

US 30 ITS Master Plan–Chester County



MAY 2016



The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy.

We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

The Delaware Valley Regional Planning Commission (DVRPC) fully complies with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. DVRPC's website, www.dvrpc.org, may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. DVRPC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by DVRPC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with DVRPC's Title VI Compliance Manager and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on DVRPC's Title VI program, or to obtain a Title VI Complaint Form, please call (215) 592-1800 or email public_affairs@dvrpc.org.

Table of Contents

- Executive Summary** 1
- CHAPTER 1: Introduction** 3
 - Study Area** 3
 - Referenced Documents** 3
 - **DVRPC Transportation Operations Master Plan** 3
 - **PennDOT Regional Operations Plan (ROP)** 4
 - **Regional ITS Architecture** 4
 - **US 30 Corridor Emergency Traffic Signal Operations** 7
 - **Congestion Management Process (CMP)** 7
 - Operational Needs** 8
- CHAPTER 2: ITS Elements** 9
 - CCTV Cameras** 9
 - DMS** 10
 - Detectors** 10
 - **Travel-Time Information** 10
 - **Incident Detection** 19
 - Traffic Signal Systems** 19
 - Fiber** 20
- CHAPTER 3: Implementation Plan** 23
 - Estimated Device Costs** 23
 - Segments** 23
 - Project Breakout Options** 31
 - **Option 1: Extend Limited ITS Coverage on US 30 Bypass to PA 10** 31
 - **Option 2: Extend Full ITS Coverage on US 30 Bypass to PA 82** 35
- CHAPTER 4: Conclusion** 39

Figures

- **Figure 1: Study Area** 5
- **Figure 2: Existing ITS Inventory** 11
- **Figure 3: Closed-Circuit Television (CCTV) Camera Vision** 13

- **Figure 4:** Dynamic Message Sign Vision..... 15
- **Figure 5:** Detectors Vision 17
- **Figure 6:** Fiber/Traffic Signal Vision 21
- **Figure 7:** US 30 Bypass Segments 25
- **Figure 8:** US 30 Business Segments 27
- **Figure 9:** Other Arterial Segments..... 29
- **Figure 10:** Project Breakout–Option 1 33
- **Figure 11:** Project Breakout– Option 2 37

Tables

- **Table 1:** Intelligent Transportation Systems Market Packages Applicable to US 30 Corridor..... 7
- **Table 2:** Last Mile Connections Estimated Costs 24
- **Table 3:** US 30 Corridor ITS Costs 39

Executive Summary

At the request of Chester County and in cooperation with the Pennsylvania Department of Transportation (PennDOT), the Delaware Valley Regional Planning Commission (DVRPC) conducted a review of PennDOT's existing Intelligent Transportation Systems (ITS) for the US 30 Bypass corridor in Chester County from US 202 to PA 10. The main focus of the US 30 ITS Master Plan—Chester County (the Plan) is to identify potential locations where new ITS assets may be deployed. The Plan presents an unconstrained regional vision for investment in ITS applications over the next two decades and provides strategic guidance for deployment over the coming years.

Throughout the region, PennDOT has approached the operations of their limited-access corridors as a priority and implemented a technology-based infrastructure backed by state-of-the-practice operational strategies. The focus is on constant improvement through evaluation, and deploying innovative strategies to address congestion, incidents, and special events. The need to deploy ITS along the entire US 30 corridor is necessary in order to expand PennDOT District 6-0's traffic and incident management system program, and it serves as a logical continuation to the ITS plans developed throughout the region as a whole and, more specifically, on surrounding highways and arterials.

The Plan takes a look at the corridor's existing ITS elements, such as closed-circuit television (CCTV) cameras, dynamic message signs (DMSs), incident and travel-time detectors, and traffic signal systems. Most of the devices that are currently deployed are located on the eastern portion of US 30 Bypass. PennDOT does not have any ITS devices west of PA 82, which leaves their Regional Traffic Management Center (RTMC) virtually blind of any incidents occurring on the western end of US 30 Bypass unless the center is contacted by local responders. To help alleviate that situation, the Plan presents a vision of deploying additional CCTV, DMS, and detectors, as well as the fiber that will support this equipment.

The cost and effort to implement the ITS vision recommended in the Plan for the entire corridor as a whole under one project is high and not realistic. These types of projects are very hard to package and find funding support for in comparison to bridge and road repairs. Through a series of maps the various ITS elements recommended have been compiled into segments for US 30 Bypass, US 30 Business, and other arterials. For each segment, the cost of new devices has been estimated and presented.

Since the entire vision may not be implemented at one time, two project breakout options were developed assuming that \$4 million would be available for a project. The Plan presents an option to extend limited ITS coverage on US 30 Bypass to PA 10. This option relegates the assets only near interchanges and deploys limited CCTV, DMS and travel-time detectors at these locations. To do this, the Plan recommends using aerial fiber along US 30 Business and branch off to the interchanges. The second option continues to fully deploy ITS coverage based on PennDOT's standard practices along US 30 Bypass, where existing coverage ends to PA 82. This complete coverage includes CCTV, DMS, and both travel-time and incident locations all along US 30 using fiber buried underground along US 30 Bypass.

The significance of the US 30 ITS Master Plan—Chester County is that the entire vision for the corridor has been broken down into segments or project options that can be programmed for development on an incremental basis when funding becomes available or as part of other projects that may occur in the corridor.

CHAPTER 1:

Introduction

The US 30 ITS Master Plan (the Plan) focuses on US 30 Bypass in Chester County. A large segment of US 30 Bypass, opened to traffic in 1962, was constructed to early Interstate design standards, resulting in substandard acceleration and deceleration lanes and many partial interchanges. Since the completion of the Exton Bypass, municipalities along US 30 corridor have grown into bedroom communities serving nearby employment centers: Lionville to the north, Great Valley and King of Prussia to the east, and Wilmington to the south. Consequently, there are extensive daily backups on US 30 Bypass, eastbound from US 202 in the morning, and westbound in the afternoon. Local police and fire responders report that any incident on the highway in the peak direction will trigger a significant traffic diversion onto US 30 Business (Lincoln Highway) and other parallel routes.

The objective of the US 30 ITS Master Plan is to present a long-term vision of ITS assets required to manage traffic in the corridor including CCTV cameras, DMSs, incident and travel-time detectors, and traffic signal systems. The Chester County Planning Commission, PennDOT, and DVRPC are jointly responsible for developing the Plan. By providing a comprehensive plan, including costs, it gives CCPC and PennDOT an opportunity to select implementation packages if and when funding becomes available.

Study Area

The study area focuses on approximately 18 miles of US 30 Bypass, encompassing the northern portion of Chester County, Pennsylvania, including but not limited to the municipalities of West Whiteland, East Caln, Downingtown, Caln, Coatesville, Valley, and Sadsbury. It is generally a four-lane, limited-access highway running in an east–west direction with interchanges at PA 100, US 30 Business, PA 113, US 322, PA 340, Reeceville Road, PA 82, Airport Road, and PA 10. This effort also looks at US 30 Business, which runs parallel to the US 30 Bypass. During traffic incidents on the US 30 Bypass, US 30 Business is the primary detour route and experiences significant congestion due to diverted traffic. **Figure 1** shows a map of the study area.

Referenced Documents

Although there are known congestion and safety issues at interchange areas, and projected traffic volume growth along the corridor, there is limited transportation funding and no existing plans for future capacity improvements along US 30 Bypass. This corridor has been referenced in several regional documents recommending ITS and operational strategies.

DVRPC Transportation Operations Master Plan

DVRPC's Transportation Operations Master Plan (DVRPC Publication # 09049), completed in 2009, outlines a long-range vision of transportation operations for the region.

The Transportation Operations Master Plan consists of five long-term visions: ITS Infrastructure Vision, Emergency Service Patrol (ESP) Plan Vision, Incident Management Task Forces, Integrated Corridor

Management Plan, and Regional Communications Network. For US 30 Bypass, the following operational strategies have been identified in the vision:

- ITS Infrastructure Vision calls for Primary Coverage on US 30 Bypass and Tertiary Coverage on US 30 Business. Primary Coverage specifies full CCTV coverage, DMS on mainline and select crossroads, and incident detection and travel-time detectors. Tertiary Coverage specifies CCTV at major intersections, DMS at decision points, travel-time detectors; all traffic signals part of a signal system, and the signals should be operated by PennDOT.
- ESP plan calls for peak-hour 8-hour, weekday coverage on US 30 Bypass between US 202 and PA 100, and eight-hour weekday coverage, four hours each in the morning and afternoon rush hours, from PA 100 to PA 10.
- Integrated Corridor Management Plan incorporates the US 30 corridor into a larger corridor extending from Lancaster County to US 202 by King of Prussia and south along US 202 to Delaware County. The objective of integrated corridor management is to integrate expressway management systems, municipal traffic signals, and rail systems to optimize transportation assets and provide uniform traveler information.
- Regional Communications Network is intended to connect regional entities, such as state departments of transportation, bridge and toll authorities, and transit agencies, who need to share situational information and coordinate their responses in emergency situations. These include PennDOT, PA State Police Troop J Embreeville Station, and the Chester County Department of Emergency Services/9-1-1 Center.

PennDOT Regional Operations Plan (ROP)

In 2007, PennDOT completed their ROP, which identified 14 recommended short-term projects and 13 long-term projects for the DVRPC region. Many recommendations were very generic or regional in nature, such as developing and distributing traveler information to the goods movement community. Others were very specific, such as deploy ITS on I-95 from the Delaware state line to the Philadelphia International Airport. The only specific recommendation applicable to the US 30 corridor is a long-term project recommending rush-hour Service Patrol coverage on US 30 Bypass between US 202 and PA 10.

Regional ITS Architecture

As per federal requirements (23 C.F.R. 940), DVRPC maintains a Regional ITS Architecture Plan (DVRPC Publication # 08084). All aspects of the architecture, including architecture scope, architecture components, functional requirements and operational concept, and implementation, are described in *Regional ITS Architecture for the Delaware Valley, Version 2.0*. An ITS architecture is a method to facilitate coordination between organizations. In general, the architecture represents a coordinated approach to installing and operating technologies in a transportation system across jurisdictions. It establishes a framework for ITS systems at each agency to collect and distribute information with each other.

A key function of the Regional ITS Architecture is to identify regional needs and determine the ITS services that should be implemented to address those needs. In the architecture these services are represented as ITS market packages. As identified in the Regional ITS Architecture, the ITS market packages that are appropriate for the US 30 corridor are delineated in **Table 1**.

US 30 ITS Master Plan - Chester County

Study Area

Figure 1

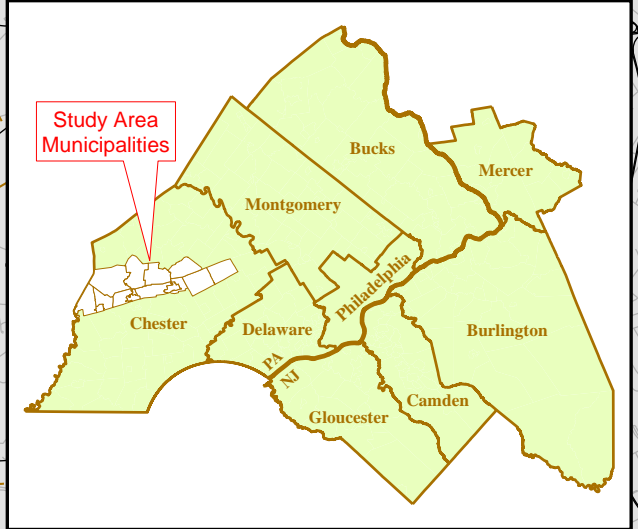
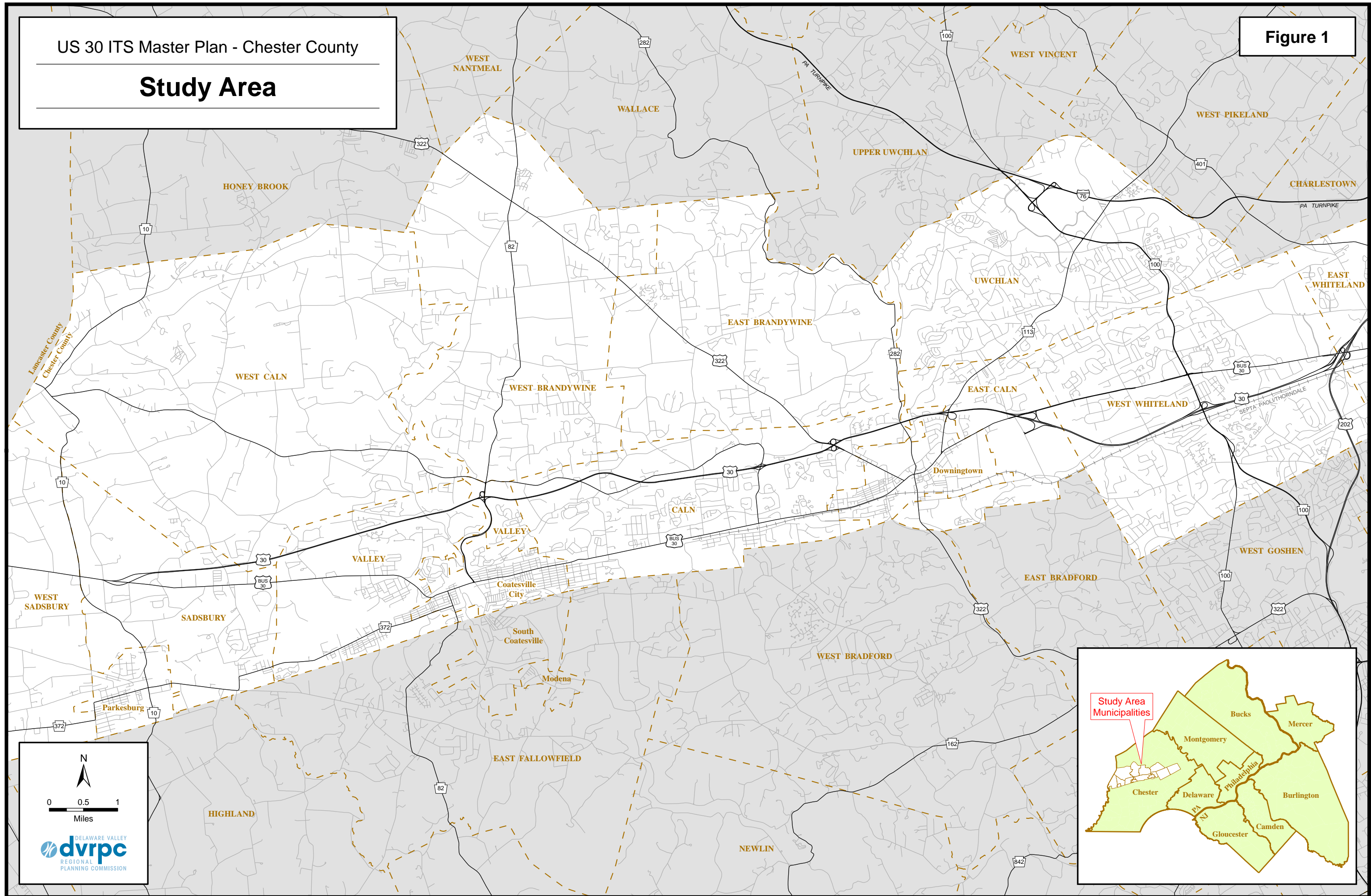


Table 1: Intelligent Transportation Systems Market Packages Applicable to US 30 Corridor

Market Packages	Description
Traffic Management	
Network Surveillance	Traffic detectors, closed-circuit television cameras, other surveillance equipment, supporting field equipment, and communications to transmit the collected data back to the Pennsylvania Department of Transportation Regional Traffic Management Center
Traffic Probe Surveillance	Infrastructure and software to track probe vehicles, position, and speed information utilized to determine road network conditions, such as average speed and travel times
Surface Street Control	Central control and monitoring equipment, communication links, and signal control equipment that support arterial traffic management
Freeway Control	Provides the communications and roadside equipment to support ramp control and interchange control for freeways; also includes the capability to utilize surveillance information for detection of incidents
Traffic Information Dissemination	Provides driver information using roadway equipment, such as dynamic message signs; can include traffic and road conditions, closure and detour information, incident information, and driver advisories
Regional Traffic Management	Sharing of traffic information and control among traffic management centers to support a regional control strategy; for US 30 corridor this involves traffic signal control
Emergency Management	
Road Service Patrols	Supports the roadway service patrol vehicles that aid motorists, monitors service patrol vehicle locations, and supports vehicle dispatch

Source: Delaware Valley Regional Planning Commission, 2012

US 30 Corridor Emergency Traffic Signal Operations

Local municipalities, CCPC, PennDOT, and DVRPC are working together to enable the implementation of emergency signal timings in the US 30 corridor. When a traffic accident occurs on US 30 Bypass, and traffic surges onto US 30 Business and other roads, PennDOT will implement emergency signal timings to facilitate the flow of increased traffic.. These timings will be a pre-approved emergency signal timing plan. Implementation of the plan requires adoption of a memorandum of understanding by all parties and some traffic signal software and hardware modifications. A draft concept of operations, that outlines procedures to implement emergency timings, identified two critical needs: connect Reeceville Road traffic signals into the signal system, and monitor traffic conditions on US 30 Business via CCTV.

Congestion Management Process (CMP)

DVRPC's CMP is a systematic process to identify congestion and its causes, propose mitigation strategies, and evaluate the effectiveness of implemented strategies. The *2015 Congestion Management Process*

Report (DVRPC Publication # 15044) identifies congested corridors and multimodal strategies to mitigate congestion. This study area falls within Corridor 7—US 30 to Philadelphia, and more specifically, Subcorridor 7E—US 30 communities west of PA 100. The following are Very Appropriate Strategies listed in the CMP for the subcorridor:

- signal improvements;
- park-and-ride lots;
- transit-oriented development; and
- transportation services for specific populations.

Among the 20 Secondary Strategies identified in the CMP for this corridor, only one—incident management—is pertinent to this Plan.

Operational Needs

This section identifies specific needs for the corridor that drive the recommendations for future systems deployment. These needs have been identified through a review of the referenced documents and reflect input from PennDOT’s District 6-0 traffic engineering and operations staff and DVRPC’s US 30 Incident Management Task Force. Operational needs and concerns for the corridor are described below.

Incident and Event Monitoring. Provide PennDOT the ability to remotely detect and visually verify incidents that are reported by Expressway Service Patrols, police, traveler calls, and other means. This includes observing and monitoring the status of the incident response by first responders.

Monitor Congestion Levels. Provide the ability to quickly identify anomalies in traffic patterns in order to detect and respond to incidents, and provide accurate and timely traveler information to the traveling public. This includes informing travelers of current traffic levels, with particular attention to how they deviate from what is normal. This includes the collection of speed, and volume information.

Support Corridor Management. Monitor operations on US 30 Bypass in concert with monitoring parallel freeways and arterials, compare relative levels of congestion, and support diversion to a lesser congested facility(s) during incidents and reports of congestion. This includes providing the ability to monitor mainline lanes, merge areas, and weave areas.

Disseminate Real-Time Information. Disseminate messages on DMS in accordance with the following real-time applications: incidents; construction and maintenance activities; adverse weather, environmental, and roadway conditions; travel-times; planned events; emergency messages; and safety messages.

Collect and Provide Travel-Time Information. Provide the ability to show real-time travel-times between certain points of interest on message boards, 511, and other dissemination tools in order to alert travelers of traffic delays.

Share Video Images. Provide the ability to share real-time video images with first responders. This includes Pennsylvania State Police, Chester County Department of Emergency Services, and local fire and rescue agencies. Video images should also be shared with the media and general public.

CHAPTER 2: ITS Elements

ITS is a way to improve mobility and enhance the efficiency of operations with technology without adding capacity. It facilitates better use of all available modes of surface transportation and allows the traveling public to make informed decisions regarding mode choice and route.

Currently, PennDOT has already made a significant investment in ITS technologies throughout the region. As **Figure 2** displays, there are a number of CCTV cameras and DMSs already deployed on the eastern portion of US 30 Bypass. These devices are operated by PennDOT staff located at RTMC in King of Prussia. The RTMC monitors traffic conditions and operates ITS equipment on a 24-hour basis. In addition to CCTV and DMS, there are vehicle detectors along the roadside to help determine travel-times and vehicle speeds for incident detection.

With input from an advisory committee of consisting of representatives from PennDOT, Chester County Planning the US 30 Traffic Incident Management Task Force, and the analyses performed by DVRPC, different components of ITS have been identified for the US 30 corridor. This section represents the vision for ITS deployment in the corridor and includes the deployment of CCTV cameras, DMS, detectors, traffic signals and fiber. This section describes the deployment of each element of the vision.

CCTV Cameras

CCTV cameras are a vital component of an ITS system and are deployed at strategic locations in order to monitor traffic conditions and assist with incident management. The proposed CCTV cameras (**Figure 3**) will be deployed to allow PennDOT's RTMC to detect, verify, and monitor incidents, construction, and maintenance activities. By remotely viewing on-the-ground conditions, operators can quickly and effectively assess what kind of actions and resources need to be implemented to send to an incident site. Additionally, PennDOT will share these video images with the first responder community via direct fiber connections and the general public using its statewide 511 traveler information system and website (www.511PA.com).

The CCTV vision for the US 30 corridor is to have full coverage on the bypass, which means locating each of the cameras approximately one mile apart. CCTV will be mounted on tall poles with domes that will protect the camera from the elements. It will have pan-tilt-zoom capability that allows an operator to readjust the view and provide a greater level of detail. The cameras will also be mounted with a lowering device to allow for maintenance.

Along US 30 Business, the focus of CCTV will be targeting major intersections to include all arterial detour routes and key decision points. The new CCTV cameras are intended to be mounted at these intersections on existing traffic signal mast arms. Mounting on traffic signal poles economizes both right of way and cost associated with constructing stand-alone poles. Additionally, mounting on an existing signal pole allows the camera to be placed as near the corner of the intersection as possible, providing the greatest opportunity to monitor traffic conditions in all directions.

Recently, Caln Township has secured grant funding under Pennsylvania's Automated Red Light Enforcement (ARLE) funding program. This ARLE project includes the construction of three pole-mounted CCTV cameras

along US 30 Business at the following intersections: North Caln Road, North Bailey Road, and Bondsville Road. Through existing fiber connections, these cameras will be connected to the PennDOT RTMC.

DMS

An integral function of the US 30 ITS Infrastructure Vision is to provide the public with real-time information on transportation conditions. One aspect of providing this information is through the use of message signs along the roadways, where the messages can be changed on demand. DMSs are one of the tools used by the RTMC to disseminate information to motorists so that they can make informed decisions regarding their intended trip and/or route. Initially, DMSs were used primarily to inform motorists throughout the region of incidents, road or lane closures, or weather conditions. Today, their use has increased to disseminate a wider variety of information regarding special events, parking, and travel-times to specific destinations or access/egress points.

Typically, these signs may be mounted on cantilevers and centered over travel lanes, or placed alongside the roadway. Most signs only have two or three lines for information; thus, the wording is very limited. DMSs can also be placed on both the highway and along arterials. Messages originate from PennDOT RTMC and are transmitted to the sign via fiber optic cable. DMSs help keep drivers informed of route alternatives and expected roadway conditions.

On US 30 Bypass, the location of the DMSs is based on key decision points (i.e., ahead of a location where a motorist may be able to divert and/or make a decision to stay on a roadway impacted by an incident) and locations that are suitable for displaying appropriate travel-times. The selection of locations for DMSs along US 30 Business was driven by the information needs of motorists diverted off of the bypass. DMSs were located in such a way as to ensure that information was relayed to travelers in advance of critical decision points along the detour routes. **Figure 4** shows the DMS vision for the corridor.

Detectors

PennDOT District 6-0 currently utilizes detectors for both real-time travel-time information and incident detection. **Figure 5** shows the Detectors vision for the corridor.

Travel-Time Information

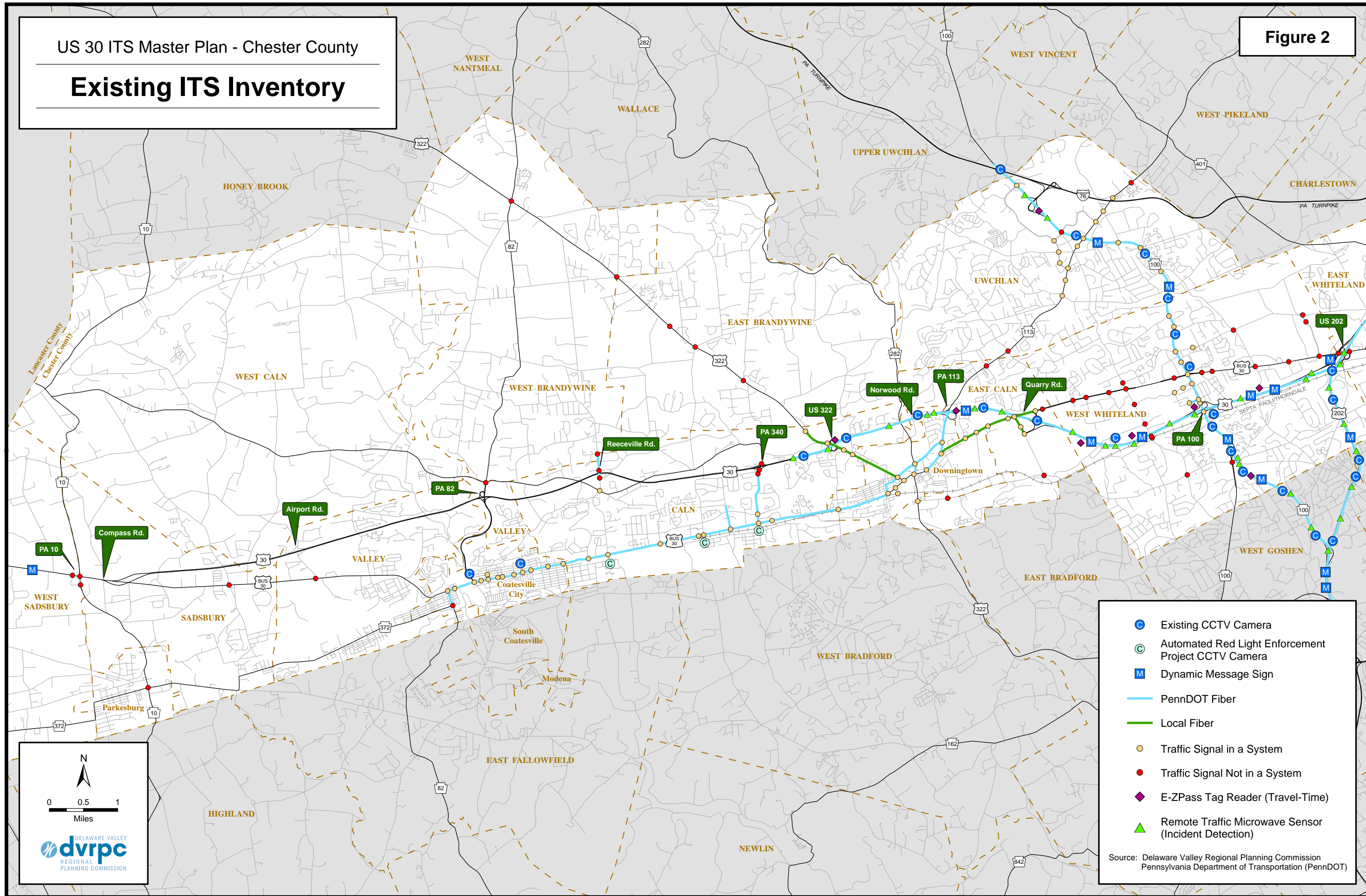
The primary function of travel-time systems is to provide en-route motorists with an estimated travel-time to a destination. These travel-times may be displayed on a DMS. To obtain real-time travel-time information, PennDOT District 6-0 has deployed the TRANSMIT system along I-95, I-476, I-76, PA 309, US 202, and the eastern portion of US 30 Bypass to calculate travel-times. This strategy is recommended for the remainder of the corridor.

TRANSMIT calculates travel-times based on information collected from E-ZPass tag readers. Transponder readers installed along roadways are used to detect vehicles with E-ZPass tags. As tags are detected by successive readers, TRANSMIT compiles aggregate data on average speeds, travel-times, and the number of non-arriving vehicles (vehicles expected but not yet detected by the next reader downstream) and displays the calculated travel-times to appropriate DMSs. In order to protect travelers' privacy, E-ZPass tag IDs are scrambled by the TRANSMIT system, and only a record of the trip by an anonymous vehicle is stored. Individual vehicle information is not stored or made available to PennDOT, nor used for law enforcement purposes. The scrambled tag information is deleted after the vehicle has left the highway.

US 30 ITS Master Plan - Chester County

Existing ITS Inventory

Figure 2



- Existing CCTV Camera
- Automated Red Light Enforcement Project CCTV Camera
- Dynamic Message Sign
- PennDOT Fiber
- Local Fiber
- Traffic Signal in a System
- Traffic Signal Not in a System
- ◆ E-ZPass Tag Reader (Travel-Time)
- ▲ Remote Traffic Microwave Sensor (Incident Detection)

Source: Delaware Valley Regional Planning Commission
 Pennsylvania Department of Transportation (PennDOT)

N

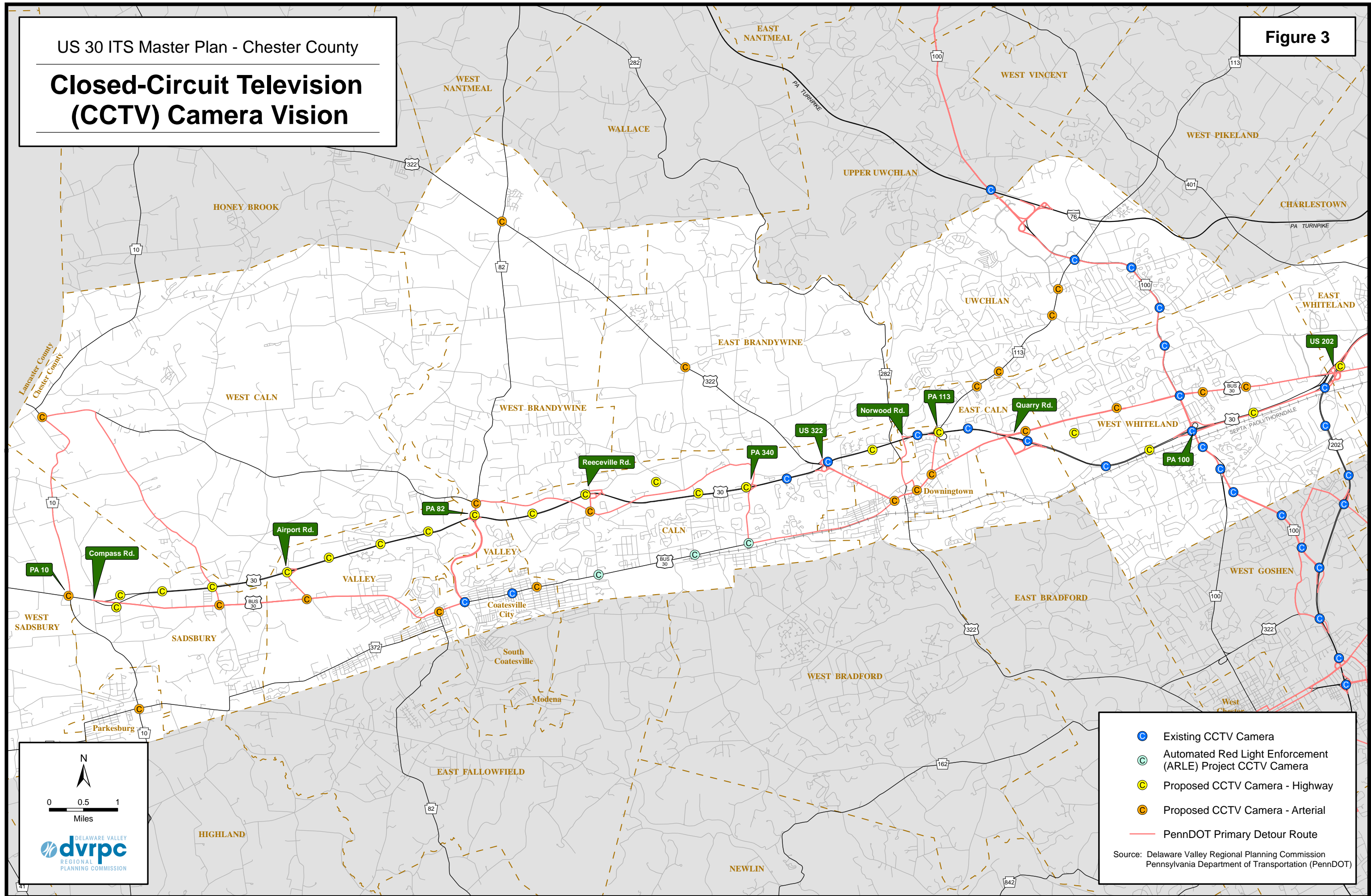
0 0.5 1
Miles

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

Figure 3

US 30 ITS Master Plan - Chester County

Closed-Circuit Television (CCTV) Camera Vision



- Existing CCTV Camera
- Automated Red Light Enforcement (ARLE) Project CCTV Camera
- Proposed CCTV Camera - Highway
- Proposed CCTV Camera - Arterial
- PennDOT Primary Detour Route

Source: Delaware Valley Regional Planning Commission
Pennsylvania Department of Transportation (PennDOT)

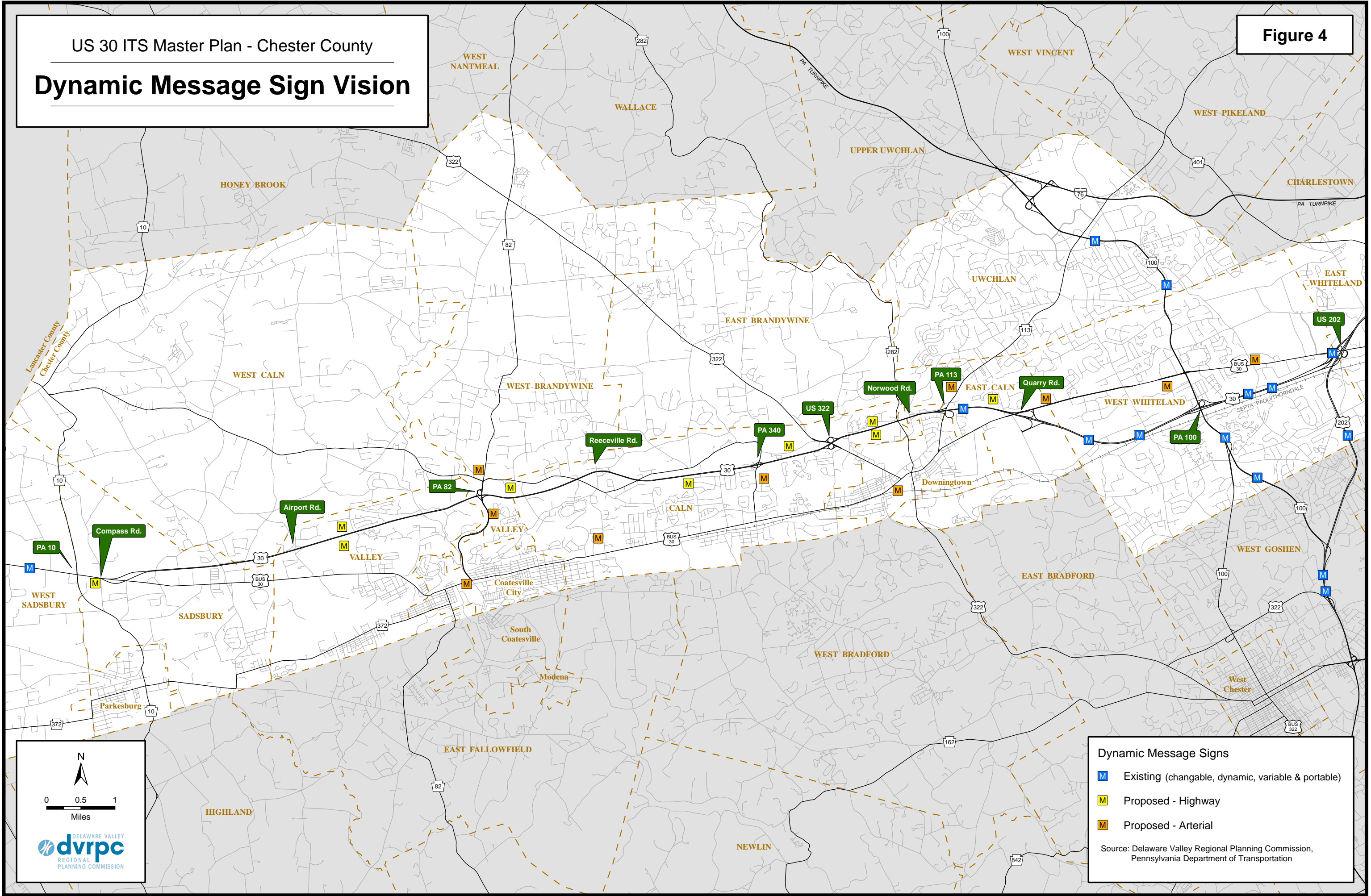
0 0.5 1
Miles

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

Figure 4

US 30 ITS Master Plan - Chester County

Dynamic Message Sign Vision



Dynamic Message Signs

- Existing (changable, dynamic, variable & portable)
- Proposed - Highway
- Proposed - Arterial

Source: Delaware Valley Regional Planning Commission, Pennsylvania Department of Transportation

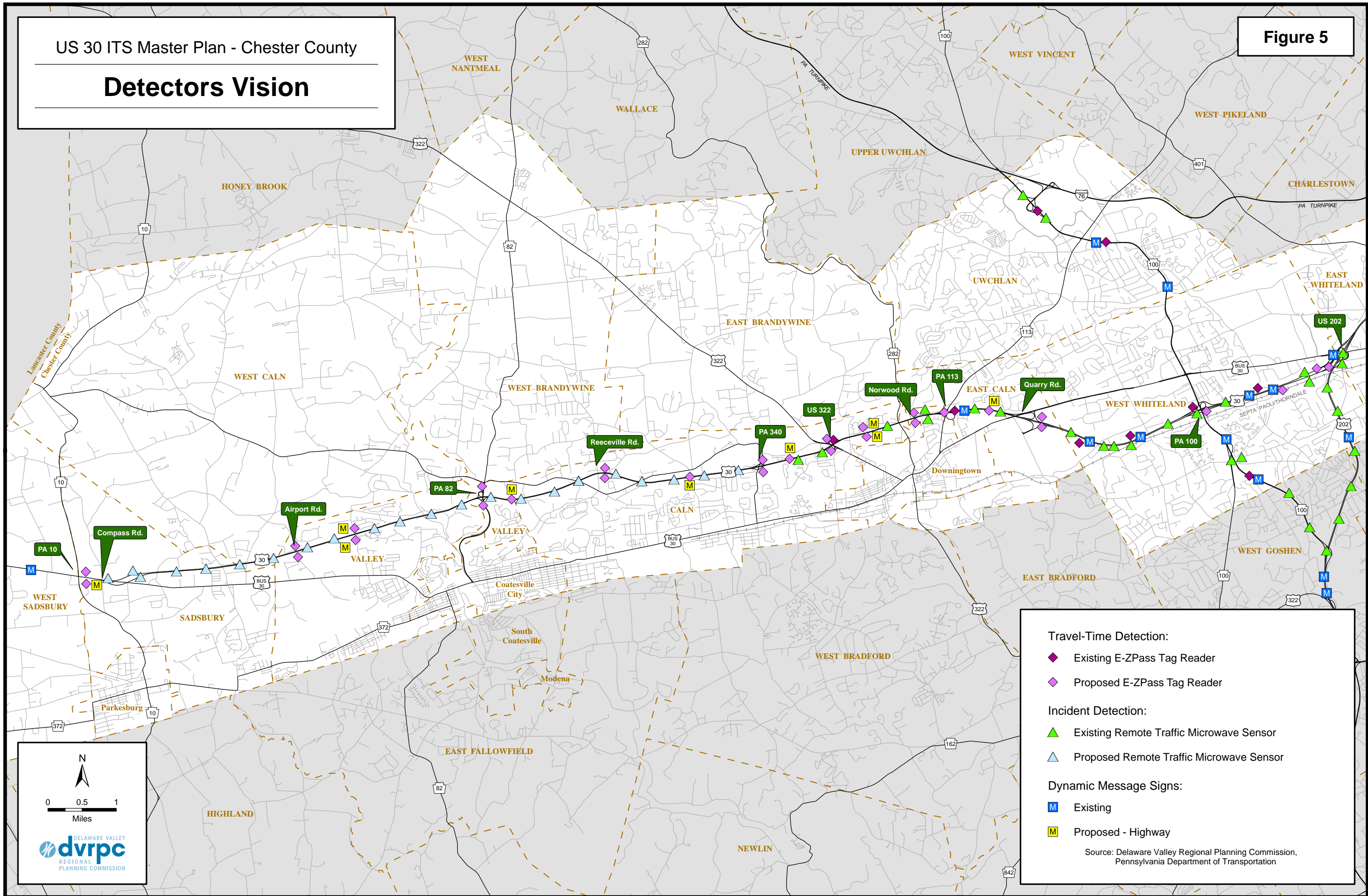
N

0 0.5 1
Miles

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

Detectors Vision

Figure 5



Travel-Time Detection:

- Existing E-ZPass Tag Reader (Purple diamond)
- Proposed E-ZPass Tag Reader (Light purple diamond)

Incident Detection:

- Existing Remote Traffic Microwave Sensor (Green triangle)
- Proposed Remote Traffic Microwave Sensor (Light blue triangle)

Dynamic Message Signs:

- Existing (Blue square with 'M')
- Proposed - Highway (Yellow square with 'M')

Source: Delaware Valley Regional Planning Commission, Pennsylvania Department of Transportation

N

0 0.5 1 Miles

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

The general approach when locating travel-time detectors is to ensure that origins and destinations (typically at key interchanges) will produce travel-times useful for the majority of motorists traveling through the corridor. Detectors are also co-located with DMSs to support the generation of messages and times that will be displayed at those signs.

Incident Detection

Vehicle detection systems are stand-alone point detectors that detect the presence of vehicles and their characteristics. These detectors are used for two primary purposes: data collection and incident management. They can detect and provide valuable real-time and historical data, including speed, volumes, vehicle presence, occupancy, gaps, and incident occurrence. Incident detection is a traffic management function that provides automated alarms and notifications of potential incidents to the RTMC operators. These systems require vehicle detectors at regular intervals along a corridor to collect data and send it back to the RTMC. There, a software program employs an algorithm to determine the presence of an incident on the roadway. To be effective, incident detectors should be spaced every half-mile or less. A Remote Traffic Microwave Sensor (RTMS) is the preferred detector type of PennDOT. These are non-intrusive radar sensors for the detection and measurement of traffic. Microwave detectors are angled down toward the travel lanes of the roadway and can collect data on more than one lane traffic. They can be either free-standing on a steel pole or co-located with many existing structures, such as sign structures, bridge structures, CCTV poles, and DMSs.

Traffic Signal Systems

All traffic signals in Pennsylvania are owned, operated, and maintained by the individual municipalities in which they are located. Consequently, there may be different types of traffic signals, levels of signal management and maintenance, and lack of inter-municipal coordination that result in poorly timed traffic signals.

According to DVRPC's Transportation Operations Master Plan, upgrading and interconnecting signals on a priority network is an objective to meet the goal of reducing traffic congestion through improved traffic management. Many older traffic signal systems utilize time-based coordination to interconnect traffic signals. There is no central processor to dynamically manage the system, nor is there a communication network to transmit commands to individual signals or between signals. Closed-loop traffic signal systems permit a central processor, through a communications network, to monitor a large group of traffic signals and implement dynamic signal timing patterns.

Along the US 30 Business corridor, in cooperation with PennDOT, municipal public works departments have already constructed an interconnected closed-loop traffic signal system. Therefore, the vision for the US 30 ITS Master Plan is to identify traffic signals not currently within an existing system and recommend an upgrade to the signal to bring them into an existing system. **Figure 6** shows the existing traffic signal systems and those individual traffic signals that have been identified to be upgraded to a system. For instance, Caln Township was awarded 2015 ARLE funding to extend the current closed loop system along Reeceville Road. The fiber would be extended from US 30 Business to Reeceville Road via Barley Sheaf Road.

There are currently several other ongoing efforts in Chester County to enhance the area's signal systems. Along the US 30 Business corridor, the municipalities are working with PennDOT to develop emergency signal timing in the US 30 corridor, when needed, by changing the signal timing plan to a pre-approved

emergency signal timing plan. It does not affect day-to-day operation of traffic signals. When a traffic accident occurs on US 30 Bypass, and traffic surges onto US 30 Business and other roads, PennDOT will implement emergency signal timings. PennDOT is the only entity operating 24 hours, seven days a week and capable of implementing emergency signal timings across municipalities on US 30 Business.

Fiber

Communications infrastructure is the backbone for all ITS deployments. To support the recommended ITS devices, a fiber optic infrastructure is required that will support the level of data and information sharing needed. Currently, fiber optic cable is the preferred communications medium for PennDOT's ITS network. Fiber optic will provide the necessary bandwidth required to transmit high-resolution video to the RTMC, as well as communications between ITS and traffic signal field devices and the RTMC.

Depending on the location of the ITS assets, the fiber optic cable is either installed underground or aerially. The cost of implementing fiber varies greatly, with aerial construction costing one-third the price of the underground alternative. For this study, any fiber along US 30 Bypass will be reflected as underground fiber, and fiber along the arterial network will be of the aerial construction.

With the deployment of new ITS assets along the US 30 corridor, it is essential to build upon the regional communications network and provide connectivity between the RTMC and regional stakeholders, such as SEPTA and local emergency responders. It is envisioned that a fiber connection between PennDOT and the 11 municipalities in the corridor be established that will provide the capability to share video and other traffic information. This connectivity includes "last mile" connection. This refers to the final leg of the connection from the telephone poles into the building. The Plan calls for a connection to the following local police departments:

- Caln Township;
- City of Coatsville;
- Borough of Downingtown;
- East Brandywine Township;
- Parkesburg Borough;
- Sadsbury Township;
- Uwchlan Township;
- Valley Township;
- West Brandywine Township;
- West Caln Township;
- West Sadsbury Township; and
- West Whiteland Township.

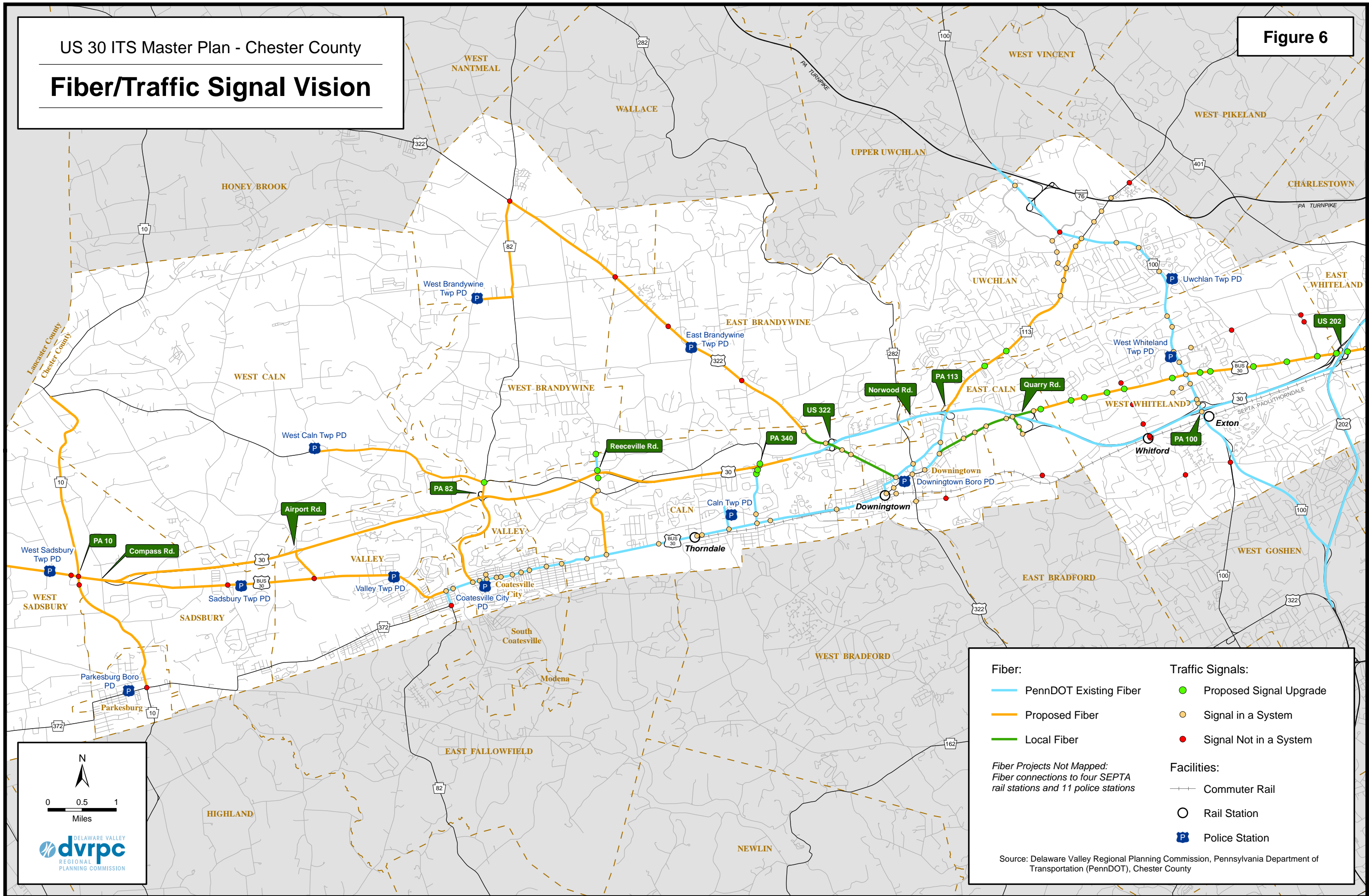
Another opportunity to enhance connectivity is to tie into the four SEPTA regional rail stations that are located adjacent to US 30 Business. These stations are located on SEPTA's Paoli/Thorndale rail line. This is located on Amtrak territory, and the SEPTA control center cannot "see" the actual movement of trains along this route. This means transit information and train status information are estimated in these locations. A fiber connection at these locations may provide SEPTA with the ability to communicate with these remote stations and enhance their traveler information systems. The Plan calls for a connection to the following SEPTA rail stations:

- Exton Station;
- Whitford Station;
- Downingtown Station; and
- Thornadale Station.

Figure 6 shows the Fiber and Traffic Signal vision for the corridor.

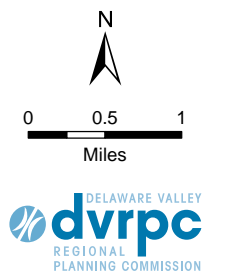
Figure 6

US 30 ITS Master Plan - Chester County Fiber/Traffic Signal Vision



- | | |
|--|--|
| Fiber: | Traffic Signals: |
| — PennDOT Existing Fiber | ● Proposed Signal Upgrade |
| — Proposed Fiber | ● Signal in a System |
| — Local Fiber | ● Signal Not in a System |
| <i>Fiber Projects Not Mapped:
Fiber connections to four SEPTA
rail stations and 11 police stations</i> | Facilities: |
| | — Commuter Rail |
| | ○ Rail Station |
| | P Police Station |

Source: Delaware Valley Regional Planning Commission, Pennsylvania Department of Transportation (PennDOT), Chester County



Implementation Plan

The realization of the vision for ITS along the US 30 corridor is dependent upon developing specific projects to deploy the enabling infrastructure and establish the communication and coordination linkages that do not yet fully exist. In today's difficult transportation funding environment, the likelihood of securing funding for a full-scale ITS design build project for the entire corridor is unlikely. This type of project has a hard time competing for funds against projects for bridge and road repairs that may be more immediately pressing but that do not necessarily deliver the same long-term returns. The significance of the US 30 ITS Master Plan is that the entire vision for the corridor has been broken down into segments that can be programmed for development on an incremental basis.

Estimated Device Costs

According to discussions with PennDOT and their experiences implementing other projects throughout the region, this Plan used a series of estimated costs for the various ITS technology being recommended. Many of the devices vary in cost on whether they are being recommended for the highway or an arterial. For instance, the estimated costs per CCTV camera on US 30 Bypass (\$50,000) are more expensive due to the need to use new and higher poles versus on an arterial (\$20,000), where they would be mounted on existing utility poles. Similarly, new DMSs on US 30 Bypass are estimated to be about \$150,000 per sign due to highway signs needing to be larger in size as compared to an arterial DMS, which costs about \$68,000. The estimated per mile cost of running fiber also differs on the highway (\$300,000) and arterials (\$100,000). On a highway, the fiber is required to be buried underground rather than hung on existing utility poles as can be done on an arterial.

The cost of detectors also varies. The travel-time detection system uses E-ZPass tag readers at a cost of \$45,000 per location, while the incident detection readers are estimated to be only \$15,000 per recommended location. Another cost identified is for traffic signal upgrades. It is estimated that upgrades per intersection will be about \$10,000. This cost accounts for timing upgrades and not new equipment.

Segments

To break down the entire vision into manageable pieces that may be implemented over time, the corridor was divided into segments. The thought is, that many of these devices could be implemented as part of other projects that may occur in these locations in the future. These segments were generated for US 30 Bypass, US 30 Business, and other arterials. For each location, all the devices in the CCTV, DMS, Detectors, and Fiber visions were compiled, and costs were created for each segment. To determine the final cost for each project location, an adjusted cost of *30 percent* was applied to each project to take into consideration **mobilization, design, and contingency**. *Mobilization* refers to any pre-construction expenses and the cost of preparatory work and operations (such as moving equipment on site and staging areas). *Design* refers to the engineering costs of developing the plans for work to be executed (specific, form, structure location of recommended devices). *Contingency* accounts for uncertainties in quantities, unit costs, and minor risk events related to the project requirements that may occur during construction.

The following three figures—US 30 Bypass (**Figure 7**), US 30 Business (**Figure 8**), and Other Arterial (**Figure 9**)—depict segments of the road network and where ITS devices have been recommended. For each segment, an estimated cost has been identified and tabulated in the corresponding table.

Two other projects were not included on the maps: the “last mile” connections to the 12 local police departments and the four SEPTA rail stations. This is generally a connection from where the fiber is on the street or utility pole to the building. These efforts can be stand-alone projects. Many of the police departments are already located near existing fiber, and connections may be implemented at any time funding may be available. The other connections can occur as the entire vision plays out. The estimated costs for these are displayed in **Table 2**.

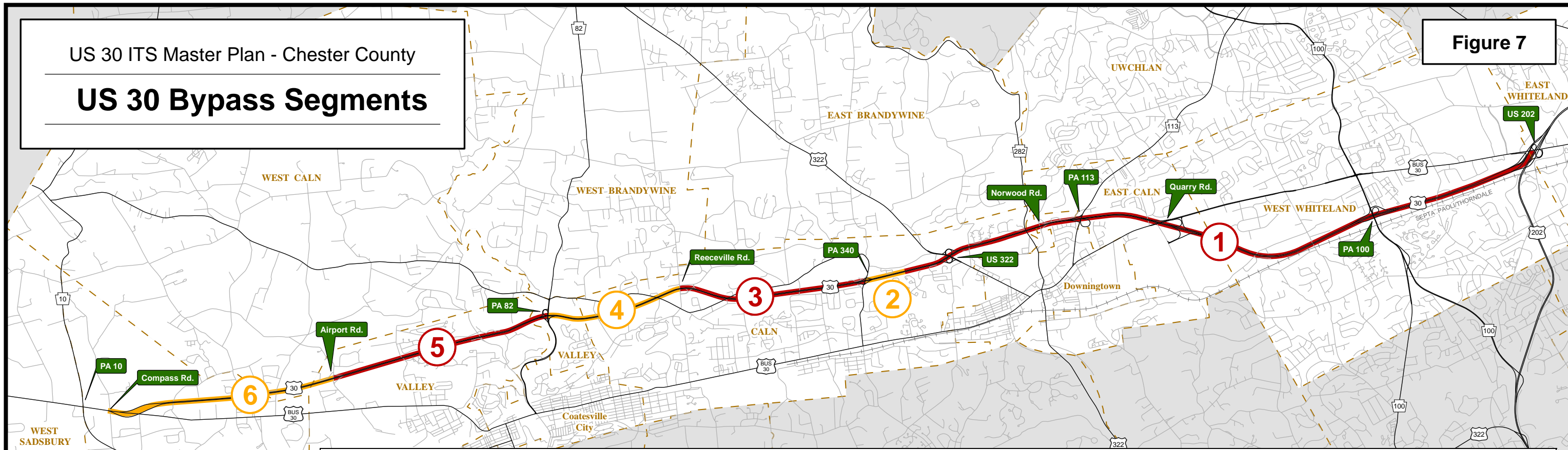
Table 2: Last Mile Connections Estimated Costs

Project	SEPTA		Local Police		Cost	Adjusted Cost *
	#	\$50,000 each	#	\$25,000 each		
SEPTA Connections	4	\$200,000			\$200,000	\$260,000
Local Police Connections	12		12	\$300,000	\$300,000	\$390,000
Total Costs					\$500,000	\$650,000

**Adjusted Costs include 30 percent for mobilization, design, and contingency
Source: Delaware Valley Regional Planning Commission, 2015*

US 30 Bypass Segments

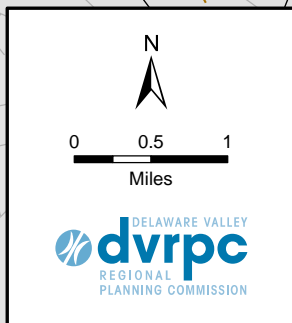
Figure 7



Segment Location	Limits	Closed-Circuit Television Camera (Highway)		Dynamic Message Sign (Highway)		Detection				Fiber (Underground)		Cost	Adjusted Cost *
		#	\$50,000 each	#	\$150,000 each	E-ZPass Tag Readers		Vehicle Incident Detection		Distance (Miles)	\$300,000 per mile		
						#	\$45,000 Each	#	\$15,000 Each				
1	US 30 Bypass: US 202 to west of US 322	6	\$300,000	3	\$450,000	14	\$630,000	0	\$0	0	\$0	\$1,380,000	\$1,794,000
2	US 30 Bypass: West of US 322 to PA 340	1	\$50,000	1	\$150,000	3	\$135,000	0	\$0	0.5	\$150,000	\$485,000	\$630,500
3	US 30 Bypass: PA 340 to Reeceville Road	3	\$150,000	1	\$150,000	3	\$135,000	5	\$75,000	2.3	\$690,000	\$1,200,000	\$1,560,000
4	US 30 Bypass: Reeceville Road to PA 82	2	\$100,000	1	\$150,000	3	\$135,000	4	\$60,000	1.8	\$540,000	\$985,000	\$1,280,500
5	US 30 Bypass: PA 82 to Airport Road	4	\$200,000	2	\$300,000	4	\$180,000	6	\$90,000	2.8	\$840,000	\$1,610,000	\$2,093,000
6	US 30 Bypass: Airport Road to Compass Road	4	\$200,000	0	\$0	0	\$0	7	\$105,000	2.8	\$840,000	\$1,145,000	\$1,488,500
Total Costs												\$6,805,000	\$8,846,500

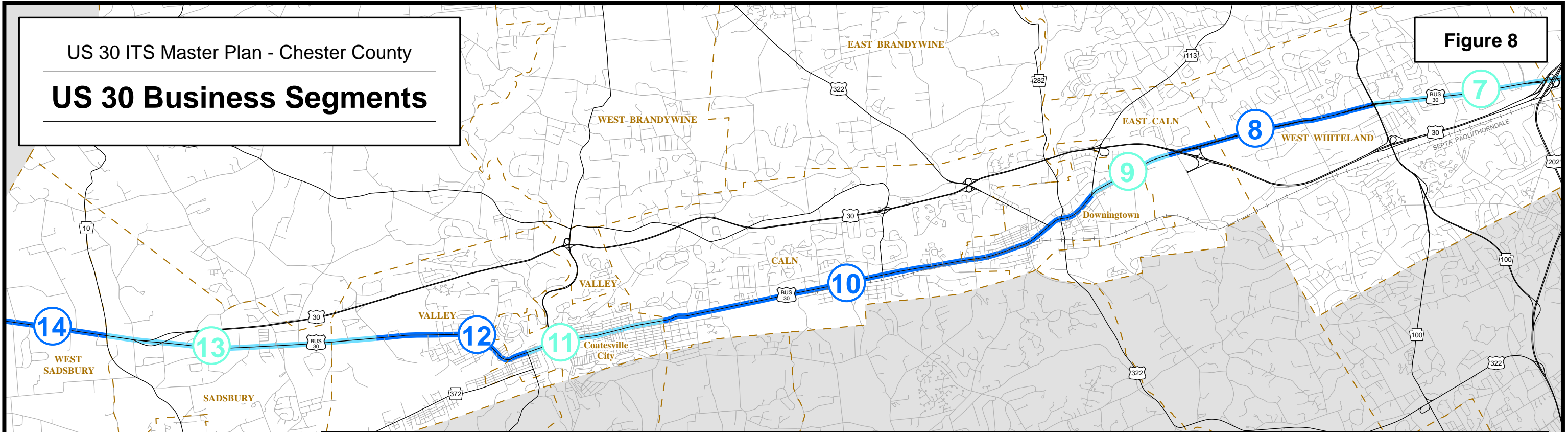
Source: Pennsylvania Department of Transportation, Delaware Valley Regional Planning Commission

* Adjusted Costs includes 30 percent for mobilization, design and contingency

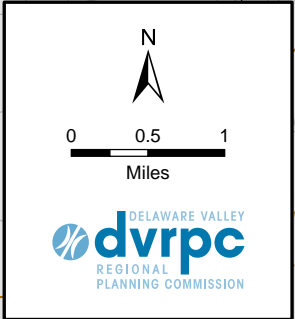


US 30 Business Segments

Figure 8



Segment Location	Limits	Closed-Circuit Television Camera (Arterial)		Dynamic Message Sign (Highway)		Dynamic Message Sign (Arterial)		E-ZPass Tag Readers		Fiber (Aerial)		Traffic Signal Upgrades		Cost	Adjusted Cost *
		#	\$20,000 each	#	\$150,000 each	#	\$68,000 each	#	\$45,000 each	Distance (Miles)	\$100,000 per mile	#	\$10,000 each		
7	US 30 Business: US 202 to PA100	2	\$40,000	0	\$0	1	\$68,000	0	\$0	2.4	\$240,000	7	\$70,000	\$418,000	\$543,400
8	US 30 Business: PA 100 to Quarry Road	3	\$60,000	0	\$0	2	\$136,000	0	\$0	2.6	\$260,000	6	\$60,000	\$516,000	\$670,800
9	US 30 Business: Quarry Road to PA 113	1	\$20,000	0	\$0	0	\$0	0	\$0	1.5	\$150,000	0	\$0	\$170,000	\$221,000
10	US 30 Business: PA 113 to Coatesville	2	\$40,000	0	\$0	3	\$204,000	0	\$0	0	\$0	0	\$0	\$244,000	\$317,200
11	US 30 Business: Coatesville	2	\$40,000	0	\$0	1	\$68,000	0	\$0	0	\$0	0	\$0	\$108,000	\$140,400
12	US 30 Business: Coatesville to Airport Road	1	\$20,000	0	\$0	0	\$0	0	\$0	2.1	\$210,000	0	\$0	\$230,000	\$299,000
13	US 30 Business: Airport Road to PA 10	2	\$40,000	1	\$150,000	0	\$0	2	\$90,000	3.4	\$340,000	0	\$0	\$620,000	\$806,000
14	US 30 Business: PA 10 to County Line	0	\$0	0	\$0	0	\$0	0	\$0	2.1	\$210,000	0	\$0	\$210,000	\$273,000
Total Costs														\$2,516,000	\$3,270,800

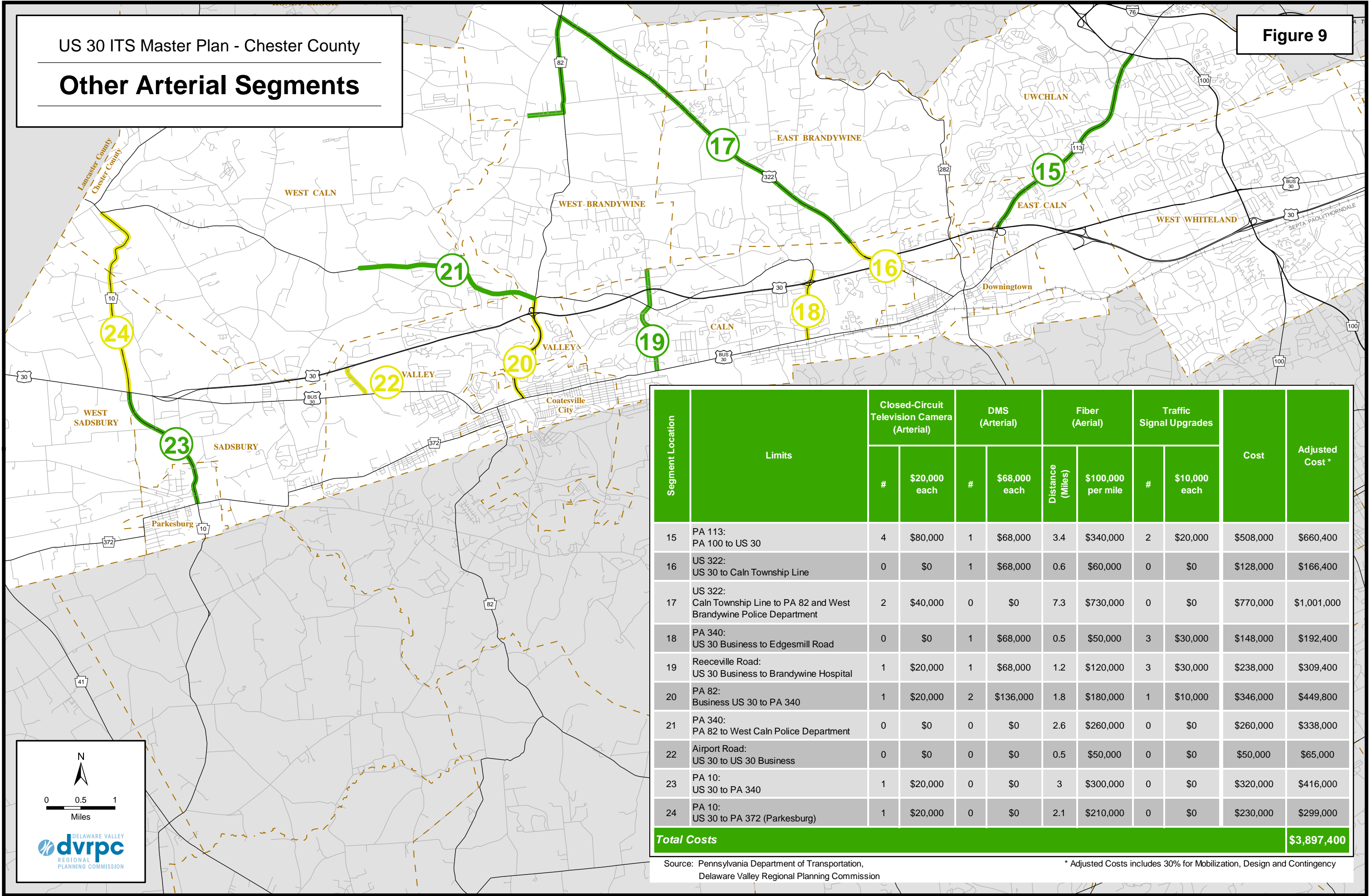


Source: Pennsylvania Department of Transportation, Delaware Valley Regional Planning Commission

* Adjusted Costs includes 30 percent for mobilization, design and contingency

Other Arterial Segments

Figure 9



Segment Location	Limits	Closed-Circuit Television Camera (Arterial)		DMS (Arterial)		Fiber (Aerial)		Traffic Signal Upgrades		Cost	Adjusted Cost *
		#	\$20,000 each	#	\$68,000 each	Distance (Miles)	\$100,000 per mile	#	\$10,000 each		
15	PA 113: PA 100 to US 30	4	\$80,000	1	\$68,000	3.4	\$340,000	2	\$20,000	\$508,000	\$660,400
16	US 322: US 30 to Caln Township Line	0	\$0	1	\$68,000	0.6	\$60,000	0	\$0	\$128,000	\$166,400
17	US 322: Caln Township Line to PA 82 and West Brandywine Police Department	2	\$40,000	0	\$0	7.3	\$730,000	0	\$0	\$770,000	\$1,001,000
18	PA 340: US 30 Business to Edgesmill Road	0	\$0	1	\$68,000	0.5	\$50,000	3	\$30,000	\$148,000	\$192,400
19	Reeceville Road: US 30 Business to Brandywine Hospital	1	\$20,000	1	\$68,000	1.2	\$120,000	3	\$30,000	\$238,000	\$309,400
20	PA 82: Business US 30 to PA 340	1	\$20,000	2	\$136,000	1.8	\$180,000	1	\$10,000	\$346,000	\$449,800
21	PA 340: PA 82 to West Caln Police Department	0	\$0	0	\$0	2.6	\$260,000	0	\$0	\$260,000	\$338,000
22	Airport Road: US 30 to US 30 Business	0	\$0	0	\$0	0.5	\$50,000	0	\$0	\$50,000	\$65,000
23	PA 10: US 30 to PA 340	1	\$20,000	0	\$0	3	\$300,000	0	\$0	\$320,000	\$416,000
24	PA 10: US 30 to PA 372 (Parkesburg)	1	\$20,000	0	\$0	2.1	\$210,000	0	\$0	\$230,000	\$299,000
Total Costs											\$3,897,400

Source: Pennsylvania Department of Transportation, Delaware Valley Regional Planning Commission

* Adjusted Costs includes 30% for Mobilization, Design and Contingency

Project Breakout Options

As previously mentioned, it is unlikely funding for the entire vision for the US 30 corridor would become available. However, in discussions with CCPC and PennDOT there is still a desire to look at the complete vision and develop options that might be able to be deployed if limited funds were to become available. Therefore, two Project Breakout Options were developed using the hypothetical notion that \$4 million were available to deploy ITS along the US 30 corridor.

Option 1: Extend Limited ITS Coverage on US 30 Bypass to PA 10.

The first option concept was developed with the purpose of extending PennDOT's ITS coverage on US 30 Bypass from where the existing ITS coverage ends near PA 340 all the way west to PA 10. The coverage would be an additional 10 miles along US 30 Bypass. However, with only a limited budget, the coverage will be limited, with emphasis on constructing ITS devices at each of the interchanges and their immediate vicinity.

To accomplish this, the majority of the fiber needed to run these devices and bring the information back to PennDOT's RTMC will have to be run as aerial fiber. This will be installed on telephone poles along US 30 Business from Coatesville to PA 10. There will also be lateral extensions of this aerial fiber along the roads leading to the US 30 Bypass interchanges at PA 340, Reeceville Road, PA 82, and Airport Road. The installation of the Reeceville Road fiber will also allow for the interconnection of three traffic signals by the interchange and back into Caln Township's signal system.

Although most of the fiber will be aerial, there is need for underground fiber on the bypass since the use of telephone poles is prohibited. The Plan calls for burying the fiber for approximately half to three-quarters of a mile on US 30 Bypass at PA 82, Airport Road, and the western ramps to accommodate proposed DMSs near these interchanges.

The focus of the ITS devices will be providing additional CCTV cameras for surveillance, DMSs for traveler information, and E-ZPass tag readers for travel-time information. **The estimated cost for Option 1 is \$3,948,000.** The following is a description of the locations for each type of device.

- CCTV devices (six)
 - Six are located on US 30 Bypass at each interchange (PA 340, Reeceville Road, PA 82, Airport Road, and on the eastbound and westbound directional ramps at the western end of the bypass).
 - One arterial CCTV device is located at the intersection of US 30 Bypass and PA 10.

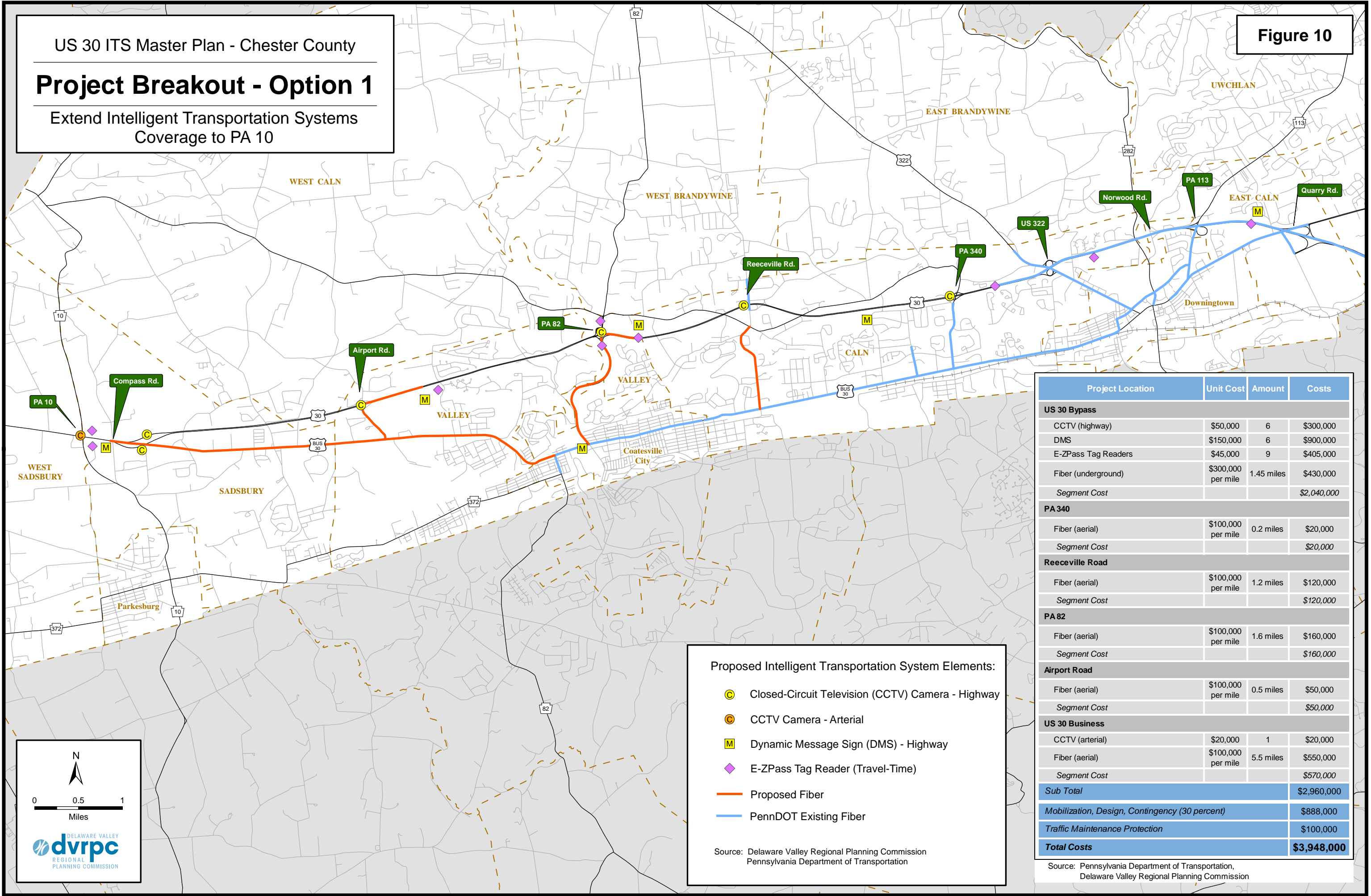
- DMSs are located prior to decision points (six)
 - eastbound (three)
 - beginning of US 30 Bypass;
 - between Airport Road and PA 82; and
 - between US 322 and PA 282.
 - westbound (three)
 - between Quarry Road and PA 113;
 - between US 322 and PA 340; and
 - between Reeceville and PA 82.

- E-ZPass tag readers (nine)
 - One is located at each of the six new DMSs
 - Two are located at PA 82 ramps for travel-time information end points.
 - One is located at PA 10 in the westbound direction for travel-time information end point.

Figure 10 displays a map of Project Breakout–Option 1 with both the location of the ITS devices and a table breaking down the project costs.

Figure 10

US 30 ITS Master Plan - Chester County
Project Breakout - Option 1
 Extend Intelligent Transportation Systems Coverage to PA 10



Proposed Intelligent Transportation System Elements:

- Closed-Circuit Television (CCTV) Camera - Highway
- CCTV Camera - Arterial
- Dynamic Message Sign (DMS) - Highway
- ◆ E-ZPass Tag Reader (Travel-Time)
- Proposed Fiber
- PennDOT Existing Fiber

Source: Delaware Valley Regional Planning Commission
 Pennsylvania Department of Transportation

Project Location	Unit Cost	Amount	Costs
US 30 Bypass			
CCTV (highway)	\$50,000	6	\$300,000
DMS	\$150,000	6	\$900,000
E-ZPass Tag Readers	\$45,000	9	\$405,000
Fiber (underground)	\$300,000 per mile	1.45 miles	\$430,000
Segment Cost			\$2,040,000
PA 340			
Fiber (aerial)	\$100,000 per mile	0.2 miles	\$20,000
Segment Cost			\$20,000
Reeceville Road			
Fiber (aerial)	\$100,000 per mile	1.2 miles	\$120,000
Segment Cost			\$120,000
PA 82			
Fiber (aerial)	\$100,000 per mile	1.6 miles	\$160,000
Segment Cost			\$160,000
Airport Road			
Fiber (aerial)	\$100,000 per mile	0.5 miles	\$50,000
Segment Cost			\$50,000
US 30 Business			
CCTV (arterial)	\$20,000	1	\$20,000
Fiber (aerial)	\$100,000 per mile	5.5 miles	\$550,000
Segment Cost			\$570,000
Sub Total			\$2,960,000
Mobilization, Design, Contingency (30 percent)			\$888,000
Traffic Maintenance Protection			\$100,000
Total Costs			\$3,948,000

Source: Pennsylvania Department of Transportation, Delaware Valley Regional Planning Commission

DELAWARE VALLEY
dvrpc
 REGIONAL
 PLANNING COMMISSION

Option 2: Extend Full ITS Coverage on US 30 Bypass to PA 82.

The second option concept was developed to provide full coverage of ITS assets along US 30 Bypass from where the existing coverage ends near the PA 340 interchange west to the PA 82 interchange. The focus of the ITS devices will be providing additional CCTV cameras for surveillance; DMSs for traveler information, E-ZPass tag readers for travel-time information, and RTMS tag readers for incident detection.

Since the devices for this option are directly on US 30 Bypass, this option would require the use of more underground fiber as compared to aerial fiber. This will absorb about one-quarter of the budget, which ultimately limits the extent of US 30 Bypass ITS assets to only an additional 4.5 miles to the PA 82 interchange.

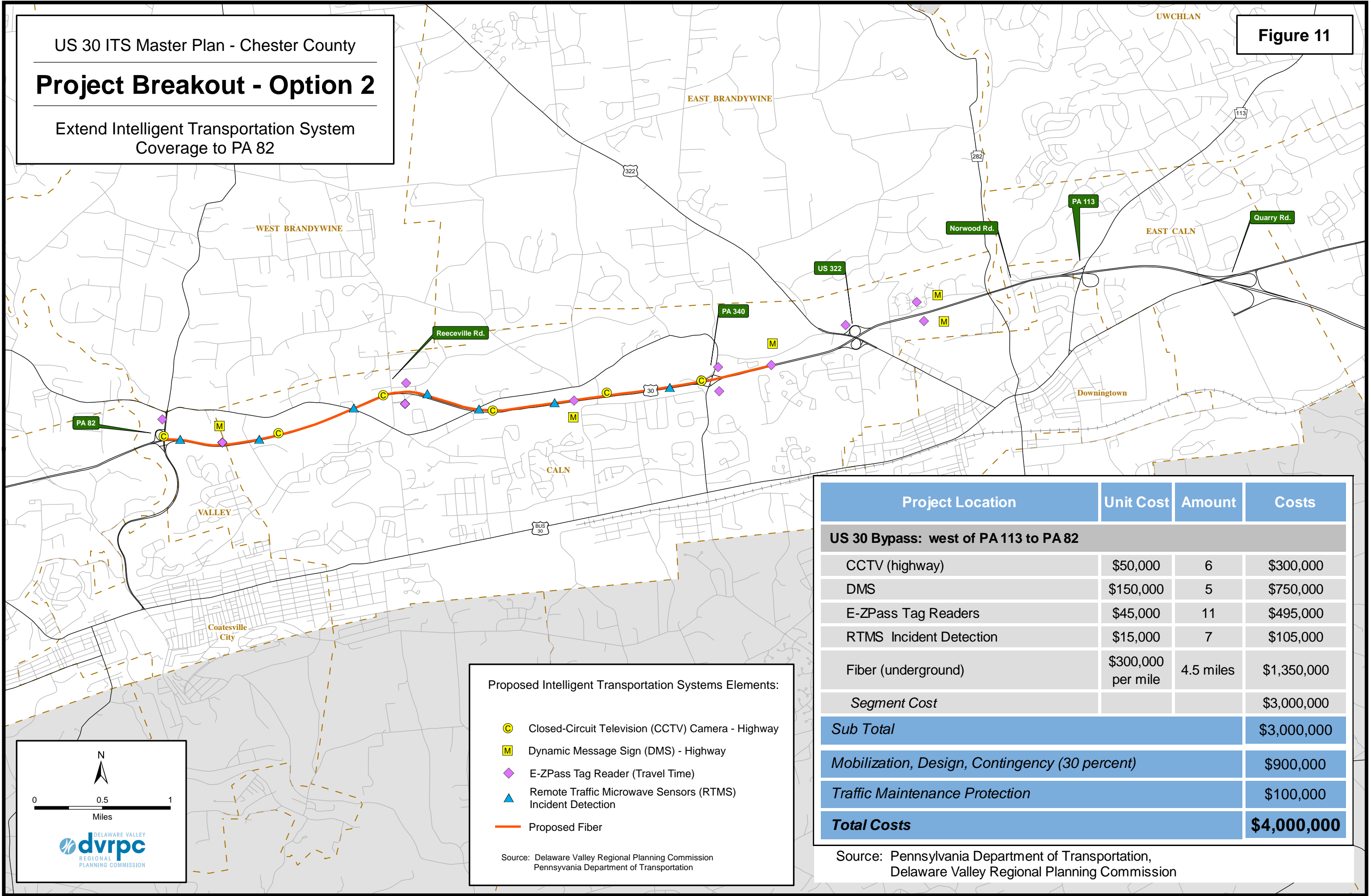
The estimated cost for Option 2 is \$4,000,000. The following is a description of the locations for each type of device.

- CCTV devices (six):
 - Six are located approximately one-half miles apart between PA 340 and PA 82.
- DMSs are located prior to decision points (five):
 - Five DMSs are located on US 30 Bypass:
 - eastbound between Reeceville Road and PA 340;
 - eastbound between US 322 and PA 282;
 - westbound between PA 282 and US 322;
 - westbound between US 322 and PA 340; and
 - westbound between Reeceville Road and PA 82.
- E-ZPass tag readers (eleven):
 - Five are located at every new DMS on US 30 Bypass.
 - Three are located in westbound directions at US 322, PA 340, Reeceville Road, and PA 82 ramps for travel-time info end points.
 - Three are located in eastbound directions at Reeceville Road, PA 340 ramps for travel-time info end points.
- RTMS Incident Detection (seven):
 - Existing coverage is extended to just west of PA 82..

Figure 11 displays a map of Project Breakout–Option 2 with both the location of the ITS devices and a table breaking down the project costs.

Figure 11

US 30 ITS Master Plan - Chester County
Project Breakout - Option 2
 Extend Intelligent Transportation System Coverage to PA 82



Proposed Intelligent Transportation Systems Elements:

- Closed-Circuit Television (CCTV) Camera - Highway
- Dynamic Message Sign (DMS) - Highway
- ◆ E-ZPass Tag Reader (Travel Time)
- ▲ Remote Traffic Microwave Sensors (RTMS) Incident Detection
- Proposed Fiber

Source: Delaware Valley Regional Planning Commission
 Pennsylvania Department of Transportation

DELAWARE VALLEY
dvrpc
 REGIONAL PLANNING COMMISSION

Project Location	Unit Cost	Amount	Costs
US 30 Bypass: west of PA 113 to PA 82			
CCTV (highway)	\$50,000	6	\$300,000
DMS	\$150,000	5	\$750,000
E-ZPass Tag Readers	\$45,000	11	\$495,000
RTMS Incident Detection	\$15,000	7	\$105,000
Fiber (underground)	\$300,000 per mile	4.5 miles	\$1,350,000
<i>Segment Cost</i>			\$3,000,000
Sub Total			\$3,000,000
<i>Mobilization, Design, Contingency (30 percent)</i>			\$900,000
<i>Traffic Maintenance Protection</i>			\$100,000
Total Costs			\$4,000,000

Source: Pennsylvania Department of Transportation,
 Delaware Valley Regional Planning Commission

Conclusion

The US 30 ITS Master Plan is the first step in the development of an ITS system along the US 30 corridor in Chester County. Planning for deployment of future ITS applications will be best served by matching crucial corridor issues with existing capabilities and real-world implementation experience. The vision presented to advance PennDOT's ITS coverage along US 30 corridor by deploying additional CCTV, DMS, detectors, and fiber and traffic signals costs over \$16 million. The Plan also presents two Project Breakout Options developed assuming that \$4 million were available. **Table 3** depicts a summary of the estimated costs for the Plan.

Table 3: US 30 Corridor ITS Costs

Project Locations	Description	Costs
Entire US 30 Corridor		
US 30 Bypass Segments	From US 202 to PA 10 Recommendations include CCTV, DMS, underground fiber, and travel-time and incident management vehicle detectors.	\$8,846,500
US 30 Business Segments	From US 202 to County Line Recommendations include CCTV, DMS, aerial fiber, travel-time and traffic signal upgrades.	\$3,270,800
Other Arterials Segments	Portions of PA 10, PA 82, PA 113, PA 340, US 322, Reeceville and Airport roads Recommendations include CCTV, DMS, aerial fiber, and traffic signal upgrades	\$3,897,400
Last Mile Connections	Recommendations include final fiber connections to local police departments and SEPTA rail stations.	\$650,000
Total Project Costs		\$16,664,700
Project Breakout Options		
Option 1	Extend limited Intelligent Transportation Systems (ITS) coverage on US 30 Bypass to PA 10.	\$3,948,000
Option 2	Extend Full ITS coverage on US 30 Bypass to PA 82.	\$4,000,000

Source: Delaware Valley Regional Planning Commission, 2016

The advantage of the Plan is to provide PennDOT, Chester County, and local municipalities with a set of options to advance the deployment of future ITS applications along the corridor when funding becomes available. DVRPC will continue to work with this project's partners to explore both potential funding strategies and additional opportunities to coordinate with other planning efforts.

US 30 ITS Master Plan—Chester County

Publication Number: 11025

Date Published: May 2016

Geographic Area Covered:

US 30 Bypass corridor, in Chester County, Pennsylvania, including the municipalities of Caln Township, City of Coatsville, Borough of Downingtown, East Brandywine Township, Parkesburg Borough, Sadsbury Township, Uwchlan Township, Valley Township, West Brandywine Township, West Caln Township, West Sadsbury Township, West Whiteland Township, East Goshen Township, and West Goshen Township.

Key Words:

Transportation Operations, Intelligent Transportation Systems (ITS), Crashes, Safety Issues, Transportation Improvement Strategies, Closed-Circuit Television (CCTV) Cameras, Dynamic Message Sign (DMS), Incident and Travel-Time Detectors, Traffic Signal Systems, US 30 Bypass

Abstract:

This report represents the findings and recommendations for the US 30 ITS Master Plan – Chester County. The goal of this plan is to document existing Intelligent Transportation Systems (ITS) infrastructure locations including closed-circuit television cameras, dynamic message signs, fiber, and travel and incident detectors, and to pinpoint gaps in coverage along the US 30 Corridor including the US 30 Bypass and key parallel routes (US 30 Business, PA 340, Downingtown area, etc.). This Plan identifies a set of recommended locations for future ITS assets. Recognizing the difficulty of securing funding for a stand-alone project to cover the entire corridor, the significance of the US 30 ITS Master Plan is that the entire vision for the corridor has been broken down into segments that can be programmed for development on an incremental basis when funding becomes available.

Staff Contact:

Chris King
Principal Transportation Planner
(215) 238-2849
cking@dvrpc.org



190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1520
Phone: (215) 592-1800
Fax: (215) 592-9125
www.dvrpc.org



DVRPC, 8TH FLOOR
190 N. INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19106-1520
(215) 592-1800
WWW.DVRPC.ORG