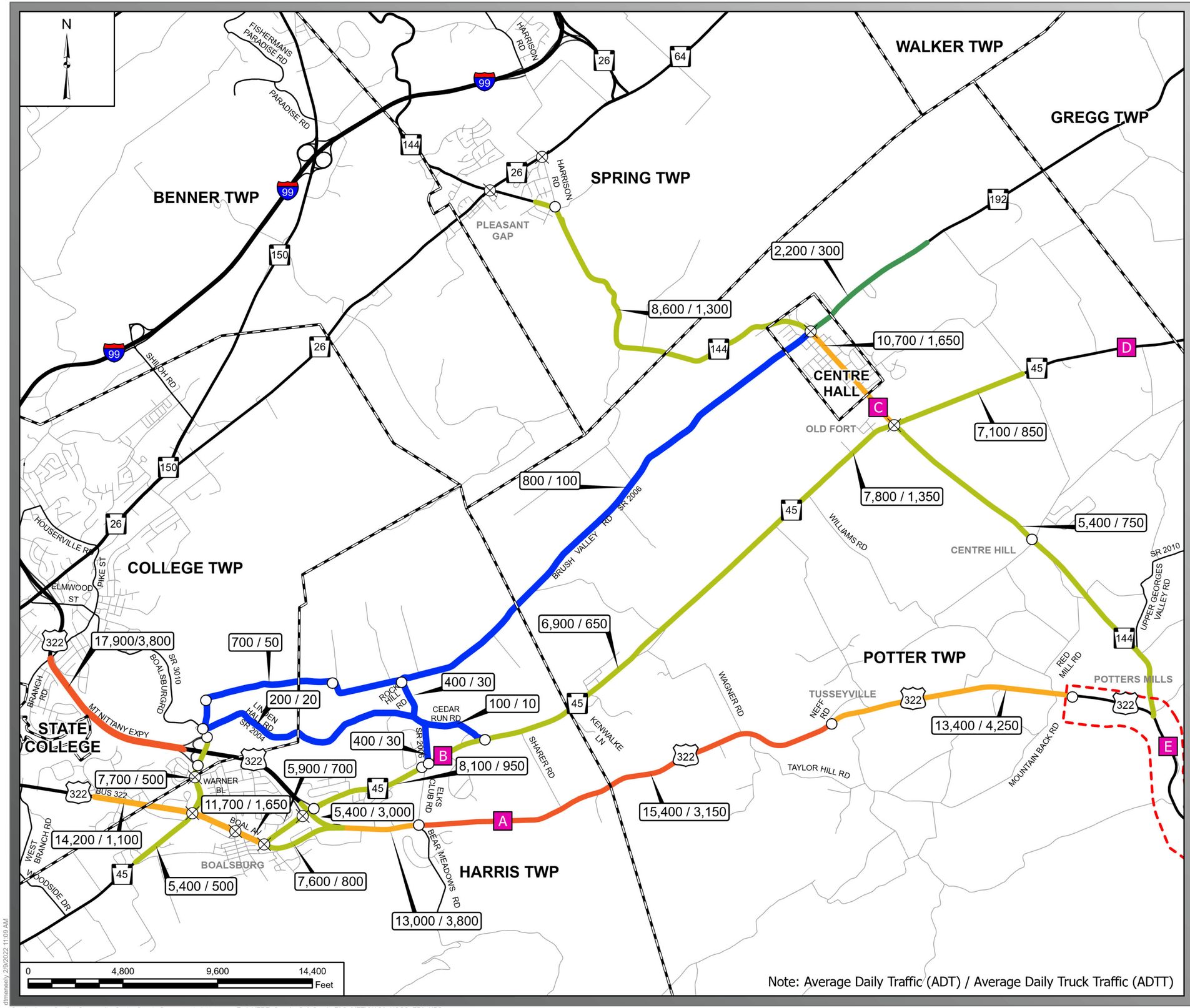
Notes: AADT = Average Annual Daily Traffic, ADTT = Average Daily Truck Traffic (%Trucks), and Growth Rate = 2017-2050 Annual Growth Rate (linear)

The 2050 No-Build roadway network assumed the completion of the PMG improvements (SR 0322, Sections B05 and B06), the I-99/I-80 High-Speed and I-80 Local Access interchange (SR 0080, Sections B18 and A18), and the I-99/US 322 Waddle Road Interchange Expansion. The overall network traffic growth for total vehicle traffic was estimated to be about 27% between 2017 and 2050 (about 1% per year). The overall network traffic growth for truck traffic was also estimated to be about 31% between 2017 and 2050 (about 1% per year).

Along US 322 between Boal Avenue (Business US 322/Mount Nittany Expressway Split) and Mountain Back Road/Red Mill Road, Base Year (2017) AADT volumes range between 13,000 vehicles per day (VPD) and 15,400 VPD with truck percentages between 20% and 32%. Within the study area, US 322 is classified as an East-West Other Principal Arterial, and the statewide average truck percentage for an Other Principal Arterial is approximately 7%. On average, there is over three times the percentage of trucks traveling along US 322 within the study area when compared to truck percentages of similar roadways. In the Design Year (2050), AADT volumes along the same segments of US 322 are expected to range between 15,700 VPD and 18,600 VPD, with truck percentages expected to increase at a higher rate than passenger vehicles along the corridor.

Traffic along PA 45 (East-West Minor Arterial) between Boalsburg and Centre Hall ranges from 7,800 VPD and 11,700 VPD, with truck percentages between 12% and 17%. Outside of the urbanized area near Boalsburg, truck volumes are anticipated to increase at a greater rate than passenger vehicles. In the Design Year (2050), traffic volumes are anticipated to increase to between 9,600 VPD and 13,500 VPD and truck percentages are anticipated to increase to between 13% and 18%. Although not as significant as the truck traffic using the US 322 corridor, the truck percentages are about double the statewide average for similar roadways.

PA 144 is classified as a North-South Other Principal Arterial between US 322 and PA 26. Base Year (2017) traffic volumes range between 5,400 VPD and 10,700 VPD, with truck percentages averaging 15%. Along this corridor, truck volumes increase at a similar rate to passenger vehicles. Design Year (2050) traffic volumes range between 8,500 VPD and 14,100 VPD. There is a weight limit of 10 tons on the section of PA 144 over Mount Nittany between Centre Hall and Pleasant Gap. However, based on observations of the Pennsylvania State Police and Spring Township Police, heavy trucks are still traveling on the weight restricted section of PA 144.



Note: Average Daily Traffic (ADT) / Average Daily Truck Traffic (ADTT)

LEGEND

- Potters Mills Gap Transportation Project
- Municipal Boundaries
- A — Origin Destination Survey Sites

Intersections

- Signal
- Stop

Average Daily Traffic Volume

- 0 - 999
- 1,000 - 4,999
- 5,000 - 9,999
- 10,000 - 14,999
- 15,000 - 19,999
- > 20,000

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DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

INDEX MAP

November 2020

State College Area Connector

EXISTING (BASE YEAR 2017) AVERAGE DAILY TRAFFIC VOLUMES

CENTRE COUNTY, PENNSYLVANIA

Figure 4 | 1 Inch = 4,800 Feet

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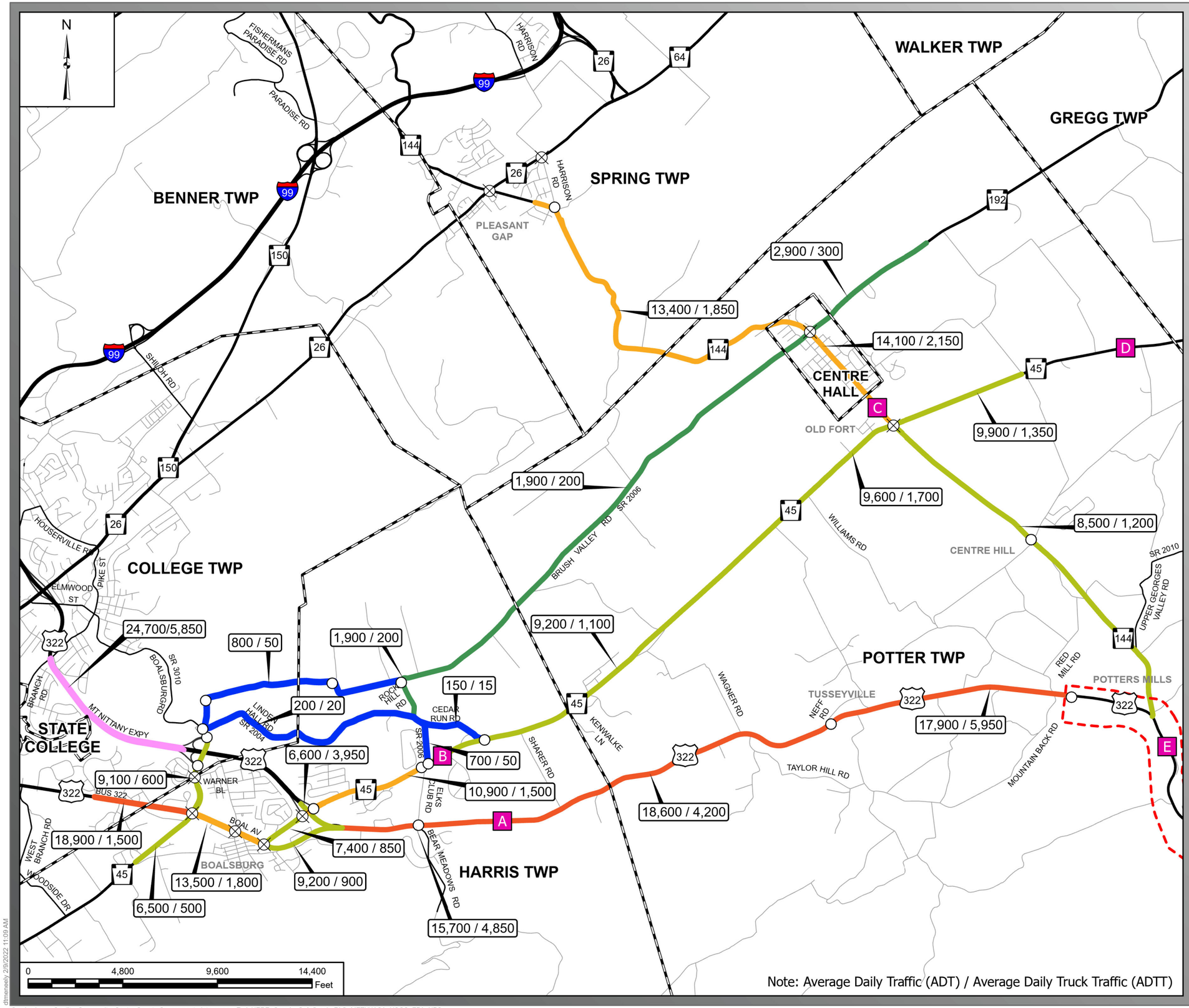

LEGEND

- Potters Mills Gap Transportation Project
- Municipal Boundaries
- A — Origin Destination Survey Sites

Intersections

- Signal
- Stop

Average Daily Traffic Volume

- 0 - 999
- 1,000 - 4,999
- 5,000 - 9,999
- 10,000 - 14,999
- 15,000 - 19,999
- >20,000

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DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

INDEX MAP

November 2020

State College Area Connector

NO BUILD (DESIGN YEAR 2050) AVERAGE DAILY TRAFFIC VOLUMES

CENTRE COUNTY, PENNSYLVANIA

Figure 5	1 Inch = 4,800 Feet

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2.4.2 Origin-Destination

An Origin and Destination Study was performed at five strategic locations within the study area as listed below and shown on **Figures 4 and 5**).

- Site A: US 322 Eastbound west of Sharer Road
- Site B: PA 45 eastbound west of Cedar Run Road
- Site C: PA 144 southbound north of PA 45
- Site D: PA 45 westbound east of PA 144
- Site E: US 322 westbound east of PA 144

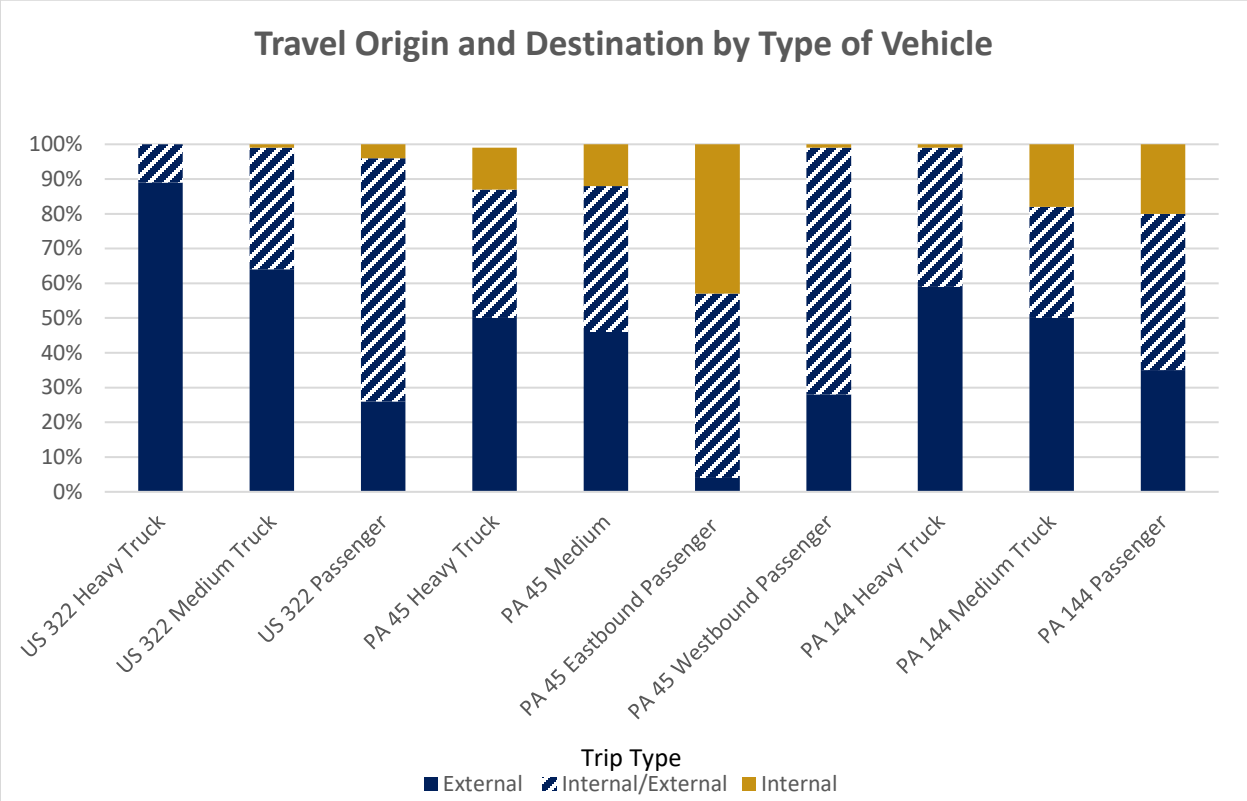
The Origin and Destination Study results for trucks and passenger vehicles are shown in Table 6 (and the following chart) for the following trip types:

- **External to External (E-E)** – Origin and destination are outside of the study area (through trip)
- **Internal to Internal (I-I)** – Origin and destination are inside the study area. (local trip)
- **External to Internal (E-I) or Internal to External (I-E)** – Origin or Destination is outside the study area

Heavy trucks, as defined for this analysis, are considered tractor trailers with an average of five axles and medium trucks are trucks with two to three axles. Table 6 also defines the typical weight definition used for truck types.

Table 6 – Origin-Destination Summary

Route	Sites	Truck		Trip Types		
		Type	Percent	E-E	I-I	E-I / I-E
Trucks						
US 322	Site A (EB) and Site E (WB)	Heavy	74%	89%	0%	11%
		Medium	26%	64%	1%	35%
PA 45	Site B (EB) and Site D (WB)	Heavy	23%	50%	12%	37%
		Medium	77%	46%	12%	42%
PA 144	Site C (SB)	Heavy	14%	59%	1%	40%
		Medium	86%	50%	18%	32%
Passenger Vehicles						
US 322	Site A (EB) and Site E (WB)	--	--	26%	4%	70%
PA 45	Site B (EB)	--	--	4%	43%	53%
	Site D (WB)	--	--	28%	1%	71%
PA 144	Site C (SB)	--	--	35%	20%	45%
Notes: Truck Types: H=Heavy Truck (>26,000 pounds); M=Medium Truck (14,000 to 26,000 pounds)						



Key findings of for travel patterns, are listed below.

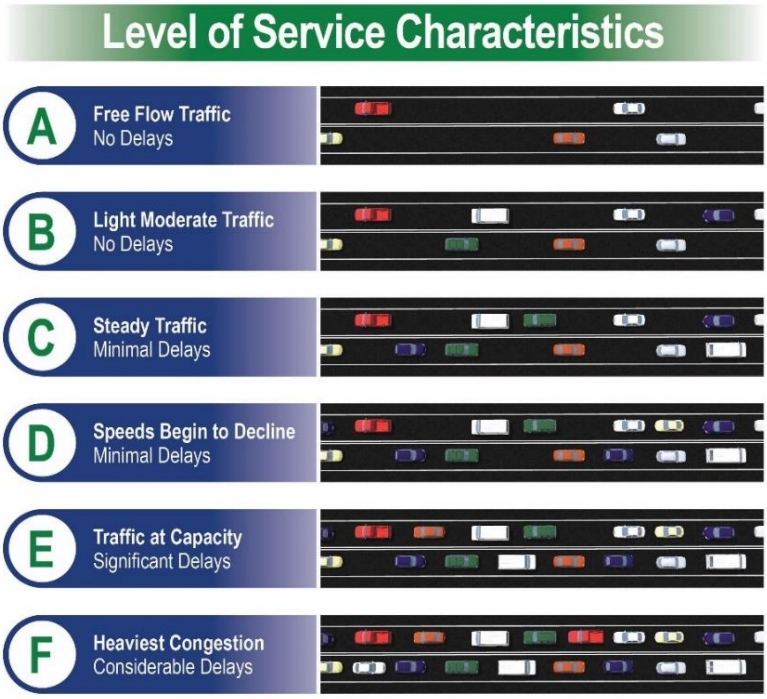
- **US 322 (Truck and Passenger Traffic)** – Heavy truck traffic is primarily through trips that travel through the PEL Study Area. Almost 90% of heavy trucks have an origin and destination outside the study area, and 100% of all heavy trucks have either an origin or destination outside of the study area. Heavy trucks are typically used for long-haul trips. Medium trucks, typically used for deliveries, have a similar trip type pattern; however, more medium trucks (35%) have an origin or destination within the study area. Alternatively, 74% of all passenger vehicles have either an origin, destination, or both within the study area.
- **PA 144 and PA 45 (Truck Traffic)** – Truck traffic using PA 45 and PA 144 exhibit a more even distribution in terms of the percentage of regional (E-E) and local (I-I or E-I/I-E) trips; approximately a 50/50 split, indicating more local truck traffic use these corridors. The posted weight restriction along PA 144 over Nittany Mountain likely shifts a portion of truck traffic destined to I-80 and I-99 to US 322. However, the percentage of E-E truck traffic clearly indicates that truck operators are not compliant with the posted weight limit restrictions on PA 144. It should be noted that the PA 45 eastbound truck

traffic at the western end of the study area has changed following the opening of I-99 with heavy truck traffic re-routing to take advantage of the new facility.

- **PA 144 and PA 45 (Passenger Vehicles)** – Passenger vehicles trip along PA 45 tend to be more local trips, or trips that start and end in the study area (44%). In comparison, 20% of passenger vehicle trips on PA 144 are local trips. However, it should be noted that eastbound and westbound PA 45 vehicle trips display different travel patterns. Nearly 28% of all westbound trips are regional trips, compared to 4% of the eastbound trips. Passenger trips along PA 144 are more evenly distributed between the different origins and destinations. Centre Hall Borough and Pleasant Gap are more dense areas which contribute to more diverse trip types that make up the passenger vehicle traffic volumes.

2.4.3 Level of Service (LOS)

LOS is a quantitative performance measure that represents the quality of service being provided along a roadway or at an intersection. The measures used to determine LOS for transportation system elements are called service measures. The Highway Capacity Manual (HCM) defines six levels of service, ranging from A to F. LOS A represents the best operating conditions from a traveler's perspective, and LOS F represents the worst. Typically, roadways are not designed to operate at LOS A during peak conditions but instead provide a lower LOS that balances costs and other impacts. The study area consists of both rural and non-rural (urbanized) areas. For rural areas, LOS A through LOS C is considered acceptable operation and unacceptable operation is considered LOS D through LOS F. For urbanized areas, LOS A through LOS D is considered acceptable operation and unacceptable operation is considered LOS E and LOS F. Within the PEL Study Area, the urbanized areas are in the vicinity of Boalsburg and Pleasant Gap as shown on Figures 6 and 7. In these urban areas, the target LOS would be LOS D and in the remainder of the study area (e.g. rural areas), the LOS C is the target LOS.



The LOS analysis for peak hour traffic was performed for the following facility types: signalized and unsignalized intersections, two-lane roadway segments, multi-lane roadway segments, freeway segments, and ramp segments. **Figure 6 – Existing (Base Year 2017) Level of Service** and **Figure 7 – No Build (Design Year 2050) Level of Service** illustrate the LOS for the Base Year (2017) and Design Year (2050), respectively. In the Base Year (2017) scenario, the study area intersections primarily operate at acceptable levels of service except in the Boalsburg area. The unsignalized intersections of US 322 and Elks Club Road and US 322 westbound on-/off-ramp and Boalsburg Road currently operate at unacceptable LOS during the peak hour time periods. The roadway segment analysis revealed that there are many areas that currently operate at unacceptable levels of service. US 322 from Red Mill Road/Mountain Back Road to the Mount Nittany Expressway, PA 45 from US 322 through PA 144, and PA 144 between Brush Valley Road and PA 26 all operate at unacceptable levels of service. The average travel speed during the Base Year (2017) conditions is between 5% and 15% less than the posted speed limit.

In the Design Year (2050) scenario, capacity and operations are anticipated to continue to deteriorate. In addition to the intersections along US 322 operating at unacceptable levels of service, intersections along PA 144 and PA 45 are expected to operate at unacceptable levels of service. PA 144 from the US 322 intersection north through the study area is anticipated to operate at unacceptable levels of service. US 322 from Red Mill Road/Mountain Back Road to the Mount Nittany Expressway will continue to operate at unacceptable levels. PA 45 from west of Centre Hall to US 322 in Boalsburg will continue to operate at unacceptable levels of service. Average travel speeds are projected to drop to between 15% and 25% less than the posted speed limit with the study area.

Figure 6 – Existing (Base Year 2017) Level of Service

LEGEND

- Potters Mills Gap Transportation Project
- Municipal Boundaries
- Urban Boundary

Intersections Level of Service

- Signal, Level of Service A-C
- Stop, Level of Service A-C
- Stop, Level of Service D
- Stop, Level of Service E-F

Level of Service

- Level of Service A-C
- Level of Service D
- Level of Service E-F

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DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

INDEX MAP

January 2021

State College Area Connector

EXISTING (BASE YEAR 2017) LEVEL OF SERVICE

CENTRE COUNTY, PENNSYLVANIA

Figure 6	1 Inch = 4,800 Feet

0 4,800 9,600 14,400 Feet

Service Layer Credits: Community: Centre County Government, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

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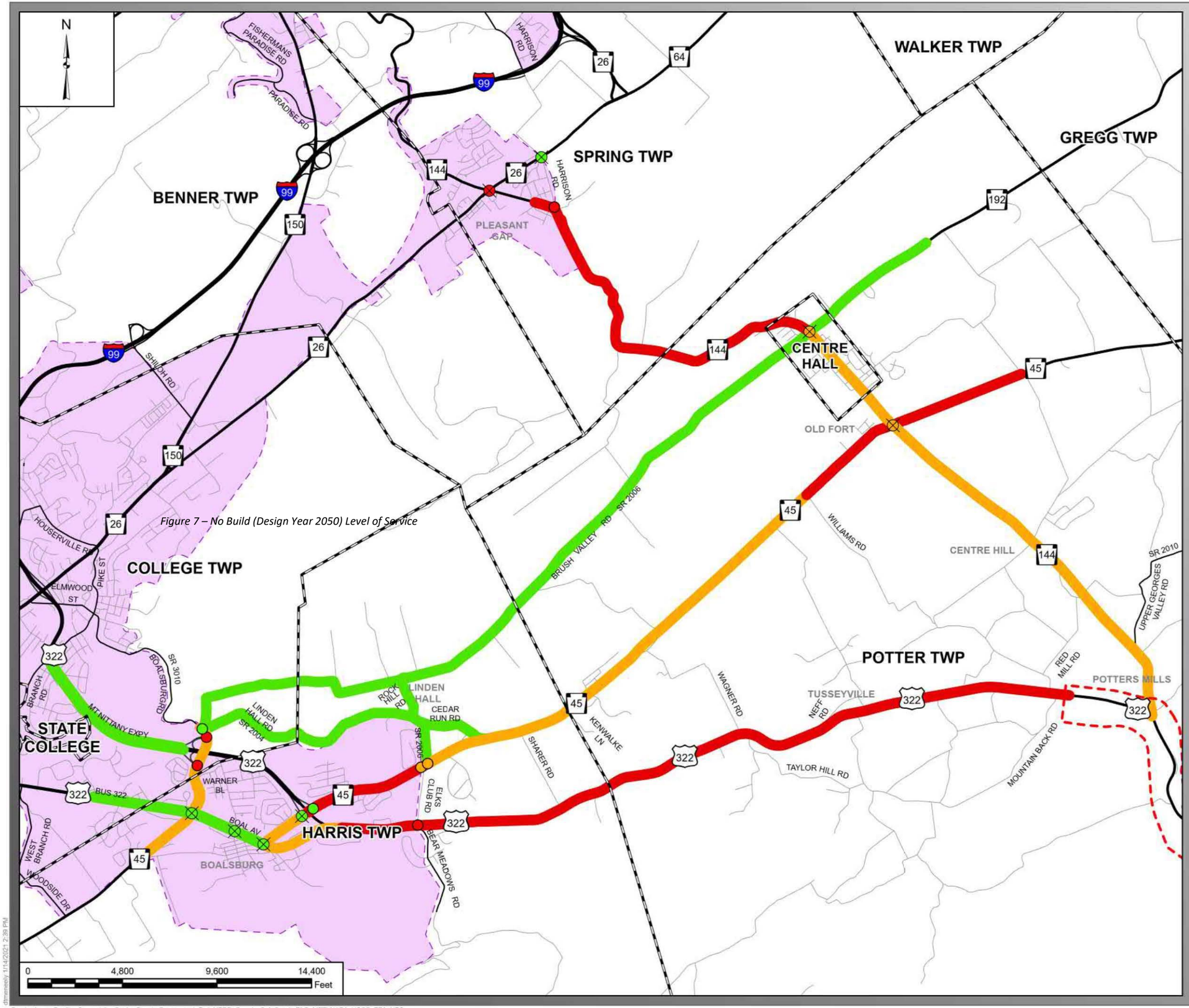

Figure 7 – No Build (Design Year 2050) Level of Service

LEGEND

- Potters Mills Gap Transportation Project
- Municipal Boundaries
- Urban Boundary

Intersections Level of Service

- Signal, Level of Service A-C
- Signal, Level of Service D
- Signal, Level of Service E-F
- Stop, Level of Service A-C
- Stop, Level of Service D
- Stop, Level of Service E-F

Level of Service

- Level of Service A-C
- Level of Service D
- Level of Service E-F

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DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION · UNITED STATES OF AMERICA

INDEX MAP

January 2021

State College Area Connector

NO BUILD (DESIGN YEAR 2050) LEVEL OF SERVICE

CENTRE COUNTY, PENNSYLVANIA

Figure 7	1 Inch = 4,800 Feet

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Service Layer Credits: Community: Centre County Government, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

3.0 Summary of Transportation Problems and Community Goals

The following provides a summary of the transportation problems identified in the PEL Study Area that document the need for transportation improvements. Also included is a summary of county and regional planning findings that address not only transportation problems but also community goals identified in adopted county and regional comprehensive plans, as summarized in Appendix B. This information is intended to facilitate the incorporation of environmental and community values into transportation decisions early in the planning process so that these considerations can be carried through project development and delivery. Incorporation of these community goals into the PEL Study will ensure that any resulting projects serve the community's transportation needs more effectively.

3.1 County and Regional Planning Findings

- **Centre County LRTP 2050** – I-80 impacts traffic patterns in Central Pennsylvania, particularly an increase in interstate truck traffic (which negatively affects traffic conditions on PA 144, PA 322, and PA 26) and the safety and quality of life in Centre County communities traversed by these roadways. The LRTP 2050 identifies the concerns in these corridors within the PEL Study Area to include vehicular congestion on a daily basis during peak hours of travel due to high volumes of interstate truck traffic, commuters, and special-event traffic; traveler delays from frequent incidents; and traffic conflicts that result in crashes and safety issues. As Centre County continues to grow as the economic hub for surrounding areas in Central Pennsylvania, vehicular traffic is projected to increase to volumes that result in poor levels of service, which will exacerbate the needs associated with congestion, safety, and incidents.
- **Penns Valley Regional Comprehensive Plan (adopted in January 30, 2006) –**
    - Devise strategy to enable a new road to convey vehicles into and through the region quickly and efficiently with strictly controlled points of local access and *"to proactively accommodate their fair share of growth and development in a compact and dispersed configuration that reflects the Region's past development patterns rather than the consumptive sprawling patterns of contemporary society."*
    - PA 45
        - Designate (along with PA 192) as scenic byways
    - PA 144
        - Preserve the Centre Hall "Main Streetscape" (South Pennsylvania Avenue) through historic preservation and local economic revitalization

- US 322
  - Potential major development pressures likely to result from the eventual improvement of the US 322 corridor. Access provided by a new highway "*could change the past economic conditions and introduce unwanted growth that is inconsistent with the Region's paramount goal to protect its rural way-of-life.*"
  - Identify this corridor as the route for the new major highway to connect the existing four-lane US 322 highway to the east with the Mount Nittany Expressway
  - Notes that "*local officials would strongly object to the construction of an interchange within the Region as it could produce an inducement to large-scale development that would conflict with the Region's overall community development objectives.*"
- Commuter bus service – plan promotes working with the CCMPO and CATA to study the feasibility of expanding commuter bus service to the Penns Valley Region

- **Centre Region Comprehensive Plan (dated November 2013) –**
  - Promote the expansion of the region's pedestrian and bicycle system and transit services, including within the PEL Study Area.
  - Uses a Regional Growth Boundary and Sewer Service Area as a tool to influence where growth occurs in the Region. The current Regional Growth Boundary extends into the western end of the PEL Study Area and includes Lemont to the north then follows the Mount Nittany Expressway to then extend eastward to encompass the residential subdivisions along both the PA 45 and US 322 Corridor up to and including the residential subdivision, Huntridge Manor.
- **Centre Region Bike Plan (adopted December 15, 2015; amended May 23, 2016) –**
  - Identifies critical gaps in the Centre Region Bicycle Network.
  - Recommends a Bike Corridor in Harris Township (referred to as Corridor Hh) extending along PA 45 from the Mount Nittany Expressway to Rosslyn Road.
- **Harris Township Comprehensive Rural Rezoning Report (March 2019) –**
  - Proposed rural zoning districts and ordinance amendments drafted by the Harris Township Planning Commission for the areas of the Township outside the Regional Growth Boundary and Sewer Service Area based on the identified long-range planning goals for the rural properties that build upon the 2013 Centre Region Comprehensive Plan.

- **Boalsburg Small Area Plan (June 13, 2016) –**
    - Establishes a long-range vision to guide the future growth and development of the Boalsburg area in the western portion of the PEL Study Area.
    - Proposes the transformation of the Boal Avenue (US 322 Business) corridor into a "welcoming and attractive gateway" and providing transportation facilities that balance the needs of pedestrians, bicyclists and motorists through streetscape improvements. This includes a recommendation to have the road considered for a "road diet" to reduce the number of travel lanes and provide a center turning lane and bike lanes.
- **Nittany Valley Regional Comprehensive Plan (adopted in September 2004; updated 2019) –**
    - *Nittany Valley Region local officials strenuously oppose an extension of a highway from Exit 81 to US 322 across Nittany Mountain "for environmental and economic reasons."*

Summary:

- ***Promote protection of historic rural communities, preserve the agricultural setting of Penns and Nittany Valleys and be compatible with local and regional land use plans.***
- ***Address safety problems while preserving rural nature and/or villages in the study area communities.***
- ***Address recurrent vehicular congestion from high volumes of truck traffic, commuters, and special-event traffic; traveler delays from frequent incidents; and traffic conflicts that result in crashes and safety issues.***
- ***Consider public transit, park-and-ride lots, pedestrian and bicycle facilities, and other non-motorized traffic (e.g., horse and buggy) to address commuter and internal travel needs in the PEL Study Area.***

3.2 Traffic and Safety Study Findings

- State College area continues to be the primary origin/destination for the local market.
- US 322
    - Continues to serve as the main travel route within the PEL Study Area.
    - An increase in traffic from the northwestern and southeastern Pennsylvania regions, in addition to interstate traffic, adds additional traffic and more heavy and medium trucks are using US 322 as a through route for regional and interstate travel purposes, and the current volume of truck traffic has increased along US 322.
    - The number of non-collisions, hit fixed object crashes, and total crashes have decreased.
    - Rear-end crashes have increased and are the most frequent and that is most likely due to the mix of local traffic and through traffic, and uncontrolled access along the corridor.

- PA 45
    - Commuter traffic has grown due to development activities particularly close to State College.
    - Total, hit fixed object, and angle crashes have increased. Angle crashes (49 crashes; 34%) are most prevalent and are most likely due to higher travel speeds, substandard roadway elements, and uncontrolled access points. Additionally, angle crashes tend to lead to more severe crashes.
- PA 144
    - A number of heavy vehicles have been observed to continue traversing Nittany Mountain despite the ban on trucks on PA 144.
    - Total crashes and angle crashes have decreased.
    - Hit Fixed Object crashes (52 crashes; 47%) are the primary crash type and are most likely due to topography which consists of a significant number of substandard horizontal and vertical curves.

Summary:

- ***US 322 serves as the main travel route for local, regional, and interstate traffic including truck traffic and LOS will reduce to LOS E for the entire length within the study area by 2050. While local improvements have led to a reduction in total, non-collision, and hit fixed object crashes; rear-end crashes increased and indicate a continued problem with congestion, mix of local and through traffic and uncontrolled access conditions.***
- ***PA 45 commuter traffic continues to increase in the western segments due to increasing residential development and LOS will reduce to LOS E from Kenwalke Lane intersection to Mount Nittany Expressway by 2050. Crashes, in particular angle crashes, have also increased in these road sections and indicate substandard roadway elements and uncontrolled access points.***
- ***PA 144 heavy truck traffic continues to include regional through traffic despite weight restrictions and reduced truck speed over Nittany Mountain.***

3.3 Transportation Connectivity and Multi-Modal Concerns

- US 322 is part of the NHS and a key trucking corridor that is a two-lane roadway and does not meet modern design standards desirable to safely and efficiently accommodate the high truck volumes present on the roadway.
- The US 322 corridor carries a mix of local and through traffic and a mix of all vehicle types (automobiles, medium trucks, and heavy trucks). It is classified as a principal arterial, but due to substantial roadside land development and the sparse local street network, US 322 also operates as a collector route.
- On a local level, US 322 serves as a key connection to the State College area, providing commuter and freight access to the borough's economic hub and to Penn State University's main campus.

- On a regional and interstate level, US 322 serves as the prime connection between many cities to the east and west of Centre County.
- Amish communities exist in the eastern and northern edges of the PEL Study Area, and the roadways frequently have horse-and-buggy traffic that must compete with faster-moving cars and trucks.
- Centre Region Bike Plan (adopted December 15, 2015; amended May 23, 2016) recommends a Bike Corridor in Harris Township (referred to as Corridor Hh) extending along PA 45 from the Mount Nittany Expressway to Rosslyn Road.
- Bicycle Pennsylvania Route G is part of the statewide bicycle routes that serve as bicycle touring routes for travel, tourism, and recreation and extends through Potter Township and Centre Hall (using Brush Valley Road) and extending into Harris Township (using Brush Valley Road to Rock Hill Road and Linden Hall Road) and then into College Township (using Linden Hall Road to connect to Boalsburg Road to Warner Boulevard) and out of the PEL Study Area south by way of PA 45.
- CATABUS Fixed Route Service includes five routes that service the more western developed areas of the study area:
  - Route B (Boalsburg) which services Harris Township using both US 322 and PA 45
  - Route C (Houserville) which services College Township using PA 26
  - Route HM (Toftrees and Nittany Mall) which services College Township using PA 26
  - Route P (Tussey Mountain) which services Harris Township using US 322
  - Route XG (Pleasant Gap) which services College, Benner, and Spring Townships using PA 26

Summary:

- ***The NHS (US 322 and PA 144) within the PEL Study Area does not safely and efficiently accommodate high volumes of interstate and regional truck traffic and conflicts with slower-moving local traffic.***
- ***US 322, PA 144, and PA 45, as currently designed and with existing high-volume truck and commuter traffic, do not accommodate local access and non-vehicular traffic.***
- ***Transit service is primarily limited to the more developed western areas of the study area using PA 26, US 322, and PA 45.***

4.0 Study Purpose and Need

The PEL Study process, like the NEPA process, begins with the establishment of the purpose and need to identify transportation issues in an area. The purpose and need provides a foundation to identify and evaluate a range of alternative solutions. As an independent project(s) is advanced into the NEPA process, the PEL Study purpose and need statement may be refined to document the specific needs within a more defined project area(s), which will facilitate the screening of proposed project alternatives on their ability to meet the refined project purpose and need.

4.1 Study Area Needs

The needs include congestion, safety, and system continuity as summarized below:

- High peak hour traffic volumes cause congestion and result in unacceptable LOS (LOS D [rural only], E, or F) on US 322, PA 45 and PA 144 roadways and intersections within the study area.
    - US 322 serves as the main travel route for local, regional, and interstate traffic, including trucks, within the PEL Study Area. Currently (2017) during the peak hours, US 322, between the US 322 Mount Nittany Expressway and the Mountain Back Road/Red Mill Road intersection (just west of Potters Mills), operates at a LOS E with an average travel speed that is 10 percent less than the posted speed limit. By 2050, peak hour traffic volumes are anticipated to increase 27 percent which will increase congestion and worsen the LOS on US 322. While a LOS E is still anticipated in 2050, the travel speed will be further decreased with an average travel speed 15 percent less than the posted speed limit.
    - PA 45 currently (2017) operates at unacceptable LOS (LOS D or E) during the peak hours and will continue to deteriorate through 2050.
    - PA 144 currently (2017) has an unacceptable LOS (LOS E) during peak hours, from north of Centre Hall to Pleasant Gap. By 2050, PA 144 is anticipated to have unacceptable levels of service (LOS D or E) from US 322 to Pleasant Gap.
    - Unsignalized intersections along US 322, PA 45, and PA 144 are anticipated to operate at unacceptable LOS (LOS D, E, or F) due to high volumes of traffic along the uncontrolled main roadway which limit the availability of gaps in the traffic for making turning movements.
    - US 322 averages three times more truck traffic within the study area in comparison to other similar roadways statewide, and truck traffic is expected to increase by 31 percent along the corridor by 2050. The additional truck traffic increases overall congestion and contributes to unacceptable levels of service. Additionally, between 2014 and 2018, nearly 23 percent of all crashes along US 322 were caused by a heavy vehicle, and 41 percent of all US 322 crashes involved at least one truck.

- Existing roadway configurations and traffic conditions contribute to safety concerns in the study area.
    - PA 45 between Elks Club Road and the PA 144 intersection has narrow lane widths and shoulders, with the presence of horizontal curves and passing zones, numerous driveway access points, and hazards adjacent to the roadway (limited clear zones). The HSM analysis indicates a potential for safety improvements in this area as the expected (normalized) number of crashes is higher than the predicted (baseline) number of crashes.
    - PA 144 between Centre Hall and Pleasant Gap exhibits roadway conditions similar to PA 45, but also has long stretches with steep grades and horizontal curves. The HSM analysis also indicates a potential for safety improvements in this area as the expected (normalized) number of crashes is higher than the predicted (baseline) number of crashes.
    - Although recent improvements along US 322 have reduced crash frequency and crash severity throughout the corridor; the HSM analysis results indicate the potential for safety improvements at unsignalized intersections. Increasing traffic along US 322 has reduced the number of gaps available for side street and driveway traffic attempting to enter US 322. This causes drivers to make turning movements outside of their comfort zone which contributes to crashes at side street and driveway intersections. Additionally, the large percentage of through traffic exacerbates the issue as these drivers may be unfamiliar with the roadway characteristics. Similar conditions exist at the unsignalized intersections along PA 144.
- The roadway network and configuration in the study area lacks continuity and does not meet driver expectations.
    - US 322 is on the NHS and is classified as a principal arterial that is intended to provide long-distance connections. US 322, adjacent to the study area (near both PMG and Boalsburg), is a four-lane, limited-access, divided highway facility with exit and entrance ramps to provide access to the local roadway network. This type of roadway is conducive to higher travel speeds and supports regional and interstate travel patterns. These adjacent sections of US 322 feed traffic into the study area, where US 322 is currently a two-lane, non-divided highway with unrestricted access to driveways and intersecting roadways. The abrupt change in roadway configuration and characteristics creates a roadway network that lacks continuity of facility type and function.
    - Within the study area, US 322 serves local, regional, and interstate traffic (including truck and commuter traffic). The road also services public transit, farm equipment traffic, and bicycle traffic. The change in the roadway cross-section at both ends of the corridor creates inconsistencies which may not meet driver expectations particularly for regional and interstate traffic. The potential for additional uncontrolled access points along US 322 would continue to degrade roadway continuity along the corridor and create additional locations for conflicts that could result in crashes.

- PA 144 is a two-lane roadway, with select areas having a passing lane, that serves local, regional, and interstate traffic. PA 144 is classified as a principal arterial that is intended to provide long-distance connections but has a weight restriction from the PA 192 intersection in Centre Hall, over Nittany Mountain, to the PA 26 intersection in Pleasant Gap. Observations indicate that some heavy truck traffic continues to use the road despite the restrictions. The roadway also serves as the "Main Street" (South Pennsylvania Avenue) for the Borough of Centre Hall, and traffic in this corridor includes pedestrian, farm equipment traffic, bicycle, and horse-and-buggy traffic that conflicts with the through traffic, in particular truck traffic.
- PA 45 is a two-lane roadway that is classified as a minor arterial highway that is intended to provide higher travel speeds with minimum interference to through movement. The corridor includes multiple intersections and driveways and serves as a commuter route to and from the State College Area and outlying residential developments and communities. Traffic in this corridor is primarily (almost 80%) local traffic; however, it should be noted that PA 45 westbound traffic experiences more regional through traffic (28%) than PA 45 eastbound traffic (4%), and only 1% of PA 45 westbound traffic appears to be local trips with both origin and destination within the study area. The road also services public transit, bicycle, farm equipment traffic, and horse-and-buggy traffic.

4.2 Study Purpose

The purpose of this study is to develop and evaluate a range of alternatives to improve mobility and meet interstate and regional through traffic and local needs by reducing congestion, addressing safety, and improving system continuity within the study area while accommodating other modes of traffic (bike, pedestrian, horse and buggies, farm equipment traffic, and public transit) where appropriate, and supporting regional land use visions and goals.

4.3 Logical Termini and Independent Utility

Logical termini are defined as the rational end points for a transportation improvement and the review of the environmental impacts from such an improvement, identified through the concurrent assessment of the identified project needs and purpose and of known features (land uses, population concentrations, cross route locations, etc.). FHWA guidance on the determination of logical termini (FHWA, 1993) recommends that termini be established such that a project/proposal should:

- Connect logical termini and is of sufficient length to address environmental matters on a broad scale,
- Will not restrict consideration of alternatives for other reasonably foreseeable transportation improvements, and
- Has independent utility or independent significance, i.e., be useable, and be a reasonable expenditure even if no additional transportation improvements in the area are made [23 CFR 771.111(f)].

Logical termini and independent utility will be defined as part of the identification and development of the range of alternatives to be analyzed in the PEL Study. It is anticipated that the logical termini and independent utility will be identified for all short-term and long-term project alternatives that may evolve from this PEL Study and be advanced in future environmental studies when project funding becomes available.

Appendix A

State College Area Connector Study Area

The Planning and Environmental Linkage (PEL) study is a planning study that provides flexibility for the lead agency in identifying transportation problems and improvement solutions within a corridor or a larger subarea. A corridor planning study generally defines a linear planning study with the focus on a single major roadway, whereas a subarea planning study encompasses a nonlinear planning area with multiple and interconnected roadway corridors. This broader approach to transportation planning allows for non-traditional transportation partners to be involved in early discussions about more sustainable integration of multiple transportation projects with the plans for the community, other public infrastructure, and economic development initiatives, while also considering the environmental impacts of the multiple plans. The PEL Study includes an assessment of identified improvement solutions in the corridor or subarea and considers whether portions of the improvement solutions can be cleared environmentally, designed, and constructed as stand-alone independent projects.

Subarea PEL studies are similar to corridor studies, with the distinction that a subarea study generally addresses a total planning context and the broader transportation network for the area. In particular, traffic congestion and safety, land use and housing, growth management, and resource protection, and their interactions with the transportation network, are a part of a subarea study. Since the subarea PEL Study provides a broader context, it can be used to identify multiple stand-alone transportation projects which include multiple corridors and transportation modes.

The SCAC PEL Study is being conducted at the “subarea” level in order to address the development of a defined portion of a region in more detail than can be done in county-wide or statewide plans. The SCAC initial data collection area is approximately 70 square miles, extends through the southern portion of Centre County, and includes all or parts of six municipalities: Centre Hall Borough and Potter, Spring, Harris, College, and Benner Townships. This study area was defined sufficiently large enough to connect to three regional/interstate connection points (improved sections of US 322 at Potters Mills Gap and the Mount Nittany Expressway and I-99) to address regional/interstate traffic needs but not so large as to overlook local transportation issues and needs. Specifically, the study area was defined to include the key transportation routes that provide access to regional destinations and beyond via major transportation routes such as U.S. Route (US) 322, Pennsylvania Route (PA) 144, PA 45, and Interstate 99 (I-99) which, in turn, provides access to nearby I-80.

The initial study area boundaries are also limited by topography, including large mountain ranges to the north and south, and by critical features such as the State Correctional Institution at Rockview (which is eligible for the NRHP and includes a potable water supply reservoir on Nittany Mountain). In general, the SCAC study area encompasses the southwestern portion of Penns Valley that extends between the Nittany Mountain to the north and the Seven Mountains area of the Tussey Mountain range to the south. Parts of Nittany Valley on the north side of the Nittany Mountain are also included within the study area, as is the more urbanized Centre Region that connects both valleys at the southern end of the Nittany Mountain.

The limits of the PEL Study Area will be refined as the process advances, as appropriate. It can be modified, as needed, to ensure that any relevant factors that may influence the study needs (and the development

of the range of alternatives that would address these needs) are incorporated, including identification of logical project termini, assessment of environmental impacts, and development of potential mitigation.

The SCAC PEL Study is anticipated to identify multiple stand-alone projects having independent utility and the associated funding requirements for the full subarea. The PEL Study is intended to help find more creative solutions to address the subarea's needs. It is intended that the resulting stand-alone projects to be carried forward for programing and project development will have a more clearly defined purpose and need, be less expensive, require less environmental review because environmental impacts have been avoided, and will likely have more community support if developed in a participatory manner.

Since the SCAC PEL Study is anticipated to result in the identification of multiple stand-alone projects, the study purpose and need statement did not include a list of project-specific logical termini. Logical termini will be identified in the next phase of the PEL Study – the development and analysis of the Range of Alternatives. Logical termini will continue to be refined as individual projects with independent utility are identified during the alternative development and analysis to address study area needs. It is intended that the SCAC PEL Study will result in an Implementation Plan with short-term and long-term stand-alone independent projects prioritized along with their logical termini, project cost estimates, and preliminary environmental impact findings.

Appendix B
County and Regional Planning
Visions and Goals
(List of Plans and Studies, with hyperlinks included at end of Appendix)

1. Centre County

The Centre County Long Range Transportation Plan (LRTP) 2044 (adopted in 2015 and updated in 2018) states that the county's strategic location at the intersection of I-80 and I-99 and US 322 has fostered a partnership between economic development entities in Bedford, Blair and Centre Counties, and Penn State University. Centre County has a unique mix of rural, suburban and urban characteristics and the LRTP was developed in an effort to be sensitive to the context of specific areas where transportation improvement projects are being advanced. The LRTP 2050 (adopted September 22, 2020) has been prepared and is under public review and comment. It is expected to be approved in August 2020.

The following goals and objectives were retained and refined from the LRTP 2040 for the new LRTP 2050.

- Goal 1 – Improve Safety and Security
  a) Reduce crashes
  b) Reduce conflicts between motorized and non-motorized transportation modes
  c) Improve safety of intersections and roadway alignments
- Goal 2 – Preserve the Existing Transportation System
  a) Conduct preventative maintenance that prolongs useful life of transportation assets
  b) Rehabilitate and modernize public transportation facilities and fleets
  c) Improve transit ride quality
- Goal 3 – Optimize System Management and Operation
  a) Reduce congestion, improve Levels of Service, reduce travel times
  b) Increase public transportation service frequency and capacity
  c) Improve system functionality (e.g., signal upgrades, ITS applications, access management) through smart infrastructure and/or technology
- Goal 4 – Improve Integration and Connectivity of the Transportation System
  a) Eliminate/overcome barriers (e.g., closures, detours and delays, weight restrictions) in key corridors to maintain system resiliency
  b) Establish/maintain intermodal connections
  c) Introduce new connections between existing network patterns (e.g., street connectivity, linking bicycle/pedestrian routes, connections between transit routes and providers)
- Goal 5 – Improve Accessibility and Mobility Options for People and Freight
  a) Improve public transportation services (e.g., routes, ride share opportunities, vanpools, park-and-ride lots, customer information and services)
  b) Improve pedestrian and bicycle facilities
  c) Improve access to airports, freight distribution facilities, or major industrial districts
- Goal 6 – Complement Planned Growth and Development Areas

a) Invest in transportation that is consistent with county, regional and municipal Comprehensive Plan documents
b) Serve existing and planned future growth areas

- Goal 7 – Maintain the Environment and Air Quality Conformity
  a) Maintain or improve air quality
  b) Promote energy conservation and system resiliency through decreased exclusive reliance on gasoline
  c) Avoid negative impacts to endangered or threatened species, key natural habitats, agricultural lands and historic and cultural resources
- Goal 8 – Enhance Economic Vitality
  a) Improve access and/or enhance freight movement to regional and national economic centers
  b) Encourage tourism
  c) Encourage infill development, the redevelopment of brownfield sites within reach of existing infrastructure, and the overall revitalization of core communities

The Centre County Comprehensive Plan Phase I (dated 2003) includes background studies, inventories of existing conditions, goals and recommendations to serve as a foundation for Phase II, Growth Management and Community Development as required by the Pennsylvania Municipalities Planning Code (MPC). These goals and recommendations, revised and updated, continue to serve as a vision and a general direction for policy and community improvement. In summary, the County-wide Planning Goals include:

- Natural Resource Goal - Identify, preserve, and monitor Centre County's environmental natural wildlife resources for the benefit of present and future generations.
- Air and Climate Goal - Identify, preserve, and monitor Centre County's environmental natural resources for the benefit of present and future generations.
- Economic Development Goal - Identify and promote industry specific economic development initiatives to maintain and grow a diverse economic base for the County and each of its planning regions.
- Community Facilities and Services Goal - Promote the appropriate location and maintenance of existing and proposed community facilities, utilities, and services for the citizens of Centre County
- Historic and Cultural Resources Goal - Preserve Centre County's historic and cultural resources for the benefit of current and future generations.
- Housing Goal - Ensure decent, safe, sanitary and affordable housing which is in suitable living surroundings and compatible with the natural environment, for every individual, regardless of age, sex, income, religious or ethnic background.

The vision of the Centre County Comprehensive Plan Phase II was developed to be consistent with the goals of each municipality and to be compatible with the land use strategies of neighboring counties. This plan was intended to build upon the goals established in the Phase I plan. The county developed Phase II Implementation Strategies between 2016 and 2020 that include the following components, along with a summary of the goals and strategies, with a particular focus on those associated with the PEL Study Area municipalities:

- Land Use (January 2016) – The goals and strategies focus on the need to use the county comprehensive plan, regional comprehensive plans, future land use maps, and official municipal maps to address land use and zoning inconsistencies and to promote smart growth.
    - Centre Region (College, Ferguson, Halfmoon, Harris and Patton Townships, and State College Borough) remains the most developed region. Developed lands increased by 0.3% between the 2010 and 2014 survey to 21.7% of the region's total land area. Among the major land uses, both forest and agricultural lands decreased while residential land uses increased.
    - Nittany Valley Region (Benner, Marion, Spring and Walker Townships, and Bellefonte Borough) is the second most developed planning region in the county. In the major land use categories, forest lands decreased while agricultural and residential land uses increased. Nittany Valley experienced more growth than the Centre Region.
    - Penns Valley Region (Gregg, Haines, Miles, Penn and Potter Townships, and the boroughs of Centre Hall and Millheim) remains largely undeveloped. Among the major land use categories, both forest and agricultural lands decreased, and residential land uses increased. The Penns Valley Region experienced the greatest loss in agriculture lands by acres.
- Economic Development (June 2016) – The goals and strategies presented focus on the need to drive capital investment toward existing infrastructure, i.e., build on existing assets and support revitalization for communities where the economy is in transition.
- Energy Conservation (August 2016) – The goals and strategies presented focus on energy conservation and renewable energy sources. Specific to transportation, this includes pursuing the expansion of park and ride stations for commuters, including facilities in the Penns Valley Region.
- Public Safety (April 2017) – The goals and strategies presented focused on gaps in fire protection infrastructure, in particular access to water, and the reliance on volunteer or state-based public services and did not specifically address transportation related concerns, like emergency service response times.
- Historic Resources (August 2017) – The goals and strategies presented focus on historic preservation, including the promotion of community revitalization and long-term sustainability. This effort identified Penns Valley and then Nittany Valley as the top two planning regions in the county with adverse impact potential to preservation efforts due to economic development and/or decline and the ever present possibility that historic resources may be affected by encroachment of human activities, unintended land use conflicts, or rapid physical deterioration due to neglect.
- Recreation (February 2018) – The goals and strategies presented focus on access to recreation opportunities, interagency cooperation and municipal support to improve and construct recreation infrastructure, and to address gaps in the trail system. The Penns Valley Rail Trail (Penns & Brush Valleys Rail Trail Feasibility Study, 2015) was included as one of four trail gap assessments. It was determined that the original proposed 27-mile regional trail would refocus on 4 community-based trails.
- Communications and Information Technology (May 2018) – The goals and strategies presented focus on access to broadband internet services and the need to mitigate the visual impacts associated with wireless infrastructure.
- Sewage Facilities Management (December 2018) – The goals and strategies presented focus on malfunctioning onlot sewage disposal systems and regionalization of public services management operations. The latter described the use of public sewer service areas to identify Regional Growth

Boundaries used by the Centre Region COG to focus larger developments within the boundary and deter development of regional impacts outside the boundary.

- Community Facilities and Services (September 2019) – The goals and strategies presented focus on identifying more multi-use, shared facilities and more opportunities to increase citizen participation in planning for local and regional community facilities and services. This included multi-use facilities that serve as a park and ride locations. The State College Area Connector (US 322/SR 144/SR 45 improvements) was also noted.
- Agriculture (January 2020) – The goals and strategies presented focus on opportunities to support agricultural related businesses and industries and the implementation of Best Management Practices to improve environmental conditions locally and regionally. It notes how transportation limited to automobile access is a sign and symptom of "urban sprawl" that is the greatest challenge facing farmland preservation.

As part of the development of the Comprehensive Plan, planning regions were asked to prioritize multiple issues. Below are the issues for the Penns Valley and Nittany Valley Planning Regions.

High Priority Issues

- Economic Development
  - Penns Valley
    Individuals and families need living wage employment in sustainable occupations
  - Nittany Valley
    Available lands and buildings for economic development projects must be identified and marketed.
- Energy Conservation
  - Penns Valley
    Energy conservation should be embraced at the community-level by local government, businesses, and residents to collectively reduce energy consumption.
  - Nittany Valley
    Energy conservation should be embraced at the community-level by local government, businesses, and residents to collectively reduce energy consumption.

    Renewable energy sources, facilities and technologies should be actively explored and encouraged where best suited for utilization.
- Historic Resources
  - Penns Valley
    Historic preservation is a de facto conservation method that should be further explored for our long-term community sustainability.
  - Nittany Valley
    Historic preservation is a de facto conservation method that should be further explored for our long-term community sustainability.

- Recreation
  - Penns Valley
    Access to recreation opportunities remains a quality of life factor that is key to economic development, individual health and wellness, and conservation and preservation efforts
  - Nittany Valley
    Access to recreation opportunities remains a quality of life factor that is key to economic development, individual health and wellness, and conservation and preservation efforts
- Communications and Information Technology
  - Nittany Valley
    Wireless infrastructure is becoming more prevalent in the landscape and municipalities seek ways to mitigate visual impacts.
- Agriculture
  - Penns Valley
    The agriculture sector is vital to the County's overall economy and there are opportunities to support agricultural related businesses and industries.
  - Nittany Valley
    The agriculture sector is vital to the County's overall economy and there are opportunities to support agricultural related businesses and industries.

Medium Priority Issues

- Community Facilities and Services
  - Penns Valley
    Need to explore more opportunities to increase citizen participation in planning for local and regional community facilities and services.
  - Nittany Valley
    Need to explore more opportunities to increase citizen participation in planning for local and regional community facilities and services.

2. Planning Regions and Municipalities

Penns Valley Region

The Penns Valley Region encompasses seven municipalities, including two of the PEL Study Area municipalities; Centre Hall Borough and Potter Township. The current Penn Valley Regional Comprehensive Plan was adopted in January 30, 2006. The plan notes that historically, the planning region has retained its rural character as a fertile farming valley between two mountain ranges on the north and south. Centre Hall and Millheim Boroughs have developed as compact towns and activity areas for the planning region along with several smaller crossroad villages. Some suburban development has occurred outside of these towns and villages, but large areas remain undeveloped. The region includes a small public airport accessed from PA 144. Centre Air Park provides limited services for flight instruction, aircraft rental, and aerial surveying. The region also includes a large Old Order (Amish) community primarily outside the PEL Study Area. However, the Amish community has thrived and some of their farms and one

school are within the PEL Study Area in the northeastern part of Potter Township, just east of Centre Hall, along PA 192 and PA 45.

The plan includes a "Community Vision" to preserve the region's natural and cultural resources. The plan contains "Community Planning Goals" in an effort to guide development and help the planning region preserve its rural character. This effort included devising a strategy that will enable a new road to convey vehicles into and through the region quickly and efficiently with strictly controlled points of local access and "to proactively accommodate their fair share of growth and development in a compact and dispersed configuration that reflects the Region's past development patterns rather than the consumptive sprawling patterns of contemporary society." PA 45 serves most of the region and runs in an east/west direction through the entire region. US 322 crosses the southeast corner of Potter Township with a northwest/southeast alignment and PA 144 runs in a north/south direction through Potter Township and Centre Hall Borough. The plan refers to these routes as "arterials" that "emphasize greater mobility than land access and individual driveway cuts should occur very rarely except in outlying rural areas."

The plan includes multiple recommendations for transportation improvements within the PEL Study Area that are intended to align with the vision and goals of the planning region municipalities. Specific recommendations for the PEL Study Area roadways that support the Region's effort to preserve its rural historic character include the following.

- PA 45
  - Designate (along with PA 192) as a scenic byway
- PA 144
  - Preserve the Centre Hall "Main Streetscape" through historic preservation and local economic revitalization.
- US 322
  - Identify this corridor as the route for the new major highway to connect the existing 4-lane US 322 highway to the east with the Mt. Nittany Expressway. The plan bases this recommendation on the following factors related to the Region's "Community Vision":
    - The existing corridor has already impacted its surroundings and has created an expectation of highway access and traffic flow to local property owners;
    - This alignment offers the least threat for the division and loss of productive farmlands and disruption of active farming operations concentrated within Potter Township;
    - This alignment avoids the creation of a new highway corridor that could induce future demand for development within the Region that is committed to preservation of its historic and rural character;
    - This alignment offers the least adverse environmental and cultural impact; and
    - Context sensitive designs for this corridor could adequately convey through traffic movements while offering suitable access with parallel access roads to existing businesses and industries along the highway.

Regional Goals of the Plan include the following.

- Protect the watersheds and wellheads throughout the Region.
- Preserve prime farmlands and productive farms amid historic settings.
- Develop strategies to protect important natural features (e.g., forested mountains, PA Gamelands, caves, State Parks and Forests and the Seven Mountains Scout Camp.
- Steer development away from steep slopes, floodplains, wetlands and limestone geology to avoid stormwater and drainage problems.
- Promote greenways along important streams as a means of protecting local surface water quality and providing wildlife habitats.
- Vigorously defend the rural character and lifestyle throughout much of the Region.
- Provide an overall Regional land use and traffic strategy that can be used, upon completion, to better market the Region's tourist-based features and activities without inviting unwanted adverse uses and impact.
- Develop an ongoing process of dialog between the municipalities to assist each other and meet future challenges together.
- Protect the low-speed traffic-carrying capacity of "Main Streets" and the historic streetscape (boroughs and villages).
- Advocate the Region's preferred alignment for the SCCCTS project (US Route 322) connection with the Centre Region.
- Be mindful of the special needs of the Region's plain-sect residents who rely largely upon horse-and buggy travel.
- Assess current road conditions and compare with adopted design standards.
- Promote pedestrian travel within the boroughs and villages and to their adjoining neighborhoods.
- Monitor the long-range plans concerning major road corridors and public transit that may affect the Region.
- Coordinate future land uses with roads that have sufficient capacity to handle the additional traffic.
- Explore the possibility of mass transit service to the Region.
- Promote interconnected neighborhoods and streets.

Specific to the PEL Study Area, the region's Future Land Use Plan was developed based on the premise that the US 322 corridor would be the corridor for a future limited access highway in the planning region and the suggested land uses along US 322 were intended to reflect the extent of development potential desired after the highway is built. The plan also notes that "local officials would strongly object to the construction of an interchange within the Region as it could produce an inducement to large-scale development that would conflict with the Region's overall community development objectives."

Centre Region

The Centre Region encompasses six municipalities, including two of the PEL Study Area municipalities; College Township, with its eastern portion within the PEL Study Area including the US 322 Mt. Nittany Expressway and the village of Lemont and Harris Township with its northeast portion in the PEL Study Area where both PA 45 and the 2-lane US 322 roadways tie into the Mt. Nittany Expressway. The planning region also includes the State College Area School District and the Penn State University. Both College and Harris Townships are at the eastern end of the planning region situated in the southcentral portion of

Centre County. This planning region is the most urbanized part of the County with approximately 20% of the land area in the Centre Region classified as developed. This can be attributed to the presence of the University Park campus. The current Comprehensive Plan for the Centre Region is dated November 2013 and notes that the opening of I-99 has influenced the location and the extent of new commercial development in the Centre Region.

Because of the more urbanized nature of this planning region and the presence of Penn State University, local and university officials have worked closely with CATA and PennDOT to promote the expansion of the region's pedestrian and bicycle system and transit services, including within the PEL Study Area corridors. The plan addresses on-going multi-modal planning initiatives and describes the long history of regional/municipal land use planning in support of these initiatives. In particular, the planning region uses a Regional Growth Boundary and Sewer Service Area as a tool to influence where growth occurs in the Region. The current Regional Growth Boundary extends into the western end of the PEL Study Area and includes the Village of Lemont to the north, then follows the Mt. Nittany Expressway to then extend eastward to encompass the residential subdivisions along both the PA 45 and US 322 Corridor up to and including the residential subdivision, Huntridge Manor.

The Centre Regional Planning Agency and Harris Township also coordinated in the preparation of the Harris Township Comprehensive Rural Rezoning Report (March 2019) that provides a comprehensive overview of the proposed rural zoning districts and ordinance amendments that were drafted by the Harris Township Planning Commission for the areas of the Township outside the Regional Growth Boundary and Sewer Service Area. These four districts include:

- Natural Areas District - primarily comprised of steep slopes and other environmental constraints that include portions of Rothrock State Forest, State College Borough Water Authority properties, and recreational areas such as Tussey Mountains.
- Designated Agricultural District – contains the agricultural operations or have large open space areas capable of being used for agriculture in the western edges of Penns Valley.
- Rural Residential District - primarily comprised of areas with large lot residential uses, including properties near the villages of Linden Hall and Shingletown, properties in the vicinity of Bailey Lane, and existing developments inside the Regional Growth Boundary including Rockey Ridge, Aspen Heights, Huntridge Manor, Laurel Hills, Bear Meadows Village, and the Mountain View Country Club.
- Rural Centers District - properties in the existing villages of Linden Hall and Shingletown that pre-date modern zoning resulting in greater development density than what is found throughout other rural areas in the Township.

The intent of the plan was to identify the long-range planning goals for the rural properties in the Township, along with a zoning implementation strategy to help accomplish those goals and build upon the 2013 Centre Region Comprehensive Plan.

The Centre Regional Planning Agency and Harris Township also collaborated in the development of the Boalsburg Small Area Plan (June 13, 2016) that establishes a long-range vision to guide the future growth and development of the Boalsburg area in the western portion of the PEL Study Area. The Small Area Plan addresses three areas that encompass the Boalsburg area that are referenced as the village, commercial and cultural nodes. Of particular concern for the PEL Study is the commercial node that addresses the

Boal Avenue (US 322 Business) corridor. The plan notes that the corridor lacks greenery and pedestrian and bicycle amenities that in turn creates a hostile environment for non-motorized transportation. The plan includes a future land use map combined with the identification of goals and actions that constitute the official policies for growth and development issues in the Boalsburg area. The goals and actions provide a foundation for future decisions regarding growth and development, capital improvements, environmental protection, transportation, and community heritage. Specific to the US 322 Business corridor, the plan includes visions including transforming the Boal Avenue corridor into a "welcoming and attractive gateway" and providing transportation facilities that balance the needs of pedestrians, bicyclists and motorists through streetscape improvements. As part of the implementation process, the Township approached PennDOT to discuss the long-term plans for Boal Avenue and its desire to have the road considered for a "road diet" to reduce the number of travel lanes and provide a center turning lane and bike lanes, and a Feasibility Study is now underway.

Nittany Valley Region

The Nittany Valley Region encompasses five municipalities, including two of the PEL Study Area municipalities; Benner Township (a small southeastern portion is within the PEL Study Area that primarily includes the northern slope of Nittany Mountain and property included within the State Correctional Institution at Rockview) and Spring Township (a southern portion in the PEL Study Area that includes the Village of Pleasant Gap and where PA 144 connects to PA 26 that then connects to I-99 at Exit 80 [a partial interchange with Harrison Road] and Exit 81 [a full interchange with PA 26/PA 64 referred to as the Pleasant Gap interchange]. The planning region also includes the Bellefonte Area School District. The Nittany Valley planning region is separated from the Penns Valley planning region by Nittany Mountain, and is about 20 miles long and generally 7 miles wide, totaling approximately 119 square miles. While within proximity to major roads and including I-80 and I-99, it is similar to Penns Valley with an isolated location within the rural central portion of the commonwealth and daily commuting kept primarily within the local economy in and around Centre County. The region also includes a large Old Order (Amish) community primarily within Marion and Walker Townships, outside of and north of the PEL Study Area. The Village of Pleasant Gap lies at the northern edge of the PEL Study Area and its mountain gap location serves as a major transportation route (PA 144) and has for more than 200 years. Native American paths, pack horse trails, and an early turnpike all crossed through this gap connecting Penns and Brush Valleys with Nittany Valley.

The first Comprehensive Plan for the Nittany Valley Region was adopted in September 2004. The plan noted that historically, the planning region has retained its rural character as a fertile farming valley between two mountain ranges on the north and south. The notable exception is Bellefonte Borough (outside of the PEL Study Area) with its densely built community and central business area and industrial base. Some suburban development has occurred outside of Bellefonte, including scattered commercial uses extending between the borough and Pleasant Gap, but large areas of the region remain undeveloped. The plan also noted "that could change with completion of ongoing road projects as new routes for commerce and commuting could present tremendous pressures for residential development and attendant sprawl." The plan specifically mentions the potential "major development pressures that are likely to result from the imminent completion of the I-99 corridor."

Since the Comprehensive Plan was first adopted, I-99 was constructed through Centre County and the final I-99 project, the I-99/I-80 high-speed interchange at Exist 161 in the northern end of Spring Township, is anticipated to be completed in 2022. The regional plan was intended to guide land use impacts, in particular,

prepare Bellefonte Borough and Spring Township to accept and manage any "new found development pressure, particularly if it brings needed tax base in the form of economic development." Specifically, the plan looked to focusing future development in and adjacent to existing commercial and industrial development in these municipalities, including in the vicinity of the I-99 Exit 81. The Exit 81 interchange provides access to southern Spring Township and nearby Walker Township and more importantly, provides ready access to the many heavy trucks that transport materials from the Region's nearby limestone quarries.

The new I-99/I-80 high-speed interchange to be constructed at the existing I-80 Exit 161 interchange will eliminate local access and therefore reduce development pressure around the interchange area. The local access at this location will be replaced at a new I-80 local access interchange currently under construction, along with a short new road to connect the new interchange to PA 26/Jacksonville Road, over 2 miles east of Exit 161 in Marion Township. The 2004 regional plan noted this and stated that both "Marion and Walker Townships hope to avoid, or at least postpone, the attendant development pressure and impacts associated with completion of this major road." It was acknowledged that Benner Township was likely to experience growth associated with I-99 and its interchanges with the hope to minimize its impact.

Lastly, the regional plan acknowledged PennDOT's previous corridor studies that considered the extension of a new highway from the I-99 Exit 81 interchange, crossing Nittany Mountain and connecting to US 322 on Seven Mountains and stated that local officials from the Nittany Valley Region strenuously opposed the proposed corridor "for environmental and economic reasons." While the regional plan supported some development in the vicinity of I-99 Exit 81, it noted that this development should not impede the considerable quarry truck traffic that originates in the region ad travels throughout the County and beyond.

The 2004 Plan also notes the following goals.

- Preserve prime farmlands and productive farms.
- Develop an ongoing process of dialog between the municipalities to assist each other and meet future challenges together.
- Assess current road conditions and compare with adopted design standards.
- Monitor the long-range plans concerning major road corridors and public transit that may affect the Region.
- Coordinate future land uses with roads that have sufficient capacity to handle the additional traffic.

The Nittany Valley Region prepared a Comprehensive Plan Update adopted in late 2019, which included a review and update of the original plan and implementation strategies to resolve issues. The Plan Update did not specifically address transportation improvements with the exception of goals to improve bike and pedestrian corridors, maintain local CATA bus service and encourage greater use of public transportation options. However, it is worth mentioning some goals noted in the plan listed below.

- Improve bike and pedestrian corridors, in whole or in sections, throughout the region including Zion Back Road, the Canyon Trail, the Bellefonte Central Rail Trail, and the Spring Creek Navigation Canal Trail.
- Maintain CATA service at present level or greater.
- Support economic development along highway corridors.
- Preserve and promote agricultural economic endeavors that strengthen agricultural sustainability.

List of Plans and Studies

Center County Comprehensive Plan Documents

1. Centre County Comprehensive Plan Phase I (2003)
http://centrecountypa.gov/DocumentCenter/View/6034/Centre-County-2003-Comprehensive-Plan?bidId=

2. Centre County Comprehensive Plan Phase II Implementation Strategies
http://centrecountypa.gov/212/Comprehensive-Plans

3. Centre County Phase II - Land Use (January 2016)
http://centrecountypa.gov/DocumentCenter/View/6035/Land-Use-?bidId=

4. Centre County Phase II - Economic Development (June 2016)
http://centrecountypa.gov/DocumentCenter/View/6036/Economic-Development?bidId=

5. Centre County Phase II - Energy Conservation (August 2016)
http://centrecountypa.gov/DocumentCenter/View/6037/Energy-Conservation-?bidId=

6. Center County Phase II - Public Safety (April 2017)
http://centrecountypa.gov/DocumentCenter/View/6038/Public-Safety-April-2017?bidId=

7. Center County Phase II - Historic Resources (August 2017)
http://centrecountypa.gov/DocumentCenter/View/6039/Historic-Resources-August-2017?bidId=

8. Centre County Phase II - Recreation (February 2018)
http://centrecountypa.gov/DocumentCenter/View/6040/Recreation-February-2018?bidId=

9. Center County Phase II - Communications and Information Technology (May 2018)
http://centrecountypa.gov/DocumentCenter/View/6041/Communications-and-Information-Technology-May-2018?bidId=

10. Center County Phase II - Sewage Facilities Management (December 2018)
http://centrecountypa.gov/DocumentCenter/View/6042/Sewage-Facilities-Management-December-2018?bidId=

11. Center County Phase II - Community Facilities and Services (September 2019)
http://centrecountypa.gov/DocumentCenter/View/7520/Community-and-Facilities-Services-Chapter-Adopted?bidId=

12. Center County – Phase II - Agriculture (January 2020)
http://centrecountypa.gov/DocumentCenter/View/7520/Community-and-Facilities-Services-Chapter-Adopted?bidId=

Centre County Long Range Transportation Plans

13. Centre County LRTP 2044
https://www.crcog.net/?SEC=330641AF-F510-4717-B584-C3244BE1FCA1

14. Centre County LRTP 2050
https://www.crcog.net/?SEC=5C42A7FC-BD76-49BE-9D93-899B0E779947

Regional Plans and Reports

15. Centre Region Bike Plan (Adopted December 15, 2015, Amended May 23, 2016)
http://www.crcog.net/vertical/sites/%7B6AD7E2DC-ECE4-41CD-B8E1-BAC6A6336348%7D/uploads/Centre_Region_Bike_Plan_Amended_05-23-16_with_Appendices_for_Web.pdf

16. Centre Region Comprehensive Plan (November 2013 Update)
https://www.crcog.net/index.asp?Type=B_BASIC&SEC=%7b7D7950F7-6CB9-4091-9EC6-C6345A982084%7d&DE=%7b7C8F5C9E-0954-4F9F-94F6-6AFABF91F541%7d

17. Harris Township Comprehensive Rural Rezoning Report (March 2019)
https://centreregioncog.govoffice2.com/vertical/Sites/%7B6AD7E2DC-ECE4-41CD-B8E1-BAC6A6336348%7D/uploads/Rural_Rezoning_Report_March_19_2019.pdf

18. Boalsburg Small Area Plan (June 13, 2016)
https://www.crcog.net/vertical/sites/%7B6AD7E2DC-ECE4-41CD-B8E1-BAC6A6336348%7D/uploads/Boalsburg_Small_Area_Plan_June_2016_.pdf

19. Nittany Valley Regional Comprehensive Plan (2004)
http://centrecountypa.gov/DocumentCenter/View/373/nittanyvalley_withmaps?bidId=

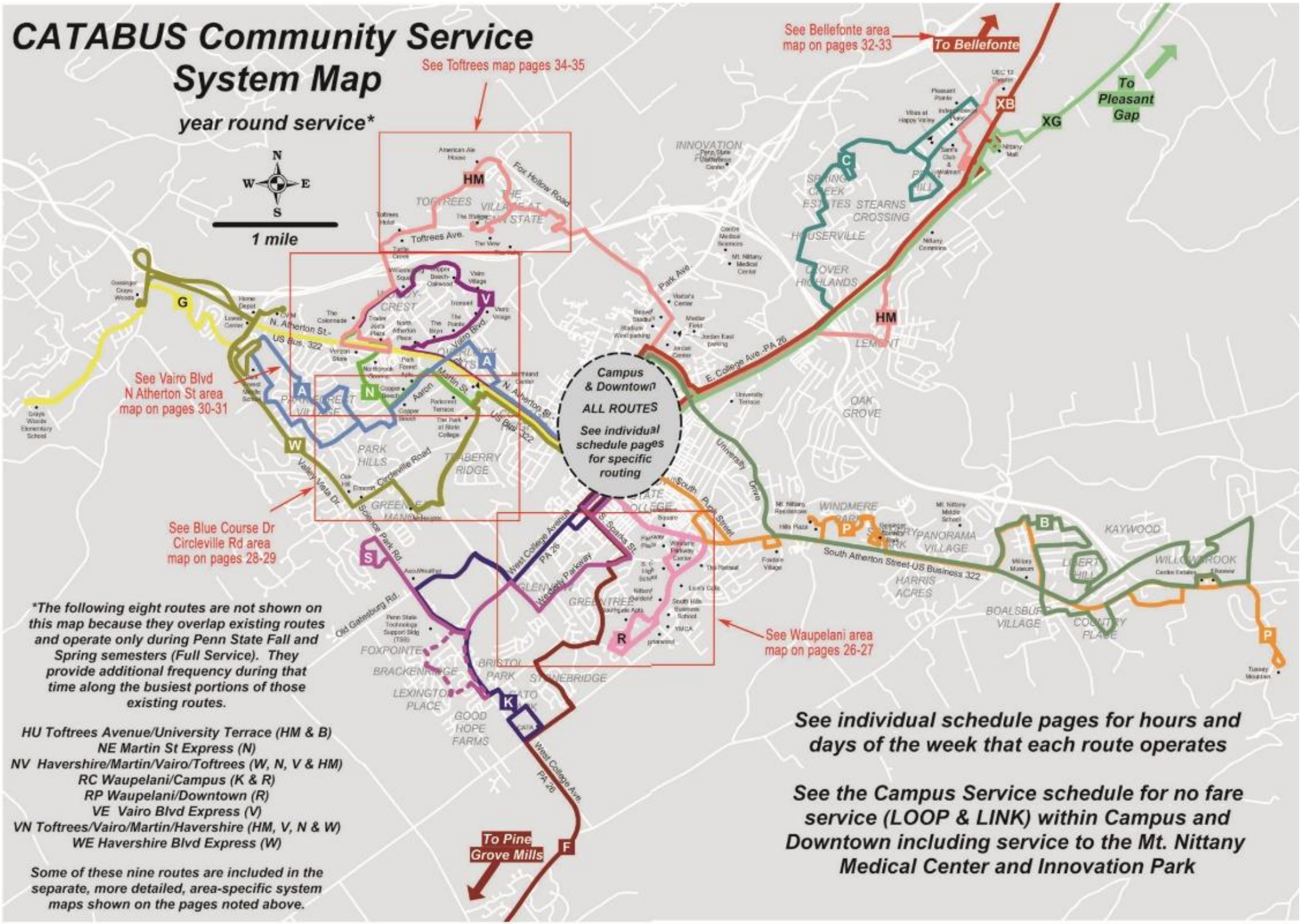
20. Nittany Valley Regional Comprehensive Plan (Update Adopted October 17, 2019)
http://centrecountypa.gov/DocumentCenter/View/14535/adopted_NVJPC_CompPlan_Update_October_2019_reducedsize?bidId=

21. Penn Valley Regional Comprehensive Plan (Adopted January 30, 3006)
https://centrecountypa.gov/DocumentCenter/View/529/pennsvalley?bidId=

Appendix C
CATABUS Community Service System Map

CATABUS Community Service System Map

*year round service**



**The following eight routes are not shown on this map because they overlap existing routes and operate only during Penn State Fall and Spring semesters (Full Service). They provide additional frequency during that time along the busiest portions of those existing routes.*

HU Toftrees Avenue/University Terrace (HM & B)
NE Martin St Express (N)
NV Havershire/Martin/Vairo/Toftrees (W, N, V & HM)
RC Waupelani/Campus (K & R)
RP Waupelani/Downtown (R)
VE Vairo Blvd Express (V)
VN Toftrees/Vairo/Martin/Havershire (HM, V, N & W)
WE Havershire Blvd Express (W)

Some of these nine routes are included in the separate, more detailed, area-specific system maps shown on the pages noted above.

See individual schedule pages for hours and days of the week that each route operates

See the Campus Service schedule for no fare service (LOOP & LINK) within Campus and Downtown including service to the Mt. Nittany Medical Center and Innovation Park