EXECUTIVE SUMMARY

INTRODUCTION

The District 2-0 Regional Operations Plan (ROP) was developed for PennDOT to address the Transportation Operation needs of the communities in the District 2-0 Region. PennDOT is responsible for transportation operations planning at the statewide level. The statewide plan is spelled out in the Transportation Systems Operation Plan (TSOP, adopted September 2005), which defines PennDOT’s operational direction. This document is a centrally-led and coordinated statewide approach to transportation operations. The document builds on national definitions of “operations”, such as that promulgated by the American Association of State Highway and Transportation Officials (AASHTO).

The direction established through the District 2-0 Regional ITS Architecture, District 2-0 ITS Strategic Plan, and the TSOP defined PennDOT’s approach to Operations. The Regional ITS Architecture is one of nine (9) regional documents that was designed to support the preparation and refinement of ITS across Pennsylvania. The District 2-0 ITS Strategic Plan provided the direction for the application of advanced transportation-related technologies. These preceding documents are resource tools for the ROP to help assist engineers, planners, designers, developers, managers, and decision-makers in defining a regionally-integrated surface transportation infrastructure.

The TSOP was driven by statewide direction and regional needs and is used to enhance the operational efficiencies, improve public safety and security, and reduce traveler delay. The ROP is being developed for PennDOT and its planning partners in an effort to adapt or “rightsize” the statewide directions established in the TSOP and Regional ITS Architecture for their own specialized needs.

After completion of the ROP, which is being developed concurrently with the District 2-0 ITS Architecture, the programs delineated in it are to be implemented and mainstreamed in transportation planning documents and day-to-day activities. Outputs of the ROP will be used in future updates of the statewide TSOP and Regional ITS Architectures. The ROP will be updated every two years to be kept current with the most recent needs and projects slated for deployment in the district.

A Traffic Signal Strategic Plan is also being developed to identify the intersections that require upgrade / replacement in the short-term. The Signal Strategic Plan will determine the signalized corridors in the District that can be recommended for improvements.
DISTRICT 2-0 REGION

The District 2-0 region encompasses ten (10) counties and for the purpose of the Regional Operations Plan (ROP), the project extends beyond the District 2-0 borders to include Jefferson County in District 10-0. The counties include:

- Cameron,
- Centre,
- Clearfield,
- Clinton,
- Elk,
- Jefferson,
- Juniata,
- McKean,
- Mifflin, and
- Potter.

The District 2-0 Region is bordered by the State of New York and PennDOT Engineering Districts 1-0, 3-0, 8-0, 9-0 and 10-0. The region experiences great diversity of weather which creates challenges for the transportation system. The region is large and except for State College, rural in nature. State College, home of the Pennsylvania State University Main Campus includes over 40,000 students during the school year, and football games, PSU football games can draw tens of thousands of additional visitors to the area during fall weekends. The influx of students and visitors for special events creates unique challenges for transportation management.

PROJECT DEVELOPMENT

The development of the District 2-0 ROP followed a process that was outlined in the Regional Guidance Document (May 2006). The process established a Regional Operations Forum Committee that developed the general vision for the District 2-0 Region. The committee was comprised of knowledgeable planning and transportation agencies in the region that helped to identify the ITS/Operations. The members were an extension of the Stakeholders involved with the District 2-0 ITS Strategic Plan completed in December 2004.

The TSOP, Regional ITS Architecture, and District 2-0 ITS Strategic Plan laid the groundwork for the integration of planning and operations in the ROP. The projects defined in these documents were used as a foundation for recommended project deployments in the ROP. In order to bring focus to the ITS planning process for the District 2-0 Region, it was important to address the needs of the region. Many of the needs outlined in the ROP were developed from the District 2-0 ITS Strategic Plan.

DISTRICT 2-0 REGION NEEDS AREAS

The District 2-0 Region is familiar with ITS/Operations and can be seen by the completion of the ITS Strategic Plan in 2004. The projects that were recommended in
the District 2-0 ITS Strategic Plan were revisited as part of the ROP process to determine their status. Stakeholders in the region provided input for the Needs Areas to be addressed by the ROP.

The five (5) Needs Areas were agreed to as the following:

1. Traveler Information
2. Incident and Emergency Management
3. Traffic Signals
4. Maintenance and Construction
5. Institutional Coordination

PROJECT DEPLOYMENTS

A list of potential projects was formulated through the projects listed in the Strategic Plan and further input from the Stakeholders. These projects were presented to Stakeholders at the second Workshop Meeting held on June 20th, 2007. This meeting brought together all the Stakeholders of the District 2-0 Region for their input on prioritizing the recommended project deployments. The recommended project deployments were categorized as short- and long-term projects. Short-Term projects were identified by a time frame of 1 to 2 years and Long-Term projects on a 3+ year’s time frame for programming.

Once the list of recommended projects was assembled, stakeholders were asked to rank the importance of each project in relation to the needs of the District 2-0 Region. This ranking process was used to determine the regional priorities. When ranking the project it was important to factor in the importance of the project, the complexity of the project and whether the project would require significant regional coordination. Projects were ranked based on a numbering system of 1 (low priority) to 5 (high priority) with the level of complexity considered in the vote.

The Recommended Short-Term Projects were ranked as follows:

1. Develop Links between Operations Centers (D-2, PSP, County 9-1-1 Centers)
2. Develop Inter-Agency Communications Protocols (TSOP 05)
3. Deploy Ramp Closure Gates for Access Ramps to I-80
4. I-80 Traffic Surveillance in Clearfield County (3 locations)
5. I-80 DMS in Clearfield County (4 locations)
6. Update High Priority Traffic Signal Corridors: Business Rt. 322 (State College/College Township/Patton Township)
7. I-80 Traffic Surveillance in Centre County (2 locations)
8. I-80 Traffic Surveillance in Jefferson County (1 location)
9. I-80 Traffic Surveillance in Clinton County (2 locations)
10. I-80 DMS in Centre County (1 location)
11. Update High Priority Traffic Signal Corridors: Twenty Eighth Division Highway (Clearfield Borough)
12. Update High Priority Traffic Signal Corridors: West College Avenue – SR 26 (Ferguson Township)
13. Update High Priority Traffic Signal Corridors: William Penn Highway/West 4th Street, North Juniata Street/East Market Street/Valley Street/South Walnut Street/East Walnut Street (Lewistown Borough)
14. I-80 DMS in Clinton County (2 locations)
15. Implement Recommendations from “Signal Strategic Plan”
16. Regional Weather Service
17. Phase 1 HAR Deployment (PA 26, SR 22, SR 220)
18. District 2-0 Region Detour Route Geographic Information Systems (GIS) Mapping
19. Update High Priority Traffic Signal Corridors: East Main Street/High Street (City of Bradford/Foster Township)

The Recommended Long-Term Projects were ranked as follows:
1. Construct a Multi-agency Regional Traffic Management Center
2. Deploy Small-size DMS at I-80 Ramp approaches in coordination with Signal Strategic Plan
3. I-80 DMS in Clearfield County (6 locations)
4. I-80 DMS in Centre County (3 locations)
5. I-80 DMS in Clinton County (4 locations)
6. Event Management Plan for PSU/State College
7. Variable Speed Limit (VSL) on I-80
8. CATA Transit Traveler Information
9. Weigh-in-Motion (Exit 120 on I-80)
10. Traveler Information Kiosks
11. Phase 2 HAR Deployment (Bradford Bypass, SR 144, US 322)
12. Regional Transit Card
13. ATA Transit Traveler Information
14. Deploy Technology Assisted Speed Enforcement
15. Computer Aided Reservation, Scheduling, and Dispatch (CARSD) Deployment for CATA & DuFAST
16. State College Multi-modal Facility
17. Advanced Fleet Maintenance for ATA

INSTITUTIONAL SUGGESTIONS

- Investigate alternative TMC/RTMC Concepts.
- Address Operations Staffing of TMC in concurrence with new statewide project TSOP – 20.
- Include PennDOT in the County Emergency Management Agency’s training exercises.
- Utilize Smart Work Zones in Construction areas to improve traveler safety where feasible.
- Investigate opportunities to utilize transit data through information sharing, for example AVL and In-Vehicle Road Sensors.
Establish a training program for PennDOT operations staff in the District 2-0 TMC.
Establish incident management training for PennDOT staff to help improve coordination during an incident.
Support 800 MHz Statewide Radio Project.
Conduct an Incident Management Self Assessment for Centre County.
Investigate Photogrammetry for PSP accident reconstruction.
Prioritize maintenance of existing ITS elements including RWIS and HAR. This involves fixing problems, performing routing inspections and replacing at the end of a lifecycle.
Support 5-1-1 Statewide Implementation Project.
Investigate the ability to use ATA Wireless sites for ITS Field devices in District 2-0.

PROGRAM MANAGEMENT

The projects recommended in the ROP are to be adopted by the planning partners of the District 2-0 Region and considered for the 2009-2012 Transportation Improvement Program (TIP). The ROP is scheduled to be updated every two (2) years so that projects that are a lower priority can move up in priority and be deployed as the ROP document is revised. The ROP is to be implemented and mainstreamed in transportation planning documents and day-to-day activities and is to be included in the updates of the TSOP and Regional ITS Architecture.

It is recommended that individual agencies step forward to lead or “champion” individual ITS projects based on their level of interest and need. Each project programmed in the ROP is defined by a lead agency, and these lead agencies will need to take the initiative to move ITS Projects forward by identifying funding, developing a design, and taking it through procurement.
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ACKNOWLEDGMENTS

Major contributions were made from the following PennDOT groups Districts 2-0 and 10-0, Bureau of Highway Safety and Traffic Engineering, Center for Program Development and Management, as well as the Centre County Metropolitan Planning Commission, North Central PA Regional Planning and Development, and SEDA Council of Governments. The ROP was developed with input from multiple regional stakeholders.

Regional Steering Committee
The ROP was guided by the Regional Steering Committee consisting of the following individuals:

- Mike Baglio  PennDOT District 2-0
- Denny Prestash  PennDOT District 2-0
- Kevin Kline  PennDOT District 2-0
- Ron Keim  PennDOT District 2-0
- Jim Surkovich  PennDOT District 2-0
- Karen Michael  PennDOT District 2-0
- Rhonda Stankavich  PennDOT District 2-0
- Mark Schultz  PennDOT District 2-0
- Rob Jaconski  PennDOT District 2-0
- Jim Roman  PennDOT District 2-0
- Tom Zurat  PennDOT District 2-0
- Jeff Walker  PennDOT District 2-0
- Vicki Rusnak  PennDOT District 2-0
- Kim Reese  Clearfield County Maintenance Department
- Brenda Murphy  PennDOT BHSTE
- Tom Zilla  Centre County Metropolitan Planning Commission
- Mike Bloom  Centre County Metropolitan Planning Commission
- Amy Kessler  North Central
- Steve Herman  SEDA Council of Governments
- Hugh Mose  Centre Area Transit Authority (CATA)
- Greg Kausch  Centre Area Transit Authority (CATA)
- Jim Hunt  Federal Highway Administration

Consultant Team
Jacobs Edwards and Kelcey (JEK) facilitated the ROP process, documented the outcomes, and prepared the plan document.
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1. BACKGROUND

Transportation agencies today do not always have the luxury of undertaking massive new capacity expansion projects. Instead, more innovative approaches are often required to optimize the use of transportation infrastructure and achieve heightened operational efficiencies. Those activities, approaches, and procedures that help to maximize efficiencies are part of the transportation operations program. Operations planning is the process used to define and prepare for operations programming.

The Pennsylvania Department of Transportation (PennDOT) is responsible for operations planning at the statewide level. The statewide plan is spelled out in the Transportation Systems Operations Plan (TSOP), which defines PennDOT’s operational directions over the next several years.

To complement the statewide operations planning effort, each of the nine (9) transportation operations regions across the Commonwealth has undertaken preparation of a Regional Operations Plan (ROP), which documents each region’s approach to operational activities. The plans were prepared through joint consultations between PennDOT District offices, transportation planning partners, and other key regional stakeholders. The plans all use TSOP as a starting point, but adapt the statewide directions to each region’s transportation conditions, values, and priorities.

1.1 Statewide TSOP Initiative

The Transportation Systems Operations Plan, adopted in September 2005, defines PennDOT’s general framework for managing capacity along the Commonwealth’s roadways. Its development was a response to PennDOT Executive Goal No. 6, to “effectively and efficiently operate the transportation system.” Toward this end, TSOP has four overarching goals:

1. build and maintain a transportation operations foundation;
2. improve highway operational performance;
3. improve safety; and
4. improve security.

Associated with these goals are a series of tangible objectives. Key objectives include:

- support transportation operations uniformly in all PennDOT engineering districts;
- furnish consistent incident response on all segments of the interstate system, regardless of location;
- share timely, reliable information about incidents among federal, state, and regional/local emergency management agencies;
- improve mobility on arterials through consolidated, inter-municipal management of traffic signals;
Regional Operations Plan 2007
District 2-0 Region

- Provide practical, reliable traveler information to transportation consumers using no-cost or low-cost media; and
- Define and implement performance metrics for effectively managing operations and guiding planning and funding.


TSOP, first and foremost, is an action plan of statewide projects. There are 19 projects that encompass four priority areas:

- incident and emergency management;
- traffic signals;
- traveler information; and
- standardization.

Standardization encompasses the uniformity of hardware, software, communications procedures and protocols.

TSOP is being updated during calendar year 2007.

1.2 District 2-0 ITS Strategic Plan

The District 2-0 ITS Strategic Plan, completed in December 2004, provided the direction for the application of advanced transportation-related technologies. The ITS Strategic Plan represented a coordinated effort among agencies responsible for planning and programming projects throughout the District 2-0 Region. The ITS Projects recommended in the Strategic Plan was consistent with the Regional ITS Architecture.

The Plan provided a foundation for the important elements of operations planning for the region. The District 2-0 ROP utilized some of the key elements of the Strategic Plan as a starting point for the Regional Operations planning exercise. Many of the Regional Needs and Recommended Projects in the Strategic Plan were carried into the ROP. The ROP process also provided the opportunity to highlight some of the successful implementations that were recommended in the Strategic Plan such as the Traffic Management Center (TMC).
1.3 **ROP Scope and Objectives**

The Regional Operations Plan for the District 2-0 Region specifies the intended approach to transportation operations. It identifies, defines, and prioritizes operationally-focused projects for the region, consistent with regional and statewide operations objectives. The ROP sets the stage for regional implementation of pertinent elements of TSOP. It may also identify other initiatives reflective of the specialized needs of the region.

Development of the ROP is intended to:

- define a strategic transportation operations plan for the region;
- extend TSOP to the regional level;
- tailor statewide directions to regional needs;
- specify and prioritize regional operations projects;
- achieve uniformity and compatibility across operations regions; and
- expand cooperative relationships between regional transportation operators and planning partners.

Regarding the last item, the ROP process is intended to link planning and operations by emphasizing (1) collaboration and coordination among regional planners and operators, and (2) structured assessment of the planning and operational implications of expanded management procedures, technology systems, and investments. The ROP will feed into the Long-Range Transportation Plans (LRTPs) in each region and the corresponding Transportation Improvement Programs (TIPs). Each ROP will also supply important inputs to future updates of TSOP, Regional Intelligent Transportation System (ITS)
Architectures, and PennDOT’s Long-Range Statewide Transportation Plan (Mobility Plan).

ROP stakeholders in every region are presenting the ROP document to their respective metropolitan planning organizations (MPOs) and rural planning organizations (RPOs), encouraging these planning partners to adopt or endorse the plans.

It is expected that all ROPs will be updated at two-year intervals in advance of bi-annual TIP update cycles.

1.4 **ROP Development Process**

The Regional Operations Plan (ROP) is being completed statewide for all the PennDOT Districts. The recommended procedures for defining and developing a ROP are listed in the Regional Guidance Document. This document outlines the procedures for developing the ROP in order to keep all ROPs consistent with one another. There are seven (7) steps to follow, and consistent with the systems engineering process, are summarized below:

1. **Establish a Regional Operations Forum.** The ROF was a group of knowledgeable planning and transportation partners who are involved in operations and transportation for the region. The ROF committee for the District 2-0 Region included representation from the following:
   - PennDOT 2-0
   - PennDOT 10-0
   - PennDOT Central Office (BHSTE)
   - Centre County Metropolitan Planning Commission
   - North Central PA Regional Planning and Development Commission
   - SEDA Council of Governments
   - Clearfield County Maintenance Department
   - Federal Highway Administration (FHWA)
   - Pennsylvania State Police
   - Centre Area Transportation Authority (CATA)

2. **Review/Update Plans and Document Projects.** The projects reviewed in preparing the project inventory include the following:
   
   i. **Regional Guidance Document**
   
   The Regional Guidance Document was prepared by Parsons Brinckerhoff (PB), May 2006, to outline an approach for developing the Regional Operations Plan (ROP). This document is being used by each PennDOT District completing a ROP.

   ii. **2005 Transportation Systems Operations Plan (TSOP)**
   
   The Transportation Systems Operations Plan (TSOP) was prepared by PB in September 2005 and defines the statewide plan for operations. The TSOP will be
updated on a bi-annual basis and its purpose is to set statewide direction for projects in Intelligent Transportation Systems (ITS) and to formalize and extend PennDOT’s business focus to include operations. TSOP is predicated on four (4) goals, which include building and maintaining a transportation operations foundation, improving highway operational performance, improving safety, and improving security.

In order to achieve these goals, the TSOP outlines 19 distinct statewide projects that include both planning efforts as well as deployments. These projects cover areas of priority such as operations mainstreaming, ITS maintenance, standards and procedures, resource management, information technology, and intermodal support. Coordination of these priorities will be carried out through both statewide initiatives and regional deployments dependant on localized needs. Like the ROP, the TSOP is positioned to be linked to the two-year Transportation Improvement Program (TIP) updates.

In development of the ROP, the TSOP is to be used as the primary guideline to follow, with the ROP covering the more specific regional needs of the District 2-0 Region.

iii. District 2-0 ITS Strategic Plan

The District 2-0 ITS Strategic Plan was a regional effort among a wide range of Stakeholders that focused on providing a direction for the application of advanced transportation-related technologies. The needs from the District 2-0 ITS Strategic Plan served as the basis for the District 2-0 ROP needs identified by Stakeholders. The existing and planned projects listed in the Strategic Plan were used to help identify the project concepts that have been deployed and to recommend additional projects that need to be programmed in the ROP.

3. Define Regional Needs and Priorities. A workshop was held with transportation and planning stakeholders of the region to define and discuss operational needs for the region. The starting point for identifying critical needs was the TSOP, followed by region-specific operational requirements addressed at the first forum workshop. Following this discussion, five operational areas were identified that captured these needs into defined groups (incident and emergency management, traveler information, traffic signals, maintenance and construction, and institutional issues).

4. Identify Regional Operations Concepts. Each of the operations areas was then assigned a task force that reviewed the list of needs associated with its respective operations area, and identified solutions to those needs in the form of potential “projects” (i.e., policies, planning studies or physical deployments). These projects reflected the specialized conditions and circumstances of the region consistent with statewide guidance.

5. Define Operations Projects. Project concepts were developed based on the District 2-0 ITS Strategic Plan, TSOP projects and in support of the needs that were discussed at the Task Force Meetings. Projects were defined based on the operations concept(s) that Stakeholders wanted to see implemented. The recommended projects may be
Projects identified were realistic, manageable, and achievable within the short-term and long-term time frame. Projects that did not meet this timeframe were recommended to be considered as a future implementation.

6. Develop a Regional Program. The recommended projects were prioritized based on a short-term and long-term time frame. Stakeholders ranked the recommended projects based on funding, complexity and need. The recommended projects are to be considered for programming in Long-Range Transportation Plans (LRTPs), the 2009 TIP, and other pertinent venues. The stakeholders participated in the project prioritization at the final workshop to help identify a regional program to best fit their region’s needs.

7. Prepare and Adopt a Regional Operations Plan. The results of the entire ROP planning effort were documented as the ROP plan. The plan includes: (1) background, (2) short- and long-term projects, and (3) program implementation. The ROP is to be reviewed and adopted by the planning partners in the region.

1.5 ROP Oversight and Management

The development of the ROP required several meetings to be conducted. The meetings helped to identify the needs of the region and the assemble project deployments to be programmed. The schedule of meetings held for the District 2-0 ROP was as follows:

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<td>March 2, 2007</td>
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<td>District 2-0 Maintenance Managers Meeting</td>
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<td>Stakeholder Workshop Meeting #1</td>
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<td>Stakeholder Workshop Meeting #2</td>
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1.5.1 Regional Operations Forum

As part of the effort to develop the ROP a Regional Operations Forum (ROF) was established. The ROF committee represents a decision-making body of knowledgeable planning partners and practitioners across the region to plan and oversee transportation operations. Their effort in developing the ROP follows the principles behind the TSOP and all projects that are ongoing and/or planned already for deployment in District 2-0. The ROF committee is comprised of an extended group of stakeholders from the Steering Committee that developed the Regional ITS Architecture and District 2-0 ITS Strategic Plan.
1.5.2 Stakeholders

The workshop meetings were held with Stakeholders from the District 2-0 Region which includes a large representation of operations personnel from across the region. The stakeholders represent a similar interest in the regional operations that exist and are planned for District 2-0. They bring a diverse range of input to the operational direction for the region. The purpose of the workshop meetings was to identify and prioritize the needs of the region with help from the interested stakeholders in the area. The ROF Committee and Stakeholders worked collaboratively to develop the needs of the District 2-0 Region. District 2-0 Stakeholders included:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Member Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>PennDOT District 2-0</td>
<td>Kevin Kline</td>
</tr>
<tr>
<td></td>
<td>Denny Prestash</td>
</tr>
<tr>
<td></td>
<td>Mike Baglio</td>
</tr>
<tr>
<td></td>
<td>Ron Keim</td>
</tr>
<tr>
<td></td>
<td>Jim Surkovich</td>
</tr>
<tr>
<td></td>
<td>Karen Michael</td>
</tr>
<tr>
<td></td>
<td>Rhonda Stankavich</td>
</tr>
<tr>
<td></td>
<td>Mark Schultz</td>
</tr>
<tr>
<td></td>
<td>Rob Jaconski</td>
</tr>
<tr>
<td></td>
<td>Jim Roman</td>
</tr>
<tr>
<td></td>
<td>Tom Zurat</td>
</tr>
<tr>
<td></td>
<td>Jeff Walker</td>
</tr>
<tr>
<td></td>
<td>Vicki Rusnak</td>
</tr>
<tr>
<td>PennDOT BHSTE</td>
<td>Brenda Murphy</td>
</tr>
<tr>
<td>Federal Highway Administration (FHWA)</td>
<td>Jim Hunt</td>
</tr>
<tr>
<td>Centre County Metropolitan Planning Commission</td>
<td>Tom Zilla</td>
</tr>
<tr>
<td></td>
<td>Mike Bloom</td>
</tr>
<tr>
<td>North Central PA Regional Planning and Development Commission</td>
<td>Amy Kessler</td>
</tr>
<tr>
<td>SEDA Council of Governments</td>
<td>Steve Herman</td>
</tr>
<tr>
<td>Centre Area Transportation Authority (CATA)</td>
<td>Hugh Mose</td>
</tr>
<tr>
<td></td>
<td>Greg Kausch</td>
</tr>
</tbody>
</table>

The organizations involved in the development of the ROP are knowledgeable authorities on their own conditions and have a reasonable degree of autonomy to adapt the statewide directions to their particular circumstances.
- Area Transportation Authority (ATA)
- Centre Area Transportation Authority (CATA)
- DUFast Transit Authority
- Step, Inc. (Clinton)
- Call-a-Ride Service (Mifflin/Juniata)
- Centre County Office of Transportation Services
- Clearfield County Planning Commission
- Clinton County Planning Commission
- Jefferson County Department of Development
- Juniata County Planning Commission
- McKean County Planning Commission
- Mifflin County Planning Commission
- Centre County Metropolitan Planning Commission
- North Central PA Regional Planning and Development Commission

- SEDA Council of Governments
- Clearfield County EMA/911 Center
- Cameron County Emergency Management Services
- Juniata County Emergency Services
- Mifflin County EMA
- Potter County EMA/911 Center
- Centre County EMA
- Elk County EMA
- PEMA
- Cameron County Maintenance
- Centre County Maintenance
- Clearfield County Maintenance
- Clinton County Maintenance
- Elk & McKean County Maintenance
- Juniata & Mifflin County Maintenance
- Signal Service Inc.
- Potter County Maintenance
- Pennsylvania State Police
- Penn State University
- PA Towing Association
2. REGIONAL ACTIVITIES AND INITIATIVES

2.1 Description of the Region

The District 2-0 Region encompasses ten (10) counties and for the purpose of the Regional Operations Plan (ROP), the project extends beyond the District 2-0 borders to include Jefferson County in District 10-0. The counties include:

- Cameron,
- Centre,
- Clearfield,
- Clinton,
- Elk,
- Jefferson,
- Juniata,
- McKean,
- Mifflin, and
- Potter.

The District 2-0 Region is bordered by the State of New York and PennDOT Engineering Districts 1-0, 3-0, 8-0, 9-0 and 10-0. The region experiences great diversity of weather which creates challenges for the transportation system. The region is large and except for State College rural in nature. State College, home of the Pennsylvania State University (PSU) Main Campus that includes over 40,000 students during the school year, and football games can draw tens of thousands of additional visitors to the area during fall weekends. The influx of students and visitors for special events creates unique challenges for transportation management.

The planning partners that are part of the District 2-0 Region include:

- Centre County Metropolitan Planning Commission
- North Central PA Regional Planning and Development Commission
- SEDA Council of Governments

FIGURE 2: TRANSPORTATION PLANNING PARTNER’S COUNTIES WITHIN DISTRICT 2-0
2.1.1 Population

The setting is primarily rural with the exception of State College Borough, which has a population exceeding 50,000 and can be described as an urban area. Centre County is part of Centre County Metropolitan Planning Organization (MPO). McKean, Potter, Elk, Cameron, and Clearfield counties comprise the North Central Rural Planning Organization (along with Jefferson County in District 10-0). Clinton, Juniata and Mifflin counties are part of the SEDA-Council of Governments (SEDA-COG) Rural Planning Organization. SEDA-COG also comprises the following District 3-0 counties: Columbia, Montour, Northumberland, Snyder and Union.

Table 1 reveals that over four hundred and seventy thousand people — or approximately three and a half percent of statewide residents of the Commonwealth of Pennsylvania — live in the District 2-0 Region. Approximately one-third of the Region’s population resides in Centre County, with the remainder scattered among the other eight counties of the Region.

<table>
<thead>
<tr>
<th>County</th>
<th>% Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameron</td>
<td>1%</td>
</tr>
<tr>
<td>Centre</td>
<td>32%</td>
</tr>
<tr>
<td>Clearfield</td>
<td>19%</td>
</tr>
<tr>
<td>Clinton</td>
<td>9%</td>
</tr>
<tr>
<td>Elk</td>
<td>8%</td>
</tr>
<tr>
<td>Jefferson</td>
<td>10%</td>
</tr>
<tr>
<td>Juniata</td>
<td>5%</td>
</tr>
<tr>
<td>McKean</td>
<td>11%</td>
</tr>
<tr>
<td>Mifflin</td>
<td>11%</td>
</tr>
<tr>
<td>Potter</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total Population in the District 2-0 Region</strong></td>
<td><strong>477,188</strong></td>
</tr>
</tbody>
</table>

2.1.2 Transportation System

The District 2-0 transportation system consists of multiple components. These components, which function as separate but related systems, include highways and roads, public and private transit, and airports. A brief description of these components is provided below.

*Highways and Roads*

The roadway network in the District 2-0 Region primarily consists of interstate, freeways, arterials, collectors, local, municipal, and other agency roads. District 2-0 has
approximately 3,500 roadway miles under its jurisdiction, which carry almost 11,000,000 daily vehicle miles of travel (DVMT). The lineal miles to DMVT ratio of 3,150 DMVT/lineal miles is lower than the statewide average ratio of 5,450 DVMT/lineal miles, which reflects the rural nature of the region.

Interstate I-80 extends through the District approximately 99 miles in the east-west direction. I-80 carries the most traffic of any roadway in District 2-0 with an Average Daily Traffic (ADT) of approximately 23,000 vehicles.

Interstate 99 in Centre County, Pennsylvania is under construction for the connection of Bald Eagle to I-80. Connecting the Pennsylvania Turnpike (Interstate 70-76) Bedford with U.S. 220 at Bald Eagle, Interstate 99 is another growing Interstate corridor. Also known as the Appalachian Thruway and the Bud Shuster Highway, it is the first Interstate highway to have its designation written into law. The much-maligned road, currently stretching from Bedford to Bald Eagle, PA, is currently being extended to Interstate 80 (northeast of Bellefonte).

The major freeway in the region is US 22/322, which connects State College to Harrisburg. Other freeways in the region include PA 26, which connects State College to I-80; US 220, which connects Lock Haven to Williamsport; and US 219, which connects Bradford to New York State.

The remaining arterials that make up the National Highway System consist of US 6, US 119, US 220, US 322, and US 522. District 2-0 has over 4,700 linear miles of municipal roads and over 1,600 linear miles of other state and federal roadways managed by other state and federal agencies including State Universities, PA Department of Conservation and Natural Resources, National Park Service and US Forest Service. At over 65% of the lineal miles in District 2-0, these other lineal miles far exceed any other District in PennDOT.

**TABLE 2: SIGNIFICANT HIGHWAY CORRIDORS**

<table>
<thead>
<tr>
<th>Interstates</th>
<th>United States (U.S.) Routes</th>
<th>Pennsylvania (PA) Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate 80 (I-80)</td>
<td>US Route 6 (US-6)</td>
<td>PA Route 26 (PA-26)</td>
</tr>
<tr>
<td>Interstate 99 (I-99)</td>
<td>US Route 22 (US-22)</td>
<td>PA Route 28 (PA-28)</td>
</tr>
<tr>
<td></td>
<td>US Route 119 (US-119)</td>
<td>PA Route 120 (PA-120)</td>
</tr>
<tr>
<td></td>
<td>US Route 219 (US-219)</td>
<td>PA Route 144 (PA-144)</td>
</tr>
<tr>
<td></td>
<td>US Route 220 (US-220)</td>
<td>PA Route 449 (PA-449)</td>
</tr>
<tr>
<td></td>
<td>US Route 322 (US-322)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>US Route 522 (US-522)</td>
<td></td>
</tr>
</tbody>
</table>

The District 2-0 Region encompasses a substantial network of roadways. **TABLE 3** depicts the linear miles of the District 2-0 Region. As reported in PennDOT’s *2005 Highway Statistics*, the Region contains 9,762 linear miles of roadway, signifying 8.1 percent of the Commonwealth’s total linear mileage. This includes 3,501 linear miles of
TABLE 3: DISTRICT 2-0 LINEAR MILES

<table>
<thead>
<tr>
<th>County</th>
<th>PennDOT Linear Miles</th>
<th>Total Linear Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameron</td>
<td>112.7</td>
<td>312.5</td>
</tr>
<tr>
<td>Centre</td>
<td>575.5</td>
<td>1,707.5</td>
</tr>
<tr>
<td>Clearfield</td>
<td>802.8</td>
<td>2,063.5</td>
</tr>
<tr>
<td>Clinton</td>
<td>296.1</td>
<td>1,079.5</td>
</tr>
<tr>
<td>Elk</td>
<td>293.1</td>
<td>829.6</td>
</tr>
<tr>
<td>Juniata</td>
<td>354.9</td>
<td>734.9</td>
</tr>
<tr>
<td>McKean</td>
<td>381.7</td>
<td>1,024.5</td>
</tr>
<tr>
<td>Mifflin</td>
<td>239.7</td>
<td>713.7</td>
</tr>
<tr>
<td>Potter</td>
<td>444.9</td>
<td>1,294.2</td>
</tr>
<tr>
<td>Regional Total</td>
<td>3,501.4</td>
<td>9,761.7</td>
</tr>
<tr>
<td>Statewide Total</td>
<td>39,889.6</td>
<td>120,667.2</td>
</tr>
</tbody>
</table>

2.1.3 Regional Congestion

Transit Service

The District 2-0 Region is currently served by six (6) transit systems, three (3) of which offer fixed route service and demand responsive service and three (3) of which provide only demand-responsive transit service. The primary rural geography of the region makes transit accessibility difficult. The following agencies provide fixed route and demand responsive transit service in the region:

- Centre Area Transit Agency (CATA);
- Centre County Office of Transportation Services;
- DuBois, Falls Creek, Sandy Township Joint Transportation Authority (DuFast); and
- Area Transportation Authority of North Central Pennsylvania (ATA).

The Centre Area Transit Agency (CATA) coverage area includes seven municipalities in Centre County. CATA is the primary transportation provider for Penn State University (PSU). It serves an annual ridership of over 6,000,000. 38,000 (less than 1%) of those trips are demand-responsive. The Centre County Office of Transportation Services provides only demand-responsive transit service within the CATA service area, but perhaps more importantly, in areas of Centre County not served by CATA. They provide trips to neighboring counties as well.

DuFast serves three communities (DuBois, Falls Creek, Sandy Township) in the northwest portion of Clearfield County. DuFast provides service on three fixed routes as
well as Paratransit Service. Area Transit Agency (ATA) serves over 38 communities in a 5,000 square mile area. ATA has an annual ridership of over 400,000 of which 180,000 (45%) are demand responsive trips. The following agencies provide only demand-responsive transit service in the region:

- STEP Inc.
- Mifflin-Juniata Area Agency on Aging (MJAAA).

STEP Inc. provides demand responsive service in Clinton County. MJAAA provides this service in Mifflin and Juniata Counties.

**Air Service**

There are 16 public airports operating in the District 2-0 Region:

- Albert Airport in Clearfield County;
- Bellefonte Airport in Centre County;
- Bradford Regional Airport in McKean County;
- Centre Airpark in Centre County;
- Clearfield Lawrence Airport in Clearfield County;
- DuBois Regional Airport in Jefferson County;
- Mid-State Airport in Centre County;
- Mifflin County Airport in Mifflin County;
- Mifflintown Airport in Juniata County;
- Penn’s Cave Airport in Centre County;
- Punxsutawney Municipal Airport in Jefferson County;
- Ridge Soaring Gliderport in Centre County;
- St. Mary’s Municipal Airport in Elk County;
- Stottle Memorial in Juniata County;
- Valley Forge Bicentennial Heliport in Centre County;
- University Park Airport in Centre County; and
- William T. Piper Memorial Airport in Clinton County.

Bradford Regional Airport (BFD) is located approximately 10 miles south of the City of Bradford in McKean County. BFD is classified as a scheduled service airport by the Pennsylvania Bureau of Aviation. The airport, with 31 based aircraft, experiences over 18,482 annual operations. Two runways serve the commercial and general aviation needs of the area. A National Guard Armory will be built at the Bradford Regional Airport. The armory will be constructed in 2007 and will house the new “Stryker Brigade” headquarters.

University Park Airport (UNV), a commercial non-hub airport, is located approximately five miles north of State College. UNV is classified as a scheduled service airport by the Pennsylvania Bureau of Aviation. The airport is home to 48-based aircraft, and in 1999 it experienced 60,790 operations. The airport has two runways, one is 6,701 feet and the other is 2,349 feet long. The carriers at UNV include Delta, Northwest, United and USAirways, which fly to Cincinnati, Atlanta, Philadelphia, Washington, and Detroit.

DuBois Regional Airport, operated by the Clearfield-Jefferson Regional Airport Authority has served businesses such as the hardwood and powdered metal industries for the
past 40 years. It enplanes approximately 20,000 passengers annually and is located just off Exit 90 of Interstate 80 or (8) miles west of US 219 on PA 830. The airport’s current operations include scheduled commercial service and air cargo services. Its 5,505-foot bituminous runway can serve 12-passenger jets, small turbo prop airplanes, commuter airplanes, and low load 727/737 class jets. Daily USAirways Express flights connect the airport to Pittsburgh International. On March 13, 2002, the airport authority was designated as a Foreign Trade Zone (FTZ) 254. FTZ status allows certain tariffs and taxes to be waived for components that are imported into the U.S. and integrated into American-made products and then re-exported.

**Commercial Vehicle Operations**

Truck volume on I-80 is over 9,000 per day in District 2-0, representing more than 40% of the total vehicles. I-80 is a major goods movement route and is part of the national network for trucks. The I-99 corridor is also expected to carry substantial truck traffic once completed. Truck percentages on I-99 are anticipated to exceed 15% in Centre County. The other highways in the region generally serve only as terminal access routes for the delivery of goods within the region.

**2.2 ITS and Operations**

ITS is not new to the District 2-0 Region. ITS systems have been implemented and are functioning throughout the region, with several more projects in the planning and design stage. An inventory and understanding of these existing systems is critical to the development of the District 2-0 ROP. These applications can potentially form the building blocks of an integrated regional Intelligent Transportation System. Existing ITS systems deployed in the region includes the following:

- Traffic Management Center (TMC);
- Highway Advisory Radio (HAR) systems;
- Road Weather Information Systems (RWIS);
- Dynamic Message Signs (DMS);
- Traffic Signal Systems;
- Traffic Monitoring Stations;
- Automated Fixed Location Anti-Icing System;
- Advanced Public Transportation Systems; and
- Communication Systems.

The ITS planning process in the District 2-0 Region is heavily influenced by stakeholder involvement. This is important to ensure interagency coordination and compatibility, to identify potential institutional issues and challenges, and to provide the necessary education and awareness of ITS in the region. The ROP process is guided by the technical direction of the stakeholders in District 2-0.
2.2.1 Traffic Signals

Traffic signals are the principal form of technology application for traffic management. Traffic signals are located throughout the District 2-0 Region, with the majority of the traffic signals located in the State College and DuBois area. The traffic signals in the District 2-0 Region are owned, operated, and maintained by the local municipalities. Features found in the existing signal systems include, but are not limited to, actuated control, coordinated operation between adjacent signals, and physical interconnects between signals.

The Signal Strategic Plan that is being developed in addition to the ROP process will evaluate the traffic signals throughout the District. The Plan is to be programmed in the ROP so that the high priority corridors identified can be implemented as recommended.

Currently, an Integrated Corridor Management (ICM) Pilot Effort is underway for the Interstate 80/US 219/PA 255 Corridor near DuBois. Under this pilot project, the corresponding PennDOT traffic management centers will have the capability to adjust traffic signal timings on the adjacent arterials when such actions would be beneficial due to incidents on the freeways.

2.2.2 Traffic Management Center

A Traffic Management Center (TMC) is the central location for the collection, processing, and dissemination of information used for management activities. A TMC relies on communication links between the center and various monitoring and control devices in the field. PennDOT Engineering District 2-0 has established a temporary TMC in the District office building in Clearfield. At present, this Center is linked to various ITS field devices in the region including weather monitoring and highway advisory radio. PennDOT Engineering District 2-0 has a new TMC under construction in the District 2-0 Office in Clearfield that will provide a more adequate facility for control of the ITS/Operations in the region.

2.2.3 Traffic Monitoring Stations

This application refers to devices used to measure or monitor traffic conditions, such as speed and volume. Information from these devices may be used by system managers to provide timely responses to changes in demand and to incidents. While some devices may operate in an isolated manner to provide historical traffic volume and speed, the focus for the ROP is on those that can provide real-time information and thus require a communication link to a central location such as a TMC. Existing traffic monitoring devices in the District 2-0 Region include:

- Closed Circuit Television (CCTV) Cameras – CCTV systems are used to provide visual images of highway operations and conditions. These images can then be used to verify incidents, determine what type of emergency response or
The management strategy should be deployed or dispatched, monitor weather conditions, and to identify field equipment such as traffic signals and signs.

The District has plans to deploy CCTV throughout the region. The deployment of CCTV is important for not only verifying incidents, but also reporting this information to motorists traveling through the region as soon as they are detected. The completion of a new TMC in the District office will necessitate the deployment of CCTV throughout the region.

2.2.4 Roadway Weather Information System

The Road Weather Information System (RWIS) application involves the use of sensors and instruments to automatically collect weather information. RWIS stations can collect information about temperature, humidity, wind speed, visibility, precipitation type and rate, and roadway icing. The main purpose of the RWIS is to facilitate the scheduling and dispatch of roadway maintenance and snow clearing crews. In addition, PennDOT makes the data from the stations available to the public through a link on its website: [http://www.dot.state.pa.us](http://www.dot.state.pa.us).

The information gathered from the RWIS stations is collected at the PennDOT Bureau of Maintenance and Operations (BOMO) for process and distribution to users. PennDOT maintains ten (10) RWIS stations throughout the District 2-0 Region. The locations of the RWIS include:

- SR 0006 at Coudersport – Potter County
- SR 0006 at Lantz Corner – McKean County
- SR 0219 at Boot Jack Hill – Elk County
- I-80 Exit 101 at MP 106 Anderson Creek – Clearfield County
- I-80 Exit 111 – Clearfield County
- I-80 Exit 147 at Roadside Rest – Centre County
- SR 0322 at Port Matilda Highway – Centre County
- I-80 Exit 192 at Milepost 190 – Clinton County
- I-80 Exit 192 at Milepost 194 – Clinton County
- SR 0322 at Seven Mountain – Mifflin County

RWIS has become a major part of the 'Total Storm Management'. Total storm management (TSM) is the selection of appropriate strategies that yield the desired Level of Service (LOS) at the lowest cost. There are three steps to TSM: anti-ice early, manage transition, and modify standard operations. RWIS when implemented properly as a protective umbrella covering a region can provide an early warning system for approaching winter events.

2.2.5 Dynamic Message Signs

The Dynamic Message Sign (DMS) applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points. PennDOT maintains thirteen DMS in the region of which
two (2) are located in Clearfield County, nine (9) are located in Centre County, one (1) is located in Juniata County, and one (1) is located in Mifflin County. PennDOT plans to install additional DMS along I-80 and I-99.

PennDOT District 10-0 controls eleven (11) DMS in Jefferson County along I-80. These locations include:

- I-80 Eastbound at Exit 78
- I-80 Westbound at Exit 73
- I-80 Eastbound at Exit 81
- I-80 Westbound at Exit 78
- I-80 Eastbound at Exit 86
- I-80 Westbound at Exit 81
- I-80 Eastbound at Exit 90
- I-80 Westbound at Exit 86
- I-80 Westbound at Exit 90
- I-80 Eastbound at Exit 97
- I-80 Westbound at Exit 97

PennDOT also utilizes portable DMS distributed throughout each of the nine (9) counties. These devices are deployed in construction/work zones, at special events, and other locations to provide traveler information for a limited duration.

### 2.2.6 Highway Advisory Radio

Highway Advisory Radio (HAR) provides traveler information to motorists via AM radio. These systems consist of transmission sites positioned along the roadway network at strategic locations. Typically, HAR systems involve the use of dedicated AM radio frequencies/channels and have a broadcast range of $\frac{1}{2}$ to 2 miles. A HAR system, if updated in a timely fashion, can be used to disseminate a significant amount of traveler information, using a live message or pre-selected recorded messages.

There are 18 HAR transmitters within the District 2-0 region, all of which are located along I-80. The HAR transmitters are controlled by PennDOT from the TMC in Clearfield. PennDOT plans to deploy additional transmitters along I-80 and I-99. PennDOT District 10-0 controls six (6) HAR in Jefferson County. The HAR locations include:

- Exit 73 Corsica
- Exit 78 Brookville – Sigel
- Exit 81 Hazen
- Exit 86 Reynoldsville
- Exit 89 DuBois – Jefferson County
- Exit 97 DuBois – Brockway

PennDOT also utilizes portable HAR transmitters. These devices are distributed in Centre, Mifflin, and Juniata Counties. Similar to the portable DMS, these devices are
deployed in construction/work zones, at special events, and other locations to provide traveler information for a limited duration.

2.2.7 Automated Fixed Location Anti-icing System

The Automated Fixed Location Anti-Icing System (AFLADS) consists of a series of spray disks that deliver a freeze point depressant agent, in a pre-prescribed amount, determined by the roadway surface condition. The AFLADS incorporates the use of RWIS for the pavement temperature. The PennDOT County Office personnel are notified when the system is activated. Therefore PennDOT crews are able to proactively treat other areas. AFLADS provides the advanced warning needed to mobilize crews thereby providing safer driving conditions for the motoring public. There are two (2) AFLADS in the District 2-0 region located along I-80 in Clearfield County. PennDOT plans to deploy an additional AFLADS along I-80 and I-99.

2.3 Other Regional Initiatives

In addition to existing ITS devices already deployed, District 2-0 has a number of operations-related projects that are either in design or construction. For purposes of this planning document, those projects were not included in the prioritization process but nonetheless are important operations project in the region. Some of these projects include HAR deployment on Route 322 and Traffic Signal Coordination and CCTV deployment in DuBois.

In addition, PennDOT has been in discussions with State College Borough regarding a Parking Management System. This system would provide real time information related to available parking spaces in the lots and garages in the downtown area.

Advanced Public Transportation Systems

The transit component of ITS is referred to as Advanced Public Transportation Systems (APTS). Two regional transit agencies (CATA and ATA) are currently engaged in ITS initiatives.

CATA has commenced installation of AVL equipment on fixed route vehicles, with implementation slated for completion by January 2008. Transit traveler information via the web will be part of this deployment. The transit buses will be tracked for their location in the system so that the arrival of CATA buses is known. Information via PDA is planned for a subsequent phase, as are automatic passenger counters and next stop annunciators.

ATA operates a regional transportation system throughout an area nearly 5100 square miles and is implementing ITS technologies in a phased approach as follows:

- Phase 1 – Base Map Data / Geographic Information Systems (GIS),
- Phase 2 – Regional Wireless Data Sharing Wide Area Network (WAN),
- Phase 3 – Mobile Voice and Data Radio, and
- Phase 4 – Computer Aided Dispatch (CAD), AVL and Mobile Data.
The wireless technology is capable of being connected with ITS field devices in the District so that other agencies can share ATA's technology. ATA recently embarked on the Mobile Data Computer (MDC) pilot program in September 2006 to test the use of PA-STARnet radio system as the method of communications between the MDC’s and the communication server housed at ATA. The PA-STARnet system utilizes 800 MHz OpenSky radios with the built-in GPS option procured thru the PA State Contract. The MDC application was coordinated with the scheduling and dispatching software ATA uses in its Regional Call Center and Customer Service Departments. The MDC can record the pre-trip inspection of the vehicle to make sure it's in proper working condition and maintenance can be done according to the pre-trip write-up. The location of vehicles in the system can be tracked by the software and show whether the vehicle is on-time, late or off-line. The entire fleet will utilize the software in September 2007.

2.4 National Initiatives

SAFETEA-LU requires consideration of transportation systems operations and management from two primary levels in the planning process. First, long range transportation plans shall contain operational and management strategies to improve the performance of existing transportation facilities.

FHWA is focusing on a number of high-priority efforts to help reduce congestion on the nation’s highways in support of the US DOT Secretary’s Congestion Relief Initiative. Together, these efforts will provide information that allows more informed decisions, better coordination, and quicker action to avoid and reduce traffic congestion.

Furthermore, the SAFETEA-LU Real-Time System Management Information Program (Section 1201) is to provide all states with the capability to monitor, in real time, the traffic and travel conditions of the major highways of the United States and to share that information to improve the security of the surface transportation system, to address congestion problems, to support improved response to weather events and surface transportation incidents, and to facilitate national and regional highway traveler information.

Finally, the Work Zone Safety and Mobility Final Rule takes effect in October 2007. The Final Rule places increased emphasis on maintaining travel mobility in construction work areas through enhanced operations, traffic management, and public information strategies.

The ROP clearly provides a strong link to the operations and management elements of the long range plan and the plan’s constituent projects and strategies support many of the elements related to the Congestion Initiative, Section 1201, and the Work Zone Safety and Mobility Final Rule.

2.5 Regional Planning Process

Centre County MPO, North Central, SEDA-COG, PennDOT District 2-0 and 10-0 in the Region are responsible for the implementation of planned projects. The MPO/RPO has
the primary role and responsibility of ensuring that the transportation planning process is being carried out in accordance with current Federal and State regulations. The primary planning responsibilities of the MPO/RPO include creating a Long Range Transportation Plan (LRTP), a shorter range Transportation Improvement Program (TIP), a Unified Planning Work Program (UPWP) and conducting proactive Public Participation. The MPO/RPO provides a forum where decision-makers identify issues/opportunities and make informed decisions regarding the programming and implementation of transportation projects and services that address these issues and opportunities.

The TIP is an intermediate-range planning document that reflects the transportation expenditures programmed over a four year period. The TIP contains information on a wide array of transportation projects including aviation, bicycle facilities, planning studies, road improvements and transit, among others. Projects identified in the TIP must be derived from the LRTP to be eligible for Federal funds. ITS projects can be listed on the TIP as stand alone projects or often can be identified in the scope of larger transportation projects.

Each MPO/RPO must develop and administer a TIP, the region’s short range (4 year) investment plan, which prioritizes all transportation related projects within the constraints of federal funding to be received over that period. The TIP is updated every two years and included as a component of the State Transportation Improvement Program (STIP).

The STIP in 2005 and 2007 were developed for all areas of the state. They were developed in cooperation with all planning partners; allowed for a broad range of public comment, including all modal and intermodal surface transportation projects, were consistent with MPO, RPO, independent county long range transportation plans.

Centre County Metropolitan Planning Organization

One of the basic responsibilities of the Centre County Metropolitan Planning Organization (CCMPO) is to approve the use of Federal funds for specific highway and mass transit projects within its geographic boundary. This responsibility is fulfilled through the development and adoption of the short-range Transportation Improvement Program (TIP).

The development and adoption of the long-range plan is another basic responsibility of the CCMPO. The CCMPO's current adopted long-range plan is called "Centre County Long Range Transportation Plan 2030". The Plan was adopted in September 2006 and amended to conform to SAFETEA-LU requirements in June 2007.

North Central PA Regional Planning and Development

The North Central Pennsylvania Regional Planning and Development Commission (NCPRPDC), serving as the Rural Transportation Planning Organization (RTPO), guides the transportation planning and programming process in Cameron, Clearfield, Elk, Jefferson, McKean and Potter counties. The RTPO, operating via an agreement with the Pennsylvania Department of Transportation, approves the development and implementation of highways, transit and other transportation facilities and services. The
RTPO Planning Committee acts as the authority on all regional transportation planning activities. The RTPO is responsible for

- Completing an annual Unified Work Program in order to ensure that statewide transportation mandates required by federal and state regulations are implemented.
- Integrating and implementing PennDOT management systems as decision support tools.
- Updating and adopting a 20-year long-range plan.
- Adopting the Transportation Improvement Program (TIP).
- Initiating activities to satisfy federal and statewide transportation planning and programming mandates, including advertising and holding public meetings on the TIP.

SEDA – Council of Governments

SEDA-Council of Governments (COG) guides the transportation planning and programming process in the rural counties and municipalities of Clinton, Columbia, Juniata and Mifflin, Montour, Northumberland, Snyder, and Union in Central Pennsylvania. SEDA-COG coordinates public information workshops, serves as a depository for transportation-related information, develops special studies, and assists PennDOT in carrying out its mission.
3. REGIONAL OPERATIONS FRAMEWORK

3.1 District 2-0 Approach to Operations

The District 2-0 Region is familiar with ITS/Operations with the completion of the District 2-0 ITS Strategic Plan in 2004. This was used as the basis for the ROP. The projects that were recommended in the District 2-0 ITS Strategic Plan were reviewed for their existing need and if a project had not been deployed in the region then it was recommended in the District 2-0 ROP. The ROP investigated the deployment of the previous projects in order to update operations and fill the ITS/Operations gaps where needed in the region.

Needs Areas

A major step in any study or planning process is to identify, discuss, and prioritize a list of needs and strategies. The examination of existing conditions and the ITS inventory helped to identify potential shortcomings and needs in the region. The Workshop Meetings held with Stakeholders in the Region led the technical direction for the Needs Areas.

The recommended ITS projects set forth in this plan are designed specifically to address the documented transportation needs of the region. The objective is not to simply implement ITS projects because the technologies are available, rather to match existing ITS technologies that meet the transportation needs of the District 2-0 Region and follow the operations for the entire state. This section will document the Needs Areas that were developed in order to help address ITS projects that can be programmed for deployment.

During the Operations Workshop, held on April 20, 2007 the Stakeholders defined the critical ITS/Operation Needs Areas for the District. The discussion expanded upon the needs addressed in the District 2-0 ITS Strategic Plan. The list below summarizes the identified needs:

- Safety;
- Congestion / Traffic Operations;
- Centrally located TMC;
- Emergency Response & Incident Management;
- En-Route and Pre-trip Traveler Information;
- Timely Incident Clearance / Debris Removal;
- Maintenance Activities;
- Communications and Coordination;
- Planning Data;
- CCTV deployment;
- Transit Traveler Information;
- Road/Weather Management;
- Device placement- look at ITS Gap Plans;
- Road Closure Reporting System (RCRS);
- Ramp Meters / Gates;
- Improve Interagency communications; and
- Incident Management Training.

The general needs that came out of the Workshop Meeting discussion were categorized under the following five (5) primary needs areas:

1. Traveler Information
2. Incident and Emergency Management
3. Traffic Signals
4. Maintenance and Construction
5. Institutional Coordination

### 3.2 Operations Area: Traveler Information

Improving the efficiency of the transportation system requires that travelers are informed about the various travel options as well as the real-time operating conditions of the transportation system. One of the major needs for traveler information in the District 2-0 Region is the completion of a TMC. The TMC, which is currently under construction, will be the focal point of traffic operations and traveler information dissemination to the public. The type of information that would be disseminated to the traveling public from the TMC includes roadways conditions, incidents and crashes, construction and maintenance activities, and weather conditions.

Non-recurring congestion due to crashes and special events was identified as a key transportation challenge for the region and the impact is the greatest on high volume roadways such as I-80 and US 322. These roadways have both the highest traffic volumes and the highest crash totals in the region. Recurring and special event congestion are problems in the State College area due to the urbanized area surrounding the PSU campus and the special events such as PSU football games. Mitigating recurring congestion in urbanized areas such as State College was also identified as a regional transportation need, but at a lower priority. Several factors contribute to congestion in the region including:

- Adverse weather conditions;
- Lack of real-time traffic / traveler information;
- Limitations on alternative routes; and
- Activity centers and special events.

The deployment of CCTV is important for verifying incidents on the roadway, but also to enable operators to disseminate traveler information to motorists once an incident is recognized. Operators at the TMC will be able to monitor the video images of the roadway conditions.
A TMC is required for the region to make accurate, timely information readily available to the public. TABLE 4 and the following ITS applications present opportunities to provide enhanced traveler information activities in the region:

- HAR message should include Exit name and number
- Implement 5-1-1 System
- Deployment of CCTV
- Use DMS to post Emergency Messages in addition to Traveler Information
- Kiosks deployed at roadside centers, truck stops and welcome centers to post traveler information

The District 2-0 Region already has ITS/Operation devices in place, but additional deployments coordinated with the construction of the TMC can greatly enhance traveler information in the region. Regardless of the systems deployed for disseminating traveler information, there must be data gathering systems in place, such as CCTV and RWIS, to gather information that must be synthesized and disseminated to the traveling public.

**TABLE 4: RECOMMENDED TRAVELER INFORMATION PROJECT CONCEPTS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1 HAR Deployment</strong> – Deploy HAR for Traveler Information at key locations and junctions. Potential locations in the District 2-0 Region are: PA 26, SR 22, SR 220</td>
<td>PennDOT 2-0</td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td><strong>Phase 2 HAR Deployment</strong> – Deploy HAR for Traveler Information at key locations and junctions. Potential locations in the District 2-0 Region are: Bradford Bypass, SR 144, US 322</td>
<td>PennDOT 2-0</td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td><strong>Phase 1 DMS Deployment</strong> – Deploy Traveler Information devices at key locations and junctions. Potential locations in the District 2-0 Region include: I-80 DMS in Clinton County (2 locations), I-80 DMS in Centre County (1 location), I-80 DMS in Clearfield County (4 locations)</td>
<td>PennDOT 2-0</td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>Description</td>
<td>Lead Agency</td>
<td>Pertinent TSOP Projects</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Phase 2 DMS Deployment – Deploy Traveler Information devices at key locations and junctions. Potential locations in the District 2-0 Region include:</strong></td>
<td><strong>PennDOT 2-0</strong></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>I-80 DMS in Clinton County (4 locations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80 DMS in Centre County (3 locations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80 DMS in Clearfield County (6 locations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Deploy Small-size DMS at I-80 Ramp approaches in Coordination with Signal Strategic Plan – Coordinate this effort with the Signal Strategic Plan as part of an upgrade to the corridors that are identified as high priority corridors parallel to limited access highways.</strong></td>
<td><strong>PennDOT 2-0</strong></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td><strong>Kiosks Program at District 2-0 Locations – Deploy the kiosks/flat panel displays at key locations for travelers in the region to provide weather information via kiosks to visitors and travelers to the region. These potential locations include:</strong></td>
<td><strong>PennDOT 2-0</strong></td>
<td>TSOP 06 – Roadway Weather Management</td>
</tr>
<tr>
<td>Truck Stops</td>
<td><strong>PennDOT BHSTE</strong></td>
<td></td>
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<tr>
<td>Roadside Centers</td>
<td></td>
<td></td>
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<tr>
<td>Park &amp; Ride for State College</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Event Management Plan for Penn State University – Develop an event management plan for Penn State University area, which identifies technologies that may serve the transportation system.</strong></td>
<td><strong>PSU</strong></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td><strong>Computer Aided Reservation, Scheduling and Dispatch (CARSD) Deployment for CATA and DuFAST – Implement a system for demand-responsive transit services with the capability to manage multiple functions under one system.</strong></td>
<td><strong>CATA</strong></td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td><strong>DuFAST</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 4 (CONTINUED): RECOMMENDED TRAVELER INFORMATION PROJECT CONCEPTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Fleet Maintenance for ATA-</td>
<td>ATA</td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td>Implement advanced fleet maintenance system to reduce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operating and maintenance costs of the ATA fleet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State College Multi-modal Facility –</td>
<td>PennDOT 2-0</td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td>Construct a new facility in State College to enhance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>transit services in the region by providing a multi-modal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>connection for travelers and visitors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATA Transit Traveler Information –</td>
<td>ATA</td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td>Implement a system to provide pre-trip travel planning</td>
<td></td>
<td></td>
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<tr>
<td>information such as route and schedule information via:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactive Voice Responsive (IVR) Telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet CARSD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATA Transit Traveler Information –</td>
<td>CATA</td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td>Implement a system to provide pre-trip (routes and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>schedules) and en-route (next bus arrival times) traveler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>information through:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kiosks/displays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus Stop DMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Transit Fare Card –</td>
<td>Transit</td>
<td>TSOP 17 – Transit Operations</td>
</tr>
<tr>
<td>Implement region-wide Smart Card system to support</td>
<td>Agencies</td>
<td></td>
</tr>
<tr>
<td>transit fare payment and regional transit connections</td>
<td>(ATA, CATA</td>
<td></td>
</tr>
<tr>
<td>for multiple agencies.</td>
<td>and DuFAST)</td>
<td></td>
</tr>
</tbody>
</table>

3.3 Operations Area: Incident and Emergency Management

This need refers to the ability to detect, verify, and respond to incidents within the regional transportation system. These needs are ranked fairly high on the prioritized list since Interstate 80 runs through the region and is heavily traveled by trucks. There are several issues that contribute to the challenge of emergency response and incident management in the region. First is the ability to detect and verify incidents; second is the ability to respond to an incident quickly; and third is effective on-scene coordination and cooperation.

During discussion with regional emergency service providers, the following specific issues were identified:

- Message Consistency
• Device placement – ITS Gap Plans
• Road Closure Reporting System (RCRS)
• Improve the use of Incident Command System (ICS)
• NIMS Implementation
• User friendly PennDOT Website
• After action Reviews
• Dedicated funding for Incident Response Training
• Educating Officials
• Include Security and Safety Issues/Concerns
• Centrally located TMC

The primary objectives of this effort are to increase overall safety and reduce the amount of time necessary to respond to and clear a roadway incident. A variety of ITS applications can provide substantial enhancements to existing emergency response and incident management in the region. TABLE 5 addresses the projects that can be implemented for improved Incident and Emergency Management in District 2-0.

TABLE 5: RECOMMENDED INCIDENT AND EMERGENCY MANAGEMENT PROJECT CONCEPTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-80 Traffic Surveillance in Clinton County (2 locations) – Deploy Closed-Circuit TV Cameras at key locations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• I-80 at Exit 192 – Jersey Shore</td>
<td>PennDOT 2-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>• I-80 at Exit 176 – Lock Haven</td>
<td></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>I-80 Traffic Surveillance in Centre County (2 locations) – Deploy Closed-Circuit TV Cameras at key locations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• I-80 at Exit 158 – Milesburg</td>
<td>PennDOT 2-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>• I-80 at Exit 161 – Bellefonte</td>
<td></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>I-80 Traffic Surveillance in Clearfield County (3 locations) – Deploy Closed-Circuit TV Cameras at key locations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• I-80 at Exit 97 – DuBois &amp; Brockway</td>
<td>PennDOT 2-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>• I-80 at Exit 111 – Clearfield &amp; Penfield</td>
<td></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>• I-80 at Exit 120 – Clearfield &amp; Shawville</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-80 Traffic Surveillance in Jefferson County (1 location) – Deploy Closed-Circuit TV Cameras at key location:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• I-80 at Exit 78</td>
<td>PennDOT 2-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
</tbody>
</table>
3.4 Operations Area: Maintenance and Construction

Improved maintenance of the street and highway system is a challenge that affects all transportation facilities in the region. The weather in the region has a significant impact on the maintenance activities as it relates to snow removing activities, as well as scheduling routine maintenance. Congestion due to construction and maintenance was cited as a regional transportation challenge. Improved efficiency of maintenance activities can potentially reduce disruption to traffic flows, improve safety for vehicles and maintenance personnel, and reduce costs for snow removing operations.

The following needs areas were addressed by the District Maintenance Managers on the Maintenance Questionnaire:

- Personnel
- Incident Management Training
- Work Zone Traffic Control
- Coordinated Road Closures
- Smart Work Zones
- Detour Routing Posted via the internet
- Road/Weather Management
- Speed Enforcement
- RWIS Maintenance
- Weigh-in-Motion (WIM)

There are a number of ITS opportunities that can enhance existing maintenance operations. The predictive capability of additional RWIS stations can help allocate resources effectively for weather-related activities. Technological developments such as robotics and automation can improve the efficiency and safety of highway maintenance and construction activities. For example, advanced vehicle control systems using magnets in the roadways can help guide snow plows, allowing them to maintain higher speeds even under low visibility conditions. ITS applications such as portable DMS and portable HAR can be used to improve work zone safety. Information systems can also help direct travelers to alternative routes or times to avoid traffic disruptions, thereby reducing the congestion and delays experienced by travelers.

It should be noted that the implementation of ITS systems in the region will also create new maintenance challenges including proper training and skill sets, inventory management, and equipment maintenance. TABLE 6 includes the recommended projects to improve Maintenance and Construction in the District 2-0 Region.
<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>District 2-0 Region Detour Route GIS Mapping</strong> – Develop GIS Detour Route</td>
<td>PennDOT 2-0</td>
<td>TSOP 02 – Road Closure Reporting System</td>
</tr>
<tr>
<td>maps for the District 2-0 Region to be posted on the Internet. Allow changes</td>
<td></td>
<td>TSOP 05 – Incident Management Processes and Procedures</td>
</tr>
<tr>
<td>to detour routes to be made immediately.</td>
<td></td>
<td>TSOP 12 – Mobility in Work Zones</td>
</tr>
<tr>
<td><strong>Deploy Technology Assisted Speed Enforcement</strong> – Develop technology</td>
<td>PennDOT 2-0 / PSP</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>assisted speed enforcement in conjunction with PSP.</td>
<td></td>
<td>TSOP 05 – Incident Management Processes and Procedures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TSOP 07 – Crash Prevention/Safety</td>
</tr>
<tr>
<td><strong>Variable Speed Limit (VSL) on I-80</strong> – Deploy Variable Speed Limits on</td>
<td>PennDOT 2-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>I-80 that will change the posted speed limit based on road, traffic, and</td>
<td></td>
<td>TSOP 05 – Incident Management Processes and Procedures</td>
</tr>
<tr>
<td>weather conditions. Vary speed limits and improve safety by restricting</td>
<td></td>
<td>TSOP 07 – Crash Prevention/Safety</td>
</tr>
<tr>
<td>speeds during adverse conditions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regional Weather Service</strong> – Investigate a contract with a weather</td>
<td>PennDOT 2-0</td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>service to enhance dissemination of weather (including forecasts) to</td>
<td></td>
<td>TSOP 13 – ITS and IT</td>
</tr>
<tr>
<td>motorists.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Deploy Ramp Closure Gates for Access Ramps to I-80</strong> – Plan and</td>
<td>PennDOT 2-0</td>
<td>TSOP 02 – Road Closure Reporting System</td>
</tr>
<tr>
<td>implement a pilot program to deploy ramp closure devices to I-80 consistent</td>
<td></td>
<td>TSOP 04 – Incident Management Traveler Information</td>
</tr>
<tr>
<td>with Federal guidelines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weigh-in-Motion (Exit 120 on I-80)</strong> – Deploy Weigh-in-Motion (WIM)</td>
<td>PennDOT 2-0</td>
<td>TSOP 05 – Incident Management Processes and Procedures</td>
</tr>
<tr>
<td>devices that are designed to capture and record truck axle weights and</td>
<td></td>
<td>TSOP 07 – Crash Prevention/Safety</td>
</tr>
<tr>
<td>gross vehicle weights as they drive over a sensor.</td>
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</tbody>
</table>
3.5 Operations Area: Institutional Coordination

Inter-agency communications and cooperation are critical to the efficient operation of the transportation system. Effective communication systems allow all transportation-related agencies to share data and information in a more timely and efficient manner. Personnel are able to conduct operations safely and efficiently with seamless communications.

In the District 2-0 Region, there are a number of technical and institutional factors that reduce the effectiveness of the overall communications system. Technical issues include the lack of compatible radio systems and broadband communications networks in the region.

The Institutional Needs Areas for the District 2-0 Region concerning communications and funding issues in the District 2-0 Region include:

- TMC Staffing
- Regional TMC
- Improve Interagency communications
- Fostering relationships among planning partners

The incompatibility of radio systems is a challenge for direct inter-agency communication. The new statewide 800 MHz system offers an option for overcoming this obstacle.

Institutional issues generally involve the protocols used to facilitate and guide the transfer of information. Formalized protocols with information flows can help to address this regional issue. ITS planning efforts such as the development of the ITS Strategic Plan can provide a forum for identifying information-sharing opportunities and establishing formal protocols to facilitate such data sharing.

Another key communication issue related to the deployment of ITS technologies in the region is the device-to-center communications. This communication involves data flows from monitoring stations such as RWIS and control information for devices such as DMS, CCTV, and even traffic signal systems. PennDOT primarily uses Plain Old Telephone Service (POTS) to communicate with field devices. For ITS devices with low bandwidth requirements, such as DMS and RWIS, a standard telephone line is sufficient. As PennDOT begins to deploy systems with higher bandwidth requirements such as CCTV, high-speed wire line technology such as fiber optic cable will become the preferred method of communications. Where fiber-optic cable is not feasible due to financial or other constraints, T1 or high-speed wireless technologies should be considered.

**TABLE 7** lists the recommended projects for deployment to help improve Institutional Coordination in the District 2-0 Region.
### TABLE 7: RECOMMENDED INSTITUTIONAL COORDINATION TRAFFIC SIGNALS PROJECT CONCEPTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
</table>
| Develop Inter-Agency Communications Protocols (TSOP 05)                    | PennDOT 2-0      | TSOP 01 – Inter-Agency Incident Reporting System  
TSOP 05 – Incident Management Processes and Procedures  
TSOP 13 – ITS and IT |
| – Develop communications protocols for effective incident management in conjunction with TSOP 05. |                  |                                                                                        |
| Develop Links between Operations Centers (D2, PSP, and County 9-1-1 Center) – High-speed data links should be established between the TMC, County 9-1-1 Centers, and the State Police. These links will allow the quick and efficient exchange of data while enhancing incident coordination and provide opportunity for redundancy. | PennDOT 2-0 | TSOP 01 – Inter-Agency Incident Reporting System  
TSOP 03 – Interstate Incident Management Program  
TSOP 13 – ITS and IT |
| Construct a Multi-agency RTMC – Develop a region-wide TMC in the State College area that is centrally located for Districts 2-0, 9-0, and 10-0 to coordinate all traffic incidents and data gathering systems. | PennDOT 2-0 | TSOP 09 – STMC and TMC’s  
TSOP 20 – Organization |

### 3.6 Operations Area: Traffic Signals

The Traffic Signals Operations Area paves the way for a more centralized traffic signal program that holistically plans and coordinates activities, as well as operates and maintains signals at the corridor and regional levels. Traffic signals are an asset that should be better managed, are a shared responsibility, and need to be considered on a corridor and regional level.

A Signal Strategic Plan is being completed for District 2-0. The recommendations from the Signal Strategic Plan will be programmed in the ROP so that they can be implemented in the District 2-0 Region. The needs related to Traffic Signals that are a priority for the Stakeholders in the District includes:

- Traffic Signal interconnection on key corridors
- Update traffic signal technology by working with municipalities
- Remote signal control for detour routing on parallel routes to limited access highways

TABLE 8 lists the recommended projects that are planned to be addressed by the ROP for Traffic Signals.
TABLE 8: RECOMMENDED TRAFFIC SIGNALS PROJECT CONCEPTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Lead Agency</th>
<th>Pertinent TSOP Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement Recommendations from “Signal Strategic Plan” – The recommendations out of the Signal Strategic Plan will be implemented as part of the ROP program.</td>
<td>PennDOT 2-0</td>
<td>TSOP 08 – TAC Signal Study Implementation</td>
</tr>
<tr>
<td>Update High Priority Traffic Signal Corridors – Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. The following key corridors can be recognized for Detour Routes in the region:</td>
<td>PennDOT 2-0 / PennDOT 10-0</td>
<td>TSOP 03 – Interstate Incident Management Program</td>
</tr>
<tr>
<td>▪ Business Rt. 322 (State College/College Twp/Patton Twp)</td>
<td></td>
<td>TSOP 08 – TAC Signal Study Implementation</td>
</tr>
<tr>
<td>▪ Twenty Eighth Division Hwy (Clearfield Borough)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ E. Main St/High St (City of Bradford/Foster Township)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ William Penn Hwy/W 4th St, N. Juniata St/E. Market St./Valley St/S. Walnut St/E. Walnut St (Lewistown Borough)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ W. College Ave – SR 26 (College Township)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Punxsutawney Traffic Signal System (Jefferson County)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.7 Framework Summary

The Needs Areas that were developed for the District 2-0 ROP were derived from Stakeholder participation as well as the District 2-0 ITS Strategic Plan that was completed in 2004. The needs from the ITS Strategic Plan were discussed at Stakeholder Workshop #1 where feedback was provided on which needs were still relevant to the District 2-0 Region and what else they wanted to see. Each Need Area formed a Task Force Group that met to identify applicable Project Concepts for the Region. The Project Concepts were developed based on those listed in the ITS Strategic Plan and have not been deployed yet as well as projects created by PennDOT as part of the TSOP Projects. The list below addresses the Need Areas developed for the District 2-0 ROP.

Needs Areas: Traveler Information

En-Route Traveler Information:
▪ Provide emergency bridge postings/closures/detours to public
▪ Deploy HAR and DMS at key locations
▪ Develop an Event Management Plan for Penn State University/State College
▪ Disseminate Roadway Weather Conditions
Pre-Trip Traveler Information:
- Improve coordination with the media
- Implement the 5-1-1 System
  - Phone
  - Web
- Improve Tourist/Visitor information related to transportation

Transit Traveler Information:
- Provide real-time arrival information via DMS and the web
- Improve Transit services through AVL, dynamic dispatching and computer-aided trip reservation system
- Improve travel time for transit journeys and coordinate transit operations to help increase ridership
- Implement a regional fare card
- Improve intermodal/multi-modal connections

Needs Areas: Traffic Signals

Improve Traffic Signal operations and coordination:
- Implement Traffic Signal interconnection on key corridors
- Update traffic signal technology by working with municipalities
- Remote signal control for detour routing on parallel routes

Needs Areas: Incident and Emergency Management

Traveler Safety:
- Deploy additional ITS devices in areas of congestion
- Improve safety on roadways with site specific safety advisories and warnings
- Disseminate detour routes via HAR and DMS
- Utilize CCTV surveillance for monitoring incidents and infrastructure

Incident Management:
- Communication Training for emergency responders
- Reduce incident clearance times through improved coordination

Unified Command-Command System (ICS)/National Incident Management System (NIMS):
- Communication training for emergency responders and PennDOT
- Emergency Responders and Maintenance Crews need to communicate incident information better

Needs Areas: Institutional Coordination

Improve Coordination among agencies:
- Establish Inter-Agency Communications Protocols
- Coordinate traffic monitoring activities between operations and planning
- Utilize Inter-operable Radio Systems for on-site communications

**Regional Traffic Management Center (RTMC):**
- Develop a region-wide TMC to coordinate all traffic information and data gathering systems

**Needs Areas: Maintenance and Construction**

**Personnel:**
- Coordinate additional manpower to sustain traffic control during emergencies
- Expand PennDOT personnel available to operate ITS devices during an emergency

**Unified Command-Incident Command System (ICS)/National Incident Management System (NIMS):**
- Provide communication training for Emergency Responders and PennDOT
- Emergency Responders and Maintenance Crews need to communicate incident information better

**Smart Work Zones:**
- Provide advanced work zone management and traffic control
- Implement work zone traffic control for roadway maintenance and construction sites

**Detour Routing:**
- Develop pre-assigned detour routes to display on DMS
- Post GIS Detour Routes on the Internet
- Improve communications with Utility Companies in regards to down lines on the roadway
- Improve road closure procedures

**ITS Deployment and Maintenance:**
- Improve maintenance of existing ITS devices (i.e. RWIS maintenance)
- Make portable DMS permanent in Strategic Locations

**Road/Weather Management:**
- Control speeding during incidents and inclement weather (i.e. variable speed limit)
- Deploy more functional RWIS at strategic locations

**Use ITS to reduce congestion:**
- Improve congestion in work zones through the TMC operations (i.e. DMS, HAR)
- Utilize Portable Surveillance and Delay Advisory System
- Utilize DMS for football games and Special Events at PSU
4. REGIONAL PROGRAM

4.1 Overview

Projects that fall under the ROP are projects that are developed based on PennDOT’s vision and address one or more of PennDOT’s operational needs. The needs of District 2-0 Region fall under some or all of the projects set forth in the TSOP and are to be addressed by the ROP. The projects referenced in this plan are selected because of their ability, to establish an operations framework for PennDOT and to collectively contribute towards achieving PennDOT’s operational goals.

Many of the projects lay a foundation for important work in such areas as incident management and traveler information. This mainstreaming of the ROP also ensures projects are incorporated into the existing planning and programming functions that the MPOs and RPOs in the District 2-0 Region, including the 2009 TIP and Long-Range Transportation Plan update. Overall coordination and cooperation between agencies is critical for the successful implementation of the ROP.

The following is a list of the TSOP projects that are relevant to the ROP projects recommended for the District 2-0 Region:

- TSOP 01 – Inter-Agency Incident Reporting System
- TSOP 02 – Road Closure Reporting System (RCRS)
- TSOP 03 – Interstate Incident Management Program
- TSOP 04 – Incident Management Traveler Information
- TSOP 05 – Incident Management Processes and Procedures
- TSOP 06 – Roadway Weather Management
- TSOP 08 – TAC Signal Study Implementation
- TSOP 09 – STMC and TMCs
- TSOP 12 – Mobility in Work Zones
- TSOP 13 – ITS and IT
- TSOP 17 – Statewide Transit Operations
- TSOP 20 – Organization

These projects are the “building blocks” of the ROP. They are significant statewide priorities that are included in the ROP projects to bring potential benefits to the District 2-0 Region.

Some project initiatives prepared in District 2-0 previously came out of the District 2-0 ITS Strategic Plan in 2004. The plan provided the direction for the application of advanced transportation-related technologies. As part of the Strategic Plan, Stakeholders were involved representing the transportation, law enforcement and emergency response agencies. These agencies were also involved with the District 2-0 ROP and helped in establishing the focus of transportation in the region.
4.2 Mainstreaming Operations

Pennsylvania’s Regional ITS Architecture set the plan for “mainstreaming” ITS throughout Pennsylvania. “Mainstreaming” is, simply, getting technology issues in the transportation environment in front of the representative regional bodies for discussion, analysis, and decision making, in the same way that traditional transportation improvements are processed. ITS and Operations can no longer be considered just a PennDOT initiative, but must now be viewed as requiring regional input.

The ROP lays out the region’s short-term and long-term approach to transportation operations. It identifies, defines, and prioritizes operational-focused projects for the region that are consistent with regional and statewide operations objectives. The extent of devices to be deployed and the funding available for deployment are the factors used to determine implementation.

4.3 Project Priorities and Sequences

The Recommended Project Deployments were developed based on the discussions during each Task Force Meeting. The project deployments were categorized as Short-Term and Long-Term Projects based on the project’s necessity, funding needs, and complexity. The Project Descriptions are included in APPENDIX A for Short-Term Projects and APPENDIX B for Long-Term Projects.

Once the list of recommended projects was formulated, Stakeholders were asked to rank the importance of each project in relation to the needs of the District 2-0 Region. Voting Sheets were provided at Stakeholder Workshop Meeting #2 for the Recommended Short-Term Projects and a separate voting sheet for Long-Term Projects. Stakeholders were asked to vote on a scale of 1 (low priority) to 5 (high priority). This ranking process was used to determine regional priorities as each Stakeholder sees fit for the District 2-0 Region. A number of factors were considered when establishing these rankings:

- Need
- Complexity of the Project
- Funding Availability
- Prior Projects that would be required
- Regional Coordination

The priorities established in this plan are intended to help determine where ITS funding should be focused for the 2009-2012 TIP. It also provides a roadmap for the planning partners to plan, fund, and implement ITS initiatives in a way that supports the regional vision and objectives.

4.3.1 Short-Term Program

The ITS to be deployed under “short-term” according to the ROP includes projects that should be built or programmed within 1 to 2 years. These deployments include CCTV, DMS, Recommendations from the Signal Strategic Plan, Inter-Agency Communications,
Ramp Gates at I-80 Access Ramps and links between Operations Centers to support the ITS deployment. There is no funding currently allocated for the deployment of these ITS elements. All elements classified as part of the short-term plan are considered a high-priority and are included below in TABLE 9.

Short-Term Project 3 – Deploy Ramp Closure gates for Access Ramps to I-80 is a top priority statewide due to the February 14th, 2007 Winter Storm that shutdown Interstate-78. For this reason, statewide efforts have been made to prevent this from happening again. The deployment of Ramp Closures gates for Access Ramps will be coordinated with statewide efforts to deploy them on the Interstate so that it can be shut-down at the onset of a storm.

**TABLE 9: REGIONAL SHORT-TERM ITS PROJECT PRIORITIES**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Project ID</th>
<th>Description</th>
<th>Need Area</th>
<th>Proposed Lead</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ST-01</td>
<td>Develop Links between Operations Centers (D2, PSP, County 911 Centers)</td>
<td>Institutional Coordination</td>
<td>PennDOT 2-0</td>
<td>Deployment: $10,000/per link to T1 Line Annual O&amp;M: $84,000</td>
</tr>
<tr>
<td>1</td>
<td>ST-02</td>
<td>Develop Inter-Agency Communications Protocols (TSOP 05)</td>
<td>Institutional Coordination</td>
<td>PennDOT 2-0</td>
<td>Deployment: $150,000</td>
</tr>
<tr>
<td>3</td>
<td>ST-03</td>
<td>Deploy Ramp Closure Gates for Access Ramps to I-80</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $50,000 with additional costs for pilot deployment</td>
</tr>
<tr>
<td>4</td>
<td>ST-04</td>
<td>I-80 Traffic Surveillance in Clearfield County (3 locations)</td>
<td>Incident and Emergency Management</td>
<td>PennDOT 2-0</td>
<td>Deployment: $150,000 Annual O&amp;M: $7,500</td>
</tr>
<tr>
<td>5</td>
<td>ST-05</td>
<td>I-80 DMS in Clearfield County (4 locations)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $860,000 Annual O&amp;M: $24,000</td>
</tr>
<tr>
<td>6</td>
<td>ST-06</td>
<td>Update High Priority Traffic Signal Corridors: Business Rt. 322 (State College/College Twp/Patton Twp)</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>Deployment: $15,000 per signal Annual O&amp;M: $1,200/signal</td>
</tr>
<tr>
<td>7</td>
<td>ST-07</td>
<td>I-80 Traffic Surveillance in Centre County (2 locations)</td>
<td>Incident and Emergency Management</td>
<td>PennDOT 2-0</td>
<td>Deployment: $100,000 Annual O&amp;M: $5,000</td>
</tr>
<tr>
<td>8</td>
<td>ST-08</td>
<td>I-80 Traffic Surveillance in Jefferson County (1 location)</td>
<td>Incident and Emergency Management</td>
<td>PennDOT 2-0</td>
<td>Deployment: $50,000 Annual O&amp;M: $2,500</td>
</tr>
<tr>
<td>9</td>
<td>ST-09</td>
<td>I-80 Traffic Surveillance in Clinton County (2 locations)</td>
<td>Incident and Emergency Management</td>
<td>PennDOT 2-0</td>
<td>Deployment: $100,000 Annual O&amp;M: $5,000</td>
</tr>
</tbody>
</table>
TABLE 9 (CONTINUED): REGIONAL SHORT-TERM ITS PROJECT PRIORITIES

<table>
<thead>
<tr>
<th>Priority</th>
<th>Project ID</th>
<th>Description</th>
<th>Need Area</th>
<th>Proposed Lead</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>ST-10</td>
<td>I-80 DMS in Centre County (1 location)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $215,000</td>
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<td></td>
<td>Annual O&amp;M: $6,000</td>
</tr>
<tr>
<td>11</td>
<td>ST-11</td>
<td>Update High Priority Traffic Signal Corridors: Twenty Eighth Division Hwy</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>Deployment: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Clearfield Borough)</td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
<tr>
<td>11</td>
<td>ST-12</td>
<td>Update High Priority Traffic Signal Corridors: W. College Ave – SR 26</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>Deployment: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Ferguson Township)</td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
<tr>
<td>13</td>
<td>ST-13</td>
<td>Update High Priority Traffic Signal Corridors: William Penn Hwy/W 4th St,</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>Deployment: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N. Juniata St/E. Market St/Valley St/S. Walnut St/E. Walnut St. (Lewistown</td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Borough)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>ST-14</td>
<td>I-80 DMS in Clinton County (2 locations)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $430,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $12,000</td>
</tr>
<tr>
<td>13</td>
<td>ST-15</td>
<td>Implement Recommendations from “Signal Strategic Plan”</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>TBD</td>
</tr>
<tr>
<td>16</td>
<td>ST-16</td>
<td>Regional Weather Service</td>
<td>Maintenance and</td>
<td>PennDOT 2-0</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>ST-17</td>
<td>Phase 1 HAR Deployment (PA 26, SR 22, SR 220)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $128,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $10,000</td>
</tr>
<tr>
<td>18</td>
<td>ST-18</td>
<td>District 2-0 Region Detour Route GIS Mapping</td>
<td>Maintenance and</td>
<td>PennDOT 2-0</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>ST-19</td>
<td>Update High Priority Traffic Signal Corridors: E. Main St/High St (City of</td>
<td>Traffic Signals</td>
<td>PennDOT 2-0</td>
<td>Deployment: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bradford/Foster Township)</td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
<tr>
<td>20</td>
<td>ST-20</td>
<td>Update High Priority Traffic Signal Corridors: Punxsutawney Traffic Signal</td>
<td>Traffic Signals</td>
<td>PennDOT 10-0</td>
<td>Deployment: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System (Jefferson County)</td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
</tbody>
</table>
4.3.2 Long-Term Program

The ITS recommendations proposed for deployment under “long-term” according to the ROP should be completed beyond 3+ years. These deployments include CCTV, DMS, HAR, construction of a new Multi-agency RTMC, transit traveler information and speed enforcement technology. The projects listed as “Long-Term” are those that require large amounts of funding, are highly complicated or are not as high of a priority.

The ROP will be updated every two years. This will allow the projects to be updated as they progress to their deployment stage. TABLE 10 includes the Long-Term Prioritized Projects.

**TABLE 10: REGIONAL LONG-TERM ITS PROJECT PRIORITIES**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Project ID</th>
<th>Description</th>
<th>Need Area</th>
<th>Proposed Lead</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LT-01</td>
<td>Construct a Multi-Agency RTMC</td>
<td>Institutional Coordination</td>
<td>PennDOT 2-0</td>
<td>Deployment: $4,800,000 Annual O&amp;M: $1,200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $1,200,000</td>
</tr>
<tr>
<td>2</td>
<td>LT-02</td>
<td>Deploy Small-size DMS at I-80 Ramp approaches in coordination with Signal Strategic Plan</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $100,000/sign Annual O&amp;M: $4,000/sign</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $4,000/sign</td>
</tr>
<tr>
<td>2</td>
<td>LT-03</td>
<td>I-80 DMS in Clearfield County (6 locations)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $1,290,000 Annual O&amp;M: $36,000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $36,000</td>
</tr>
<tr>
<td>4</td>
<td>LT-04</td>
<td>I-80 DMS in Centre County (3 locations)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $645,000 Annual O&amp;M: $18,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $18,000</td>
</tr>
<tr>
<td>5</td>
<td>LT-05</td>
<td>I-80 DMS in Clinton County (4 locations)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $860,000 Annual O&amp;M: $24,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $24,000</td>
</tr>
<tr>
<td>5</td>
<td>LT-06</td>
<td>Event Management Plan for PSU/State College</td>
<td>Traveler Information</td>
<td>PSU</td>
<td>Deployment: $925,000 Annual O&amp;M: $50,000</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $50,000</td>
</tr>
<tr>
<td>7</td>
<td>LT-07</td>
<td>Variable Speed Limit (VSL) on I-80 Maintenance and Construction</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $5,000/sign</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual O&amp;M: $5,000/sign</td>
</tr>
<tr>
<td>8</td>
<td>LT-08</td>
<td>CATA Transit Traveler Information</td>
<td>Traveler Information</td>
<td>CATA</td>
<td>Deployment: $750,000 Annual O&amp;M: $75,000</td>
</tr>
</tbody>
</table>


TABLE 10 (CONTINUED): REGIONAL LONG-TERM ITS PROJECT PRIORITIES

<table>
<thead>
<tr>
<th>Priority</th>
<th>Project ID</th>
<th>Description</th>
<th>Need Area</th>
<th>Proposed Lead</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>LT-09</td>
<td>Weigh-in-Motion (Exit 120 on I-80)</td>
<td>Maintenance and Construction</td>
<td>PennDOT 2-0</td>
<td>Deployment: $1,500,000 Annual O&amp;M: $120,000</td>
</tr>
<tr>
<td>10</td>
<td>LT-10</td>
<td>Traveler Information Kiosks</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $20,000/site Annual O&amp;M: $2,000/site</td>
</tr>
<tr>
<td>11</td>
<td>LT-11</td>
<td>Phase 2 HAR Deployment (Bradford Bypass, SR 144, US 322)</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>Deployment: $96,000 Annual O&amp;M: $7,500</td>
</tr>
<tr>
<td>12</td>
<td>LT-12</td>
<td>Regional Transit Fare Card</td>
<td>Traveler Information</td>
<td>Transit Agencies TBD</td>
<td>Deployment: TBD</td>
</tr>
<tr>
<td>12</td>
<td>LT-13</td>
<td>ATA Transit Traveler Information</td>
<td>Traveler Information</td>
<td>ATA</td>
<td>Deployment: $750,000 Annual O&amp;M: $75,000</td>
</tr>
<tr>
<td>14</td>
<td>LT-14</td>
<td>Deploy Technology Assisted Speed Enforcement</td>
<td>Maintenance and Construction</td>
<td>PennDOT 2-0</td>
<td>Deployment: $225,000</td>
</tr>
<tr>
<td>15</td>
<td>LT-15</td>
<td>CARSD Deployment for CATA &amp; DuFAST</td>
<td>Traveler Information</td>
<td>CATA &amp; DuFAST</td>
<td>$125,000 per system/agency</td>
</tr>
<tr>
<td>16</td>
<td>LT-16</td>
<td>State College Multi-modal Facility</td>
<td>Traveler Information</td>
<td>PennDOT 2-0</td>
<td>TBD</td>
</tr>
<tr>
<td>17</td>
<td>LT-17</td>
<td>Advanced Fleet Maintenance for ATA</td>
<td>Traveler Information</td>
<td>ATA</td>
<td>Deployment: $600,000 Annual O&amp;M: $192,000</td>
</tr>
</tbody>
</table>

4.4 Regional Oversight

Ultimately, to be successful ROP implementation will require the collaboration of many Stakeholders. However, to help move the implementation process forward, it is expected that PennDOT District 2-0, Centre County MPO, North Central, and SEDA-COG will provide oversight and eventually be responsible for championing this Plan. This Regional Steering Committee will further track progress on implementation, oversee any “regional” projects, track performance measures and lead the update of any future ROPs.
4.5 Institutional Considerations

The recommended project deployments were developed from the discussions held at the Task Force Meeting and were developed in the ITS Strategic Plan. The Workshop and Task Force Meetings assembled representatives of the District 2-0 Region together who are familiar with the transportation operations in the District 2-0 Region. The Stakeholder participation was an important part of the ROP that helped identify planning and transportation needs to be programmed as part of the ROP. All the needs addressed at the ROP meetings were important ITS/Operation needs that Stakeholders wanted to see addressed in the District 2-0 Region.

Throughout the Stakeholder meetings, there were many needs areas raised and suggestions made that fall outside of the limits of ROP project deployments. These suggestions are, nonetheless, regionally significant and need to be captured as part of the ROP. Participants believed that to be appropriately addressed many of these suggestions and recommendations needed to be raised at a level higher than the PennDOT District or the region – either by PennDOT Central Office or the state government. This section identifies and discusses those institutional concerns that were identified as most critical in the opinion of ROP participants.

The Institutional Suggestions made by District 2-0 Stakeholders fall into the following five (5) categories:

- Technology Sharing
- Improved Incident Management
- Support 511 Statewide Implementation
- Operations Management
- Personnel

Technology Sharing

The possibility of utilizing other agencies technology is important to preserve capital resources. Sharing other agencies’ equipment can help to facilitate the efficient exchange of information and ultimately its dissemination to the general public. The Area Transportation Authority (ATA) utilizes several wireless sites in the District that can be investigated for the ability to use with District 2-0’s ITS field devices.

An additional suggestion was to investigate opportunities to utilize transit data through information sharing, for example AVL and In-vehicle road sensors. This would involve PennDOT and contractor policy changes, as currently PennDOT does not share technology with individual devices.

Recommendations to consider:

- Investigate North Central Broadband services
- Utilize Transit Data
Improved Incident Management

It is recommended that the District 2-0 Region participate in incident management training programs to help improve the operations coordination between agencies involved with incident management. The County Emergency Management Agencies utilize training programs periodically that would benefit PennDOT and Transit providers. These programs should include PennDOT District 2-0 and Transit providers in their incident management training.

The Federal Highway Administration (FHWA) Roadway Operations Self Assessment Workshop has developed an easy-to-use self-assessment tool that state and local transportation agencies can use to assess their own roadway operations performance, and to find ideas of how to achieve better operations. The self-assessment covers a broad range of traffic operations areas, including traffic signal timing, incident management, work zones, and freeway service patrols. The improvement of roadway operations offers excellent low-cost opportunities for improving the transportation system performance through enhanced management of existing facilities. This Self-Assessment Workshop can be done with the help of FHWA at a low costs. There is interest for Centre County to perform the District’s first Self Assessment.

Recommendations to consider:

- Conduct Joint Training – NIMS/ICS
- Utilize Smart Work Zones in Construction areas to improve traveler safety
- Investigate Photogrammetry for PSP

Support 511 Statewide Implementation

As part of the Statewide 511 Implementation it is recommended that District 2-0 coordinate deployment efforts with PennDOT Central Office. The 511 system will allow users to access pre-trip and en-route traveler information via the phone and internet. It is encouraged that District 2-0 address any needs for implementation with the 511 Coalition to help coordinate deployment efforts.

Recommendations to consider:

- Support 5-1-1 Implementation

Operations Management

One item of great interest within the Workshop and Task Forces was the importance of maintaining the ITS and operations within PennDOT District 2-0 Region. It is recommended that the maintenance of existing ITS elements, including RWIS and HAR, be prioritized.

As the focus shifts towards better operating the transportation systems that we currently have in place, there will need to be a plan in place in order to ensure that the operations systems deployed are working up to their designed potential. In order for additional ITS
devices to be recommended for deployment, the existing devices need to be in proper working condition.

A recurring topic of discussion throughout the stakeholder workshops and incident/event management task forces were the benefits that could be incurred by converting to an interoperable 800 MHz radio system. The PSP in the District are currently running a pilot program with the radio system and have shown great success in its capacity for facilitating more seamless communications. Support of this system is recommended for the entire District 2-0 Region. Having an interoperable system in place will greatly increase the coordination in the deployment of emergency responders and management of incidents.

Recommendations to consider:

- Investigate alternative TMC/RTMC Concepts.
- Support the Statewide Interoperable 800 MHz Radio System.
- Identify dedicated funding for ITS Maintenance.

**Personnel**

Historically, PennDOT’s mission has been to be the designer, builder and maintainer of the state roadway system. Due to the recognition of increasing congestion, the advent of new technologies, and fiscal constraints, it is now being asked to improve operations of the transportation system. This is a concern that has been raised by other ROP stakeholder groups throughout the state and is currently being addressed at the statewide level through the development of TSOP-20: Personnel/Organization. It has been recommended by the regional stakeholders that District 2-0 address its operations staffing needs in concurrence with the policies that come out of this statewide effort.

There is also a need to establish a formal training program for both PennDOT and consultant operations staffing. The completion of a new TMC will necessitate improve training programs for ITS Operators.

Recommendations to consider:

- Address Staffing Needs in Concurrence with TSOP-20.
- Establish a Standard Training Program for Operations Staffing in the District 2-0 TMC.
5. FUNDING SOURCES

Linking planning and operations is important to improve transportation decision-making and the overall effectiveness of the system. Coordination between planners and operators helps ensure that regional transportation investment decisions reflect full consideration of all available strategies and approaches to meet regional goals and objectives.

Funding is a powerful tool for promoting participation. Agencies may be unaccustomed to coordinating with other agencies for operations, or perceive that coordination provides more hardship than benefit. When this is the case, providing additional resources in exchange for participation may overcome this issue. Planning partners can champion operations through training and other forums to promote regional operations strategies. Linking participation to funding access is the key. For example, an agency may become eligible for matching funds only by participating in a regional operations training program or an established regional operations group.

Almost every transportation agency identifies inadequate funding as a major concern. At the same time, virtually every agency acknowledges that funding constraints are a major impetus for advancing operations strategies. In many cases planners often become champions for relatively low-cost operations strategies after recognizing that the discrepancy between available funds and the cost of new capital investments to maintain regional mobility is too high.

Funding Sources

There are a number of funding sources that can support operations activities and equipment. Funding for system operations traditionally has relied on the discretionary budgets of individual agencies. However, due to the mainstreaming of operations through TSOP and ROP activities, statewide policies now allow several funding sources to be used for regional operations programs. Federal programs are also in place to encourage and promote the safe and efficient management and operation of integrated, intermodal surface transportation systems to serve the mobility needs of people and freight and foster economic growth and development.

Regional Funding

Depending on the project type, various funding approaches may be available for consideration. In the ROP, for priority projects, a project description and high-level scope of the project should have been developed. Projects should have been defined in terms of planning type projects or deployment-type projects. Planning-type projects are programmatic and policy-oriented in nature. If the project is a planning-type project, it may be considered in the MPO/RPOs Unified Planning Work Program (UPWP). The process for planning partners to consider including operations planning-type projects in the next Work Program will begin in October 2007 and end with the delivery of a program to the PennDOT Program Center by February 2008.

Projects that are defining and leading to specific ITS deployment can proceed into the TIP process for funding. These types of projects can either become stand-alone capital
deployment or can be packaged as part of a wide-area deployment or construction project. These deployment projects will be required to follow the USDOT-defined systems engineering process. Using this process will ensure consistency with project definition, integration, and consideration of ongoing operations and maintenance requirements. The 2009 TIP update process for each MPO/RPO has already begun and will be completed by each planning partner by June 2008.

At the discretion of each planning partner and PennDOT District, projects may arrange pooled funding to achieve multi-jurisdictional benefit. PennDOT’s Central Office may also decide to fund multiple cross-jurisdictional efforts using A-140 or other mechanisms to ensure coordinated statewide benefit. These types of pooled funding arrangements are project-specific and can be achieved when coordination and cooperation exists and the benefits of pooled or Central Office funding outweigh the administrative cost.

Federal Funding

There is flexibility in the use of federal funds for operations projects championed by planning partners and PennDOT. Federal funds can be used for traffic monitoring, management, and control for continued operations of the system, freeway surveillance, incident management efforts, travel information systems, and traffic signal control.

Federal funds are eligible for operating costs in labor, administrative, utilities, rent, and system maintenance associated with hardware and software maintenance (preventive and corrective).

For the use of interstate maintenance (IM) funds, eligibility is based on how "maintenance" and the Interstate Maintenance program are defined in Title 23 (USC 119, 116). If the project is a capital improvement to the interstate highway (such as deploying field devices to improve the highway) or involves preventive maintenance on the devices themselves, it would be eligible for IM funds.

Some of the eligible IM costs include:
- infrastructure-based improvements, such as new dynamic message signs, CCTV, detectors, and communication systems;
- replacement or rehabilitation of infrastructure, such as replacing components of dynamic message signs or CCTVs;
- preventative maintenance on the roadway traffic management infrastructure; and
- preliminary engineering directly related to infrastructure improvements.

If the project involves operations costs involving communications maintenance (routine or corrective) it would not be eligible for Interstate Maintenance funding.

5.1 Performance Measures

Performance measurement is the use of statistical evidence to determine progress toward specific defined organizational objectives. This includes both evidence of actual fact, such as measurement of pavement surface smoothness, and measurement of customer perception such as would be accomplished through a customer satisfaction survey. In a service industry such as transportation, the performance measurement
process starts by defining precisely the services that the organization promises to provide, including the quality or level of service (e.g. timeliness, reliability, etc.) that is to be delivered.

There are often good opportunities for collecting feedback from system users in "real time," since the transportation service is often "consumed" at the same time it is "produced." Performance measures should reflect the satisfaction of the transportation service user, in addition to those concerns of PennDOT and Stakeholders.
6. CONCLUSION

Transportation agencies today do not have the luxury of undertaking massive new capacity expansion projects, yet are challenged to improve mobility and reduce congestion for travelers, visitors and businesses on its transportation system.

In response to these requirements, new approaches and innovative techniques are being explored to improve the system’s operational performance, as well as keep the network safe and secure. Better management of existing facilities is simply the new way of doing business.

Through the guidance of the statewide Transportation Systems Operations Plan and the implementation of region-specific projects documented in this report, these needs are being addressed.

The regional solutions addressed in the ROP tend to be cost effective in supporting (not eliminating) regional congestion issues. So as the region begins to review transportation options a goal should be to have ITS and operations solutions examined, weighed and equally placed in the public forum for regional consideration and funding. This will ensure that innovative and cost effective solutions get a fair hearing alongside more costly capacity expansion projects.

Continued success however relies on integration and coordination between PennDOT, regional planning partners and transportation stakeholders who together will systematically build operations programs based on policies, studies and physical deployments. These improvements will ultimately help improve the mobility, better manage incidents and emergencies and provide for real-time traveler information.

With the long-range scope of these efforts it will take hard work from Stakeholders in the District 2-0 Region and the surrounding PennDOT Districts to fully realize the goals set out in the ROP. In return the District 2-0 Region will have a safer and more reliable transportation system for its future.
APPENDIX A: SHORT-TERM ROP PROJECT DEPLOYMENTS
ST-01: DEVELOP LINKS BETWEEN OPERATIONS CENTERS (D2, PSP, COUNTY 911 CENTER)

**PROJECT DESCRIPTION AND SCOPE:** High-speed data links should be established between the TMC, County 9-1-1 Centers, and the State Police. These links will allow the quick and efficient exchange of data including CCTV while enhancing incident coordination and provide opportunity for redundancy.

**STAKEHOLDERS:** PennDOT 2-0

**PERTINENT TSOP PROJECTS:** TSOP 01, 03, AND 13

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<tr>
<td>Life Cycle: N/A</td>
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**PROJECT TYPE:** Deployment  
**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** Communications Infrastructure; Software Integration

**REREQUISITES AND DEPENDENCIES:** An operational PennDOT TMC in District 2-0.

**PERFORMANCE MEASURES:** Improved Incident Management; Improved Inter-Agency Communications

**BENEFITS:** Information sharing can be more efficient and the coordination of operations between centers improved.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
**ST-02: DEVELOP INTER-AGENCY COMMUNICATIONS PROTOCOLS (TSOP 05)**

**PROJECT DESCRIPTION AND SCOPE:** Develop communications protocols for effective incident management in conjunction with TSOP 05. Processes, procedures, and relationships are needed to more effectively manage roadway incidents. Improved Inter-Agency communications will help decrease the time required to respond to and clear incidents, and to manage these processes safely and efficiently.

**STAKEHOLDERS:** PennDOT District 2-0

**PERTINENT TSOP PROJECTS:** TSOP 01, 05 AND 13

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**PROJECT TYPE:** Planning **LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** Communications Infrastructure; Software Integration

**PREREQUISITES AND DEPENDENCIES:** An operational PennDOT TMC in District 2-0.

**PERFORMANCE MEASURES:** Improved Incident Management; Improved Incident Response Times

**BENEFITS:** Improved Coordination between agencies will help improve incident management response.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
ST-03: DEPLOY RAMP CLOSURE GATES FOR ACCESS RAMPS TO I-80

PROJECT DESCRIPTION AND SCOPE: PennDOT District 2-0 is planning the implementation of a pilot program to deploy ramp closure devices to I-80 that are consistent with the Federal guidelines.

STAKEHOLDERS: PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP-03, TSOP-08

ESTIMATED SCHEDULE: 1-2 yrs

Life Cycle: 20 years

ESTIMATED COSTS:
Capital: $50,000 for planning effort with additional costs to be incurred for pilot deployment
Annual O&M: N/A

PROJECT TYPE: Planning & Deployment

LEVEL OF EFFORT: Moderate

TECHNOLOGY COMPONENTS (if applicable): Ramp Closure Gates

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Traveler Information; Improved Incident Management; Improved Travel Time for Detour Traffic

BENEFITS: Improved traveler information for motorists accessing I-80 in the event of an incident or inclement weather. Alerts motorists to a closure before entering onto the highway

OTHER CONSIDERATIONS AND ISSUES: Maintenance and Operations are important to help keep Ramp Closure Gates operating correctly.
ST-04: I-80 TRAFFIC SURVEILLANCE IN CLEARFIELD COUNTY (3 LOCATIONS)

PROJECT DESCRIPTION AND SCOPE: Closed Circuit Television (CCTV) Cameras are used to provide visual images of highway operations and conditions. These images can then be used to verify incidents, determine what type of emergency response or management strategy should be deployed or dispatched, monitor weather conditions, and to identify field equipment such as traffic signals and signs. PennDOT District 2-0 has plans to deploy CCTV cameras at key locations:

- I-80 at Exit 97 – DuBois & Brockway
- I-80 at Exit 111 – Clearfield & Penfield
- I-80 at Exit 120 – Clearfield & Shawville

STAKEHOLDERS: PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP-03, and 04

ESTIMATED SCHEDULE: 1-2 yrs

ESTIMATED COSTS:
- Capital: $150,000
- Annual O&M: $7,500

Life Cycle: 15 years

PROJECT TYPE: Deployment

LEVEL OF EFFORT: Moderate

TECHNOLOGY COMPONENTS (if applicable): CCTV System; Telecommunications

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Incident Response Time; Improved Traveler Information

BENEFITS: Incidents and roadway conditions can be viewed in real-time so that the appropriate emergency response can be dispatched. CCTV images can be posted to the Internet to improve Traveler Information.

OTHER CONSIDERATIONS AND ISSUES: The deployment of additional CCTV on key intersecting arterials can be considered with the high priority corridors as part of the Signal Strategic Plan.
**ST-05: I-80 DMS in Clearfield County (4 Locations)**

**Project Description and Scope:** Deploy DMS at strategic locations in the District 2-0 Region. The DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points, including:

- WB approach to Exit 101
- EB approach to Exit 111
- WB approach to Exit 120
- WB approach to Exit 123

**Stakeholders:** PennDOT 2-0

**Pertinent TSOP Projects:** TSOP 04

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<td>Annual O&amp;M: $24,000</td>
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**Project Type:** Deployment  
**Level of Effort:** Moderate

**Technology Components (if applicable):** DMS Sign Systems; Telecommunications

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Traveler Information; Improved Customer Satisfaction

**Benefits:** DMS messages help warn motorists of travel conditions and assist in making more informed travel decisions.

**Other Considerations and Issues:** N/A
ST-06: UPDATE HIGH PRIORITY TRAFFIC SIGNAL CORRIDORS:
BUSINESS RT. 322 (STATE COLLEGE/COLLEGE TWP/PATTON TWP)

PROJECT DESCRIPTION AND SCOPE: Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway traffic signals can be coordinated to handle larger traffic volumes.

STAKEHOLDERS: PennDOT 2-0, PennDOT BHSTE, Local Municipalities

PERTINENT TSOP PROJECTS: TSOP 03, and 08

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<th>ESTIMATED SCHEDULE: 1-2 yrs</th>
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<tr>
<td>Life Cycle: 10 - 15 years</td>
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<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
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</table>

PROJECT TYPE: Planning & Deployment
LEVEL OF EFFORT: Moderate

TECHNOLOGY COMPONENTS (if applicable): TMC; Closed Loop Signal System; Telecommunications

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Travel Time; Improved Customer Satisfaction.

BENEFITS: Improvement of congested corridors in the District 2-0 Region can help to improve traffic conditions in the region.

OTHER CONSIDERATIONS AND ISSUES: Signal controllers should be remotely accessible by the local municipality and District 2-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.
**ST-07: I-80 TRAFFIC SURVEILLANCE IN CENTRE COUNTY (2 LOCATIONS)**

**PROJECT DESCRIPTION AND SCOPE:** Closed Circuit Television (CCTV) Cameras are used to provide visual images of highway operations and conditions. These images can then be used to verify incidents, determine what type of emergency response or management strategy should be deployed or dispatched, monitor weather conditions, and to identify field equipment such as traffic signals and signs. PennDOT District 2-0 has plans to deploy CCTV cameras at key locations:

- I-80 at Exit 158 – Milesburg
- I-80 at Exit 161 – Bellefonte

**STAKEHOLDERS:** PennDOT 2-0, PennDOT BHSTE

**PERTINENT TSOP PROJECTS:** TSOP 03, and 04

**ESTIMATED SCHEDULE:** 1-2 yrs

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<tr>
<th>Life Cycle</th>
<th>15 years</th>
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**ESTIMATED COSTS:**
- Capital: $100,000
- Annual O&M: $5,000

**PROJECT TYPE:** Deployment

**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** CCTV System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Incident Response Time; Improved Traveler Information

**BENEFITS:** Incidents and roadway conditions can be viewed in real-time so that the appropriate emergency response can be dispatched. CCTV images can be posted to the Internet to improve Traveler Information.

**OTHER CONSIDERATIONS AND ISSUES:** The deployment of additional CCTV on key intersecting arterials can be considered with the high priority corridors as part of the Signal Strategic Plan.
ST-08: I-80 TRAFFIC SURVEILLANCE IN JEFFERSON COUNTY (1 LOCATION)

**PROJECT DESCRIPTION AND SCOPE:** Closed Circuit Television (CCTV) Cameras are used to provide visual images of highway operations and conditions. These images can then be used to verify incidents, determine what type of emergency response or management strategy should be deployed or dispatched, monitor weather conditions, and to identify field equipment such as traffic signals and signs. PennDOT District 2-0 has plans to deploy CCTV cameras at key locations:

- I-80 at Exit 78

**STAKEHOLDERS:** PennDOT 2-0

**PERTINENT TSOP PROJECTS:** TSOP 01 and 04

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<th>ESTIMATED SCHEDULE: 1-2 yrs</th>
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<td>Life Cycle: 10 – 15 years</td>
<td>Capital: $50,000</td>
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<td>Annual O&amp;M: $2,500</td>
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**PROJECT TYPE:** Deployment  
**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** CCTV System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Incident Response Time; Improve Traveler Information

**BENEFITS:** Incidents and roadway conditions can be viewed in real-time so that the appropriate emergency response can be dispatched. CCTV images can be posted to the Internet to improve Traveler Information.

**OTHER CONSIDERATIONS AND ISSUES:** The deployment of CCTV on key intersecting arterials can be considered with the high priority corridors as part of the Signal Strategic Plan.
### ST-09: I-80 Traffic Surveillance in Clinton County (2 Locations)

**Project Description and Scope:** Closed Circuit Television (CCTV) Cameras are used to provide visual images of highway operations and conditions. These images can then be used to verify incidents, determine what type of emergency response or management strategy should be deployed or dispatched, monitor weather conditions, and to identify field equipment such as traffic signals and signs. PennDOT District 2-0 has plans to deploy Closed-Circuit TV cameras at key locations:

- I-80 at Exit 192 - Jersey Shore
- I-80 at Exit 176 – Lock Haven

**Stakeholders:** PennDOT 2-0

**Pertinent TSOP Projects:** TSOP 03, and 04

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<td>Life Cycle: 10 – 15 years</td>
<td>Capital: $100,000</td>
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<td>Annual O&amp;M: $5,000</td>
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</table>

**Project Type:** Deployment  
**Level of Effort:** Moderate

**Technology Components (if applicable):** CCTV System; Telecommunications

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Incident Response Time; Improved Traveler Information

**Benefits:** Incidents and roadway conditions can be viewed in real-time so that the appropriate emergency response can be dispatched. CCTV images can be posted to the Internet to improve Traveler Information.

**Other Considerations and Issues:** The deployment of additional CCTV on key intersecting arterials can be considered with the high priority corridors as part of the Signal Strategic Plan.
**ST-10: I-80 DMS in Centre County (1 Location)**

**Project Description and Scope:** Deploy DMS at strategic locations in the District 2-0 Region. The DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points. The potential location is:

- WB approach to Exit 161

**Stakeholders:** PennDOT 2-0

**Pertinent TSOP Projects:** TSOP-08

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<td>Annual O&amp;M: $6,000</td>
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**Project Type:** Deployment

**Level of Effort:** Moderate

**Technology Components (if applicable):** DMS Sign System; Telecommunications

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Traveler Information; Customer satisfaction

**Benefits:** DMS messages help warn motorists of travel conditions and assist in making more informed travel decisions.

**Other Considerations and Issues:** N/A
ST-11: UPDATE HIGH PRIORITY TRAFFIC SIGNAL CORRIDORS:  
TWENTY EIGHTH DIVISION HWY (CLEARFIELD BORO)

**PROJECT DESCRIPTION AND SCOPE:** Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway’s traffic signals can be coordinated to handle larger traffic volumes.

**STAKEHOLDERS:** PennDOT 2-0, PennDOT BHSTE, Local Municipalities

**PERTINENT TSOP PROJECTS:** TSOP 03, and 08

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<th><strong>ESTIMATED SCHEDULE:</strong> 1-2 yrs</th>
<th><strong>ESTIMATED COSTS:</strong></th>
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<tr>
<td>Life Cycle: 10 - 15 years</td>
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<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
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</table>

**PROJECT TYPE:** Planning & Deployment

**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** TMC; Closed Loop Signal System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Travel Time; Improved Customer Satisfaction.

**BENEFITS:** Improvement of signals on congested corridors in the District 2-0 Region can help to improve traffic conditions in the Region.

**OTHER CONSIDERATIONS AND ISSUES:** Signal controllers should be remotely accessible by the local municipality and District 2-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.
ST-12: UPDATE HIGH PRIORITY TRAFFIC SIGNAL CORRIDORS:
W. COLLEGE AVE – SR 26 (FERGUSON TWP)

PROJECT DESCRIPTION AND SCOPE: Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway traffic signals can be coordinated to handle larger traffic volumes.

STAKEHOLDERS: PennDOT 2-0, PennDOT BHSTE, Local Municipalities

PERTINENT TSOP PROJECTS: TSOP 03, and 08

ESTIMATED SCHEDULE: 1-2 yrs
Life Cycle: 10 - 15 years

ESTIMATED COSTS:
Capital: $15,000 per signal
Annual O&M: $1,200/signal

PROJECT TYPE: Planning & Deployment
LEVEL OF EFFORT: Moderate

TECHNOLOGY COMPONENTS (if applicable): TMC; Closed Loop Signal System; Telecommunications

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Travel Time; Improved Customer Satisfaction.

BENEFITS: Improvement of signals on congested corridors in the District 2-0 Region can help to improve traffic conditions in the Region.

OTHER CONSIDERATIONS AND ISSUES: Signal controllers should be remotely accessible by the local municipality and District 2-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.

**Project Description and Scope:** Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway traffic signals can be coordinated to handle larger traffic volumes.

**Stakeholders:** PennDOT 2-0, PennDOT BHSTE, Local Municipalities

**Pertinent TSOP Projects:** TSOP 03, and 08

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<td>Life Cycle: 10 - 15 years</td>
<td>Capital: $15,000 per signal</td>
</tr>
<tr>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
</tbody>
</table>

**Project Type:** Planning & Deployment

**Level of Effort:** Moderate

**Technology Components (if applicable):** TMC; Closed Loop Signal System; Telecommunications

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Travel Time; Improved Customer Satisfaction.

**Benefits:** Improvement of signals on congested corridors in the District 2-0 Region can help to improve traffic conditions in the Region.

**Other Considerations and Issues:** Signal controllers should be remotely accessible by the local municipality and District 2-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.
ST-14: I-80 DMS in Clinton County (2 Locations)

**Project Description and Scope:** Deploy DMS at strategic locations in the District 2-0 Region. The DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points. The potential locations include:

- EB approach to Exit 173
- WB approach to Exit 178

**Stakeholders:** PennDOT 2-0

**Pertinent TSOP Projects:** TSOP-04

<table>
<thead>
<tr>
<th>Estimated Schedule: 1-2 years</th>
<th>Estimated Costs:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Capital: $430,000</td>
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<tr>
<td></td>
<td>Annual O&amp;M: $12,000</td>
</tr>
</tbody>
</table>

**Project Type:** Planning & Deployment  
**Level of Effort:** Simple

**Technology Components (if applicable):** DMS Sign Systems; Telecommunications

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Traveler Information; Improved Customer satisfaction

**Benefits:** DMS messages help warn motorists of travel conditions and assist in making more informed travel decisions.

**Other Considerations and Issues:** N/A
## ST-15: Implement Recommendations from “Signal Strategic Plan”

**Project Description and Scope:** The recommendations developed in the Signal Strategic Plan will be implemented as part of the ROP. The Signal Strategic Plan will plan traffic signal projects for the District 2-0 Region. The ROP will help to deploy these projects as the ROP is updated every two years.

**Stakeholders:** PennDOT 2-0

**Pertinent TSOP Projects:** TSOP 08

<table>
<thead>
<tr>
<th>Estimated Schedule: 1-2 years</th>
<th>Estimated Costs: TBD – Cost estimates will be provided as part of each recommendation included in the Signal Strategic Plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Cycle: N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Project Type:** Planning  
**Level of Effort:** TBD

**Technology Components (if applicable):** N/A

**Prerequisites and Dependencies:** The Signal Strategic Plan is the direction for Traffic Signal Projects in the District 2-0 Region. The Signal Projects recommended in the Signal Strategic Plan will be programmed in the ROP for deployment.

**Performance Measures:** Improved travel time; Improved Customer Satisfaction; Improved Traffic Signal Delay

**Benefits:** The Signal Strategic Plan evaluates the current condition of traffic signals in the District and recommends improvements for congested corridors in the Region.

**Other Considerations and Issues:** N/A
## ST-16: Regional Weather Service

**Project Description and Scope:** Investigate a contract with the National Weather Service to enhance dissemination of weather (including forecasts) to motorists.

### Stakeholders: PennDOT 2-0

### Pertinent TSOP Projects: TSOP 04 and 13

<table>
<thead>
<tr>
<th>Estimated Schedule: 1-2 years</th>
<th>Estimated Costs: TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Cycle: N/A</td>
<td></td>
</tr>
</tbody>
</table>

### Project Type: Planning    Level of Effort: Simple

### Technology Components (if applicable): Accu-Weather Software

### Prerequisites and Dependencies: N/A

### Performance Measures: Improved Traveler Information; Improved Customer Satisfaction

### Benefits: A contract with the Regional Weather Service can help to disseminate weather conditions to motorists traveling throughout the District.

### Other Considerations and Issues: The Regional Weather Service contract can be used in conjunction with the kiosks and traveler information locations deployed as part of the CASTNET or 5-1-1 program.
ST-17: PHASE 1 HAR DEPLOYMENT

**PROJECT DESCRIPTION AND SCOPE:** Deploy HAR to disseminate Traveler Information at key locations and junctions to close ITS equipment gaps on the Interstates. Potential locations in the District 2-0 Region include:

- PA 26 & Zion Road in Centre County
- SR 22 in Juniata and Mifflin County
- SR 220 in Centre County

These systems consist of transmission sites positioned along the roadway network at strategic locations. Typically HAR systems involve the use of dedicated AM radio frequencies/channels and have a broadcast range of ½ to 2 miles. A HAR System can disseminate traveler information using a live message or pre-selected recorded messages.

**STAKEHOLDERS:** PennDOT 2-0

**PERTINENT TSOP PROJECTS:** TSOP 08

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<thead>
<tr>
<th>ESTIMATED SCHEDULE: 1-2 years</th>
<th>ESTIMATED COSTS:</th>
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<tr>
<td></td>
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<tr>
<td></td>
<td>Annual O&amp;M: $10,000</td>
</tr>
</tbody>
</table>

| PROJECT TYPE: Planning & Deployment | LEVEL OF EFFORT: Moderate |

| TECHNOLOGY COMPONENTS (if applicable): | HAR System |

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Customer Satisfaction

**BENEFITS:** Improved traveler information disseminated via the radio to help make drivers aware of driving conditions and to direct motorists to take an alternate route if necessary.

**OTHER CONSIDERATIONS AND ISSUES:** Maintenance of the HAR is important to make sure they are kept working properly.
**ST-18: DISTRICT 2-0 REGION DETOUR ROUTE GIS MAPPING**

**PROJECT DESCRIPTION AND SCOPE:** The detour routes for the District 2-0 Region are in booklets that are handed out as a reference for incidents and emergency detours on the Interstates. This project allows detour routes to be posted to the Internet. This effort includes:
- Continue to update existing detour routes
- Institute a web based detour routing program accessible to incident responders
- Possible future integration with Roadway Closure Reporting System

**STAKEHOLDERS:** PennDOT 2-0, Local Municipalities

**PERTINENT TSOP PROJECTS:** TSOP-02, 05 AND 12

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<tr>
<th><strong>ESTIMATED SCHEDULE:</strong> 1-2 years</th>
<th><strong>ESTIMATED COSTS:</strong> TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Cycle: N/A</td>
<td></td>
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</tbody>
</table>

**PROJECT TYPE:** Planning

**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** GIS database

**PREREQUISITES AND DEPENDENCIES:** GIS Data and Established Detour Routes

**PERFORMANCE MEASURES:** Improved Incident Management and Detour Routing

**BENEFITS:** Detour Routing on GIS maps are easy to access by emergency services and motorists when they are posted to the internet. They can be easily updated so that all motorists are aware of changes to the detour routes pre-trip.

**OTHER CONSIDERATIONS AND ISSUES:** Deployment of GIS database requires GIS expertise.
### ST-19: Update High Priority Traffic Signal Corridors: E. Main St/High St (City of Bradford/Foster Twp)

**Project Description and Scope:** Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway traffic signals can be coordinated to handle larger traffic volumes.

**Stakeholders:** PennDOT 2-0, PennDOT BHSTE, Local Municipalities

**Pertinent TSOP Projects:** TSOP 08

<table>
<thead>
<tr>
<th>Estimated Schedule: 1-2 years</th>
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<tbody>
<tr>
<td></td>
<td>Capital: $15,000 per signal</td>
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<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
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</table>

<table>
<thead>
<tr>
<th>Project Type: Planning &amp; Deployment</th>
<th>Level of Effort: Moderate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Components (if applicable):</td>
<td>TMC; Closed Loop Signal Systems; Telecommunications</td>
</tr>
</tbody>
</table>

**Prerequisites and Dependencies:** N/A

**Performance Measures:** Improved Travel Time; Improved Traffic Signal Delay

**Benefits:** Improvement of congested corridors in the District 2-0 Region can help to improve traffic conditions in the region.

**Other Considerations and Issues:** Signal controllers should be remotely accessible by the local municipality and District 2-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.
**ST-20: UPDATE HIGH PRIORITY TRAFFIC SIGNAL CORRIDORS:**

**PUNXSUTAWNEY TRAFFIC SIGNAL SYSTEM (JEFFERSON COUNTY)**

**PROJECT DESCRIPTION AND SCOPE:** Key parallel corridors to limited access highways are a high priority for signal upgrades because of their detour routing use. In the event of an incident on the highway the adjacent roadway traffic signals can be coordinated to handle larger traffic volumes.

**STAKEHOLDERS:** PennDOT 10-0, PennDOT BHSTE, Local Municipalities

**PERTINENT TSOP PROJECTS:** TSOP 03, and 08

<table>
<thead>
<tr>
<th>ESTIMATED SCHEDULE: 1-2 yrs</th>
<th>ESTIMATED COSTS:</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td>Annual O&amp;M: $1,200/signal</td>
</tr>
</tbody>
</table>

| Life Cycle: 10 - 15 years |

**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** TMC; Closed Loop Signal System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Travel Time; Improved Customer Satisfaction.

**BENEFITS:** Improvement of congested corridors in the District 10-0 Region can help to improve traffic conditions in the region.

**OTHER CONSIDERATIONS AND ISSUES:** Signal controllers should be remotely accessible by the local municipality and District 10-0. Corridors should be considered for CCTV and DMS deployment as part of the Signal Strategic Plan.
APPENDIX B: LONG-TERM ROP PROJECT DEPLOYMENTS
**LT-01: CONSTRUCT A MULTI-AGENCY REGIONAL TRAFFIC MANAGEMENT CENTER (RTMC)**

**PROJECT DESCRIPTION AND SCOPE:** Develop a Regional TMC in the State College area that is centrally located for Districts 2-0, 9-0 and 10-0 to coordinate all traffic incidents and data gathering systems.

**STAKEHOLDERS:** PennDOT District 2-0, PennDOT BHSTE

**PERTINENT TSOP PROJECTS:** TSOP 09 and 20

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<tr>
<th><strong>ESTIMATED SCHEDULE:</strong> 3+ yrs</th>
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</thead>
<tbody>
<tr>
<td>Life Cycle: N/A</td>
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<tr>
<td></td>
<td>Annual O&amp;M: $300,000</td>
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</table>

**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** Communications Infrastructure; Software Integration

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Incident Management; Improved Traveler Information; Improved coordination between Districts and Emergency Responders.

**BENEFITS:** A Regional TMC for the PennDOT Districts in Central PA will help improve the operations of ITS across the North Central portion of the state. It will also improve statewide coordination.

**OTHER CONSIDERATIONS AND ISSUES:** The RTMC does not have to be in State College, but it would be beneficial for it to be centrally located for District 2-0, 9-0 and 10-0.
LT-02: DEPLOY SMALL-SIZE DMS AT I-80 RAMP APPROACHES IN COORDINATION WITH THE SIGNAL STRATEGIC PLAN CORRIDORS

**PROJECT DESCRIPTION AND SCOPE:** Coordinate this effort with the Signal Strategic Plan as part of an upgrade to the corridors that are identified as high priority corridors parallel to limited access highways.

**STAKEHOLDERS:** PennDOT District 2-0, Local Municipalities

**PERTINENT TSOP PROJECTS:** TSOP 04 and 08

<table>
<thead>
<tr>
<th>ESTIMATED SCHEDULE: 3+ yrs</th>
<th>ESTIMATED COSTS:</th>
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<tbody>
<tr>
<td></td>
<td>Capital: $100,000/sign</td>
</tr>
<tr>
<td></td>
<td>Annual O&amp;M: $4,000/sign</td>
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</tbody>
</table>

| PROJECT TYPE: Planning | LEVEL OF EFFORT: Moderate |

**TECHNOLOGY COMPONENTS (if applicable):** DMS Sign System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** The high priority corridors identified in the Signal Strategic Plan recommended for signal upgrades and corridor improvements.

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Incident Management

**BENEFITS:** Arterial roadways that provide access to I-80 can utilize small-size DMS to disseminate traveler information messages to motorists trying to enter onto I-80.

**OTHER CONSIDERATIONS AND ISSUES:** Recommendations for the high priority corridors listed in the Signal Strategic Plan can be upgraded with the deployment of small-size DMS.
**LT-03: PHASE 2 DMS: I-80 DMS in Clearfield County (6 Locations)**

**PROJECT DESCRIPTION AND SCOPE:** Deploy Traveler Information devices at key locations and junctions to help close the ITS equipment gaps on the Interstates. Potential locations in Clearfield County include:

- EB approach to Exit 101
- WB approach to Exit 120
- EB approach to Exit 120
- WB approach to Exit 123
- WB approach to Exit 133
- I-80 at Exit 133

DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points.

**STAKEHOLDERS:** PennDOT District 2-0

**PERTINENT TSOP PROJECTS:** TSOP 04

<table>
<thead>
<tr>
<th><strong>ESTIMATED SCHEDULE:</strong> 3+ yrs</th>
<th><strong>ESTIMATED COSTS:</strong></th>
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</thead>
<tbody>
<tr>
<td>Life Cycle: 15 years</td>
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<tr>
<td></td>
<td>Annual O&amp;M: $36,000</td>
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</table>

**PROJECT TYPE:** Planning & Deployment

**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** DMS System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Customer Satisfaction

**BENEFITS:** DMS messages help to warn motorists of travel conditions and help them make more informed travel decisions.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
LT-04: PHASE 2 DMS: I-80 DMS IN CENTRE COUNTY (3 LOCATIONS)

**PROJECT DESCRIPTION AND SCOPE:** Deploy Traveler Information devices at key locations and junctions to help close the ITS equipment gaps on the Interstates. Potential locations in Centre County include:

- EB approach to Exit 147
- WB approach to Exit 147
- WB approach to Exit 161

DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points.

**STAKEHOLDERS:** PennDOT District 2-0

**PERTINENT TSOP PROJECTS:** TSOP 04

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Capital: $645,000</td>
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<tr>
<td></td>
<td>Annual O&amp;M: $18,000</td>
</tr>
</tbody>
</table>

**PROJECT TYPE:** Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** DMS Sign System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Customer Satisfaction

**BENEFITS:** DMS messages help to warn motorists of travel conditions and help them to make more informed travel decisions.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
**LT-05: PHASE 2 DMS PROJECT: I-80 DMS IN CLINTON COUNTY (4 LOCATIONS)**

**PROJECT DESCRIPTION AND SCOPE:** Deploy Traveler Information devices at key locations and junctions to help close the ITS equipment gaps on the Interstates. Potential locations in Clinton County include:

- WB approach to Exit 173
- WB approach to Exit 178
- EB approach to Exit 192
- WB approach to Exit 192

DMS applications are used to warn motorists of upcoming congestion or assist in traffic routing during construction, storms, collisions, or special events. These electronic signs are located along highways, and provide information to drivers at key decision points.

**STAKEHOLDERS:** PennDOT District 2-0

**PERTINENT TSOP PROJECTS:** TSOP 03 and 04

**ESTIMATED SCHEDULE:** 3+ yrs  
**ESTIMATED COSTS:**  
Capital: $270,000  
Annual O&M: $4,000

**PROJECT TYPE:** Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** DMS Sign System; Telecommunications

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Customer Satisfaction

**BENEFITS:** DMS messages help to warn motorists of travel conditions and help them to make more informed travel decisions.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
LT-06: EVENT MANAGEMENT PLAN FOR PSU/STATE COLLEGE

PROJECT DESCRIPTION AND SCOPE: Develop an Event Management Plan for Penn State University Area, which identifies technologies that may serve the transportation system.

This project would include major roadways that go through the State College Area and are traveled by visitors to the region. PSU football games draw a large crowd of visitors to the area and an Event Management Plan for travelers would improve the traffic conditions in the area.

STAKEHOLDERS: Penn State University, PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP 04 and 05

<table>
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<tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Life Cycle: N/A</td>
<td>*Includes some DMS and CCTV Deployment</td>
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</table>

PROJECT TYPE: Planning & Deployment  LEVEL OF EFFORT: Moderate

TECHNOLOGY COMPONENTS (if applicable): DMS Sign System; CCTV System; Telecommunications

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: N/A

BENEFITS: Traffic congestion on I-80, US 322, and other surrounding roadways in the State College vicinity can be mitigated by traffic being directed onto adjacent corridors. The adjacent corridors traffic signals will be evaluated for the possibility of being re-timed and upgraded to maintain an acceptable Level of Service when there are higher than normal volumes.

OTHER CONSIDERATIONS AND ISSUES: The deployment of CCTV on the local roadways in State College can help manage traffic conditions when there are events at the University and DMS deployed can disseminate traveler information to travelers who are unfamiliar with the area.
LT-07: VARIABLE SPEED LIMIT (VSL) ON I-80

**PROJECT DESCRIPTION AND SCOPE:** Deploy variable speed limits that will change the posted speed limit based on road, traffic, and weather conditions. Variable speed limits offer considerable promise in restoring the credibility of speed limits and improving safety by restricting speeds during adverse conditions.

**STAKEHOLDERS:** PennDOT District 2-0, PennDOT 10-0

**PERTINENT TSOP PROJECTS:** TSOP 03, 05 and 07

**ESTIMATED SCHEDULE:** 3+ yrs  
**ESTIMATED COSTS:**  
Capital: $5,000/sign

**Life Cycle:** N/A

**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** Variable Speed Limit equipment

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Travel Times; Crash Reduction during inclement weather

**BENEFITS:** Crashes on I-80 can be reduced with the ability of the posted speed limit to change at the onset of poor weather conditions and/or an incident.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
LT-08: CATA TRANSIT TRAVELER INFORMATION

**PROJECT DESCRIPTION AND SCOPE:** Implement a transit traveler information system to provide pre-trip (routes and schedules) and en-route (next bus arrival times) traveler information through:

- Kiosks/displays,
- Internet, and
- Bus Stop DMS.

**STAKEHOLDERS:** CATA, PennDOT District 2-0

**PERTINENT TSOP PROJECTS:** TSOP 17

**ESTIMATED SCHEDULE:** 3+ yrs

Life Cycle: 10 years

**ESTIMATED COSTS:**
Capital: $750,000
Annual O&M: $75,000

**PROJECT TYPE:** Planning & Deployment

**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** Kiosks/Displays; DMS Sign System

**PREREQUISITES AND DEPENDENCIES:** AVL Deployment on the CATA Transit Buses.

**PERFORMANCE MEASURES:** Improved Transit Traveler Information; Improved Customer Satisfaction

**BENEFITS:** Improved transit traveler information will help to entice more people to use public transportation to travel through the Region.

**OTHER CONSIDERATIONS AND ISSUES:** There is the possibility of real-time transit traveler information being sent to cell phones/PDA’s for pre-trip planning purposes.
**LT-09: Weigh-In-Motion (Exit 120 on I-80)**

**Project Description and Scope:** Deploy a Weigh-In-Motion (WIM) device at Exit 120 on I-80. Weigh-in-Motion devices are designed to capture and record truck axle weights and gross vehicle weights as they drive over a sensor. I-80 is heavily traveled by trucks that travel through Pennsylvania and the existing open space at Exit 120 would be a potential location for truck inspections on I-80.

**Stakeholders:** PennDOT District 2-0, Pennsylvania State Police

**Pertinent TSOP Projects:** TSOP 05 and 07

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<tr>
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<tr>
<td></td>
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<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Life Cycle: 10 years</th>
</tr>
</thead>
</table>

**Project Type:** Planning & Deployment  
**Level of Effort:** Complex

**Technology Components (if applicable):** Weigh-in-Motion System; Static Scale

**Prerequisites and Dependencies:** A dedicated location for Weigh-in-Motion devices needs to be determined so that the equipment can be deployed and the appropriate signage can be used to alert truckers to the location.

**Performance Measures:** Improved Truck Safety; Improved Incident Management

**Benefits:** Truck safety on I-80 can be monitored at the Weigh-in-Motion location and help keep all motorists on I-80 safe.

**Other Considerations and Issues:** N/A
**LT-10: TRAVELER INFORMATION KIOSKS**

**PROJECT DESCRIPTION AND SCOPE:** PennDOT District 2-0 will coordinate with PennDOT Central Office to provide traveler and weather information via kiosks or electronic displays at several locations in the Region. The potential locations for kiosks to be deployed in District 2-0 include:

- Truck Stops
- Roadside Centers
- Park & Ride for State College

This effort would provide motorists with Traveler Information on flat screen displays or kiosks. The weather information can be coordinated with Central Office to be disseminated to the District 2-0 Region visitors. It will include a web interface to the PennDOT 5-1-1 system.

**STAKEHOLDERS:** PennDOT 2-0, Pennsylvania Tourism

**PERTINENT TSOP PROJECTS:** TSOP 06

<table>
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<tbody>
<tr>
<td>Life Cycle: N/A</td>
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<tr>
<td></td>
<td>Annual O&amp;M: $2,000</td>
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</table>

**PROJECT TYPE:** Planning & Deployment

**LEVEL OF EFFORT:** Moderate

**TECHNOLOGY COMPONENTS (if applicable):** LCD Displays or kiosks; Software

**PREREQUISITES AND DEPENDENCIES:** District 2-0's efforts for deployment should be coordinated with PennDOT Central Office's evaluation of the CASTNET deployment statewide.

**PERFORMANCE MEASURES:** Improve Traveler Information; Improve Customer Satisfaction

**BENEFITS:** Travelers unfamiliar with the harsh winter weather in the District 2-0 Region can be made aware of travel conditions via the kiosks. Truck drivers can be kept off the highway in the event of inclement weather or an incident that may shut down the roadway and resume travel when they receive improved travel conditions via the kiosks.

**OTHER CONSIDERATIONS AND ISSUES:** Deployment of kiosks at the Park & Ride in State College is a potential deployment site.
LT-11: PHASE 2 HAR DEPLOYMENT

PROJECT DESCRIPTION AND SCOPE: PennDOT District 2-0 has plans to deploy additional ITS devices in the District 2-0 Region to close the ITS equipment gaps on the Interstates. The deployment of HAR can improve the dissemination of traveler information to motorists. Potential locations for HAR in the Region include:

- Bradford Bypass
- SR 144 in Potters Mills
- US 322 in Reedsville

STAKEHOLDERS: PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP 04

ESTIMATED SCHEDULE: 3+ yrs

<table>
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<tr>
<th></th>
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<td></td>
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</table>

PROJECT TYPE: Deployment

LEVEL OF EFFORT: Complex

TECHNOLOGY COMPONENTS (if applicable): HAR System

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Traveler Information; Improved Customer Satisfaction

BENEFITS: Improved traveler information disseminated via the radio to help drivers become aware of driving conditions and can be directed to take alternate routes if necessary.

OTHER CONSIDERATIONS AND ISSUES: Maintenance and Operations are important to help keep HAR working properly.
LT-12 : REGIONAL TRANSIT FARE CARD

PROJECT DESCRIPTION AND SCOPE: Implement region-wide Smart Card system to support transit fare payment and regional transit connections for multiple agencies. The card would be applicable to any transit agency in the District 2-0 Region.

STAKEHOLDERS: Transit Agencies (ATA, CATA and DuFAST), PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP 17

ESTIMATED SCHEDULE: 3+ yrs
Life Cycle: 10 years

ESTIMATED COSTS:
Capital: TBD

PROJECT TYPE: Deployment
LEVEL OF EFFORT: Complex

TECHNOLOGY COMPONENTS (if applicable): On-board flex fare system DBX processor, on-board farebox, and smart card reader.

PREREQUISITES AND DEPENDENCIES: Joint planning activities to establish connections between systems, for example, at common transfer points.

PERFORMANCE MEASURES: Improved Customer Satisfaction; Increased Ridership; Decreased effort on cash handling activities; Increased trips between providers

BENEFITS: The card will allow customers to purchase or revalue regional fare cards from several outlets (e.g., customer service offices, phone, retail outlets, internet), and will enable them to use the card several times. The fare will be automatically debited from the card after each use.

OTHER CONSIDERATIONS AND ISSUES: Implement an Automatic Passenger Counter System with the Regional Fare Card.
**LT-13: ATA TRANSIT TRAVELER INFORMATION**

**PROJECT DESCRIPTION AND SCOPE:** Implement a transit traveler information system to provide pre-trip travel planning information such as route and schedule information via:

- Interactive Voice Responsive (IVR) Telephone
- Internet CARSD

**STAKEHOLDERS:** ATA, PennDOT 2-0

**PERTINENT TSOP PROJECTS:** TSOP 17

<table>
<thead>
<tr>
<th>ESTIMATED SCHEDULE: 3+ yrs</th>
<th>ESTIMATED COSTS:</th>
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<tbody>
<tr>
<td>Life Cycle: 10 years</td>
<td>Capital: $750,000</td>
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<td>Annual O&amp;M: $75,000</td>
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**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** Kiosks/Displays; DMS Sign System

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Transit Traveler Information; Improved Customer Satisfaction

**BENEFITS:** Improved transit traveler information will help keep current transit customers up-to-date on the transit schedules and entice more people to use public transportation to travel through the Region.

**OTHER CONSIDERATIONS AND ISSUES:** There is the possibility of real-time transit traveler information being sent to cell phones/PDA for pre-trip planning purposes.
**LT-14 : DEPLOY TECHNOLOGY ASSISTED SPEED ENFORCEMENT**

**PROJECT DESCRIPTION AND SCOPE:** Develop Technology assisted speed enforcement in conjunction with the PSP. This will improve the safety of the roadway and prevent speeding throughout the Region.

**STAKEHOLDERS:** PennDOT 2-0, Pennsylvania State Police

**PERTINENT TSOP PROJECTS:** TSOP 03, 05 and 07

**ESTIMATED SCHEDULE:** 3+ yrs

**ESTIMATED COSTS:**
- Capital: $225,000

**Life Cycle:** 15 years

**PROJECT TYPE:** Planning

**LEVEL OF EFFORT:** Simple

**TECHNOLOGY COMPONENTS (if applicable):** N/A

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Safety; Improve Incident Management

**BENEFITS:** Technology Assisted Speed Enforcement will help improve the safety of motorists on the roadways and alert motorists to obey the posted speed limit.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
LT-15: COMPUTER AIDED RESERVATION, SCHEDULING AND DISPATCH (CARSD) DEPLOYMENT FOR CATA & DuFAST

**PROJECT DESCRIPTION AND SCOPE:** Implement a system for demand-responsive transit services with the capability to manage multiple functions under one system. Computer Aided Reservation, Scheduling and Dispatch (CARSD) would be utilized for the on-demand transit ride system.

**STAKEHOLDERS:** CATA & DuFAST

**PERTINENT TSOP PROJECTS:** TSOP 17

<table>
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<tr>
<th><strong>ESTIMATED SCHEDULE:</strong> 3+ yrs</th>
<th><strong>ESTIMATED COSTS:</strong> Capital: $125,000 per system/agency</th>
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<tbody>
<tr>
<td>Life Cycle: 10 years</td>
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</table>

**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** Computer Aided Dispatch; Scheduling software

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Customer Satisfaction; Increased Ridership

**BENEFITS:** Allow transit agencies to utilize an on-demand ride system that keeps schedules all on one system.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
**LT-16 : STATE COLLEGE MULTI-MODAL FACILITY**

**PROJECT DESCRIPTION AND SCOPE:** Construct a new facility in State College to enhance transit service in the region by providing a multi-modal connection for travelers and visitors.

**STAKEHOLDERS:** PennDOT 2-0, Transit Agencies

**PERTINENT TSOP PROJECTS:** TSOP-08

<table>
<thead>
<tr>
<th>ESTIMATED SCHEDULE: 3+ yrs</th>
<th>ESTIMATED COSTS: Capital: TBD</th>
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<tr>
<td>Life Cycle: 10 years</td>
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**PROJECT TYPE:** Planning & Deployment  
**LEVEL OF EFFORT:** Complex

**TECHNOLOGY COMPONENTS (if applicable):** Telecommunications; Kiosks/LCD Displays; Transit DMS

**PREREQUISITES AND DEPENDENCIES:** N/A

**PERFORMANCE MEASURES:** Improved Traveler Information; Improved Customer Satisfaction; Increased Ridership

**BENEFITS:** A new facility would provide a regional location that all visitors to the State College and District 2-0 Region could utilize for their trips in the Region.

**OTHER CONSIDERATIONS AND ISSUES:** N/A
LT-17: ADVANCED FLEET MAINTENANCE FOR AREA TRANSPORTATION AUTHORITY (ATA)

PROJECT DESCRIPTION AND SCOPE: Implement advanced fleet maintenance system to reduce operating and maintenance costs of the ATA Fleet.

STAKEHOLDERS: ATA, PennDOT 2-0

PERTINENT TSOP PROJECTS: TSOP-17

ESTIMATED SCHEDULE: 3+ yrs
Life Cycle: 10 years

ESTIMATED COSTS:
Capital: $600,000
Annual O&M: $192,000

PROJECT TYPE: Planning & Deployment
LEVEL OF EFFORT: Complex

TECHNOLOGY COMPONENTS (if applicable): Fleet Integration System

PREREQUISITES AND DEPENDENCIES: N/A

PERFORMANCE MEASURES: Improved Customer Satisfaction; Improve Transit Operations

BENEFITS: Identification of congested corridors in the NW PA Region can help to improve traffic conditions in the region.

OTHER CONSIDERATIONS AND ISSUES: The maintenance and operations of all transit vehicles in the fleet is important to make sure they are in proper working condition.