

Project Stakeholder Meeting - September 21, 2021



Alternative Fuels Deployment Plan for I-81 and I-78 in Pennsylvania

FHWA APPLIED RESEARCH PILOT STUDY



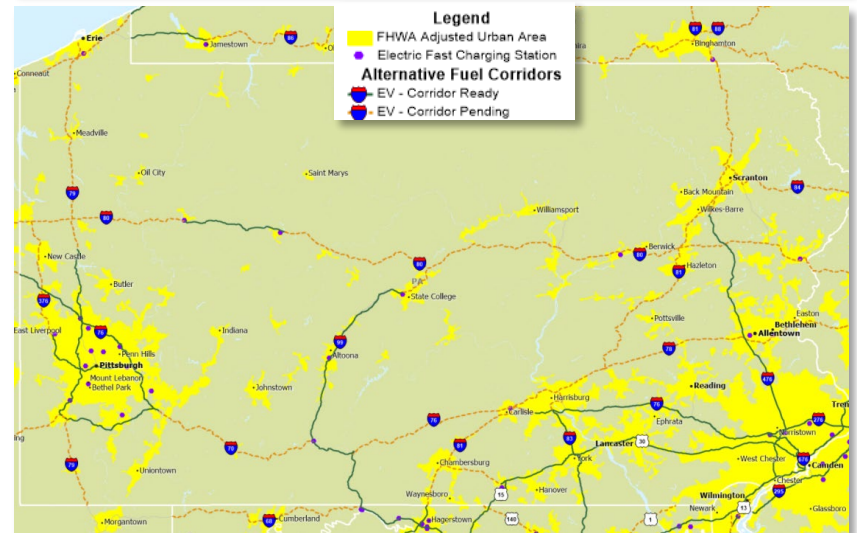
Overview of PennDOT's I-81 & I-78 Alternative Fuels Deployment Plan

▶ Outline

1. Study Background and Goals
2. Organization of Final Report Document
3. Analysis Highlights
4. Summary of Study Outreach Activities
5. Products for Business Outreach
6. Lessons Learned and Next Steps

Study Background

- FHWA funded “Pilot” study led by PennDOT
- Supports FHWA’s Alternative Fuel Corridor (AFC) program
- Focuses on DC-Fast Charging locations
- Supports advancing AFC corridors from “Pending” to “Ready” status
- I-81/I-78 Corridor - Electric Vehicle and CNG Fuels
- Establish resource for future studies



https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/

Identified Study Goals



Demonstrate a **data-driven approach** to prioritizing locations for new infrastructure



Establish a **role PennDOT or MPO/RPOs** to play in planning and supporting future infrastructure



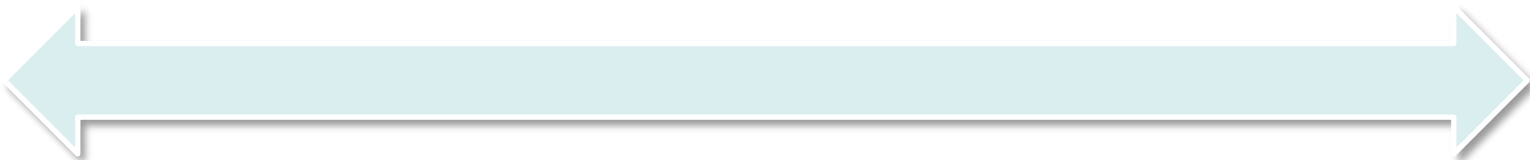
Evaluate **equitable methods for outreach** to businesses and infrastructure companies on priority locations and existing state funding programs



Understand the current **business models** for station hosts and third-party infrastructure companies

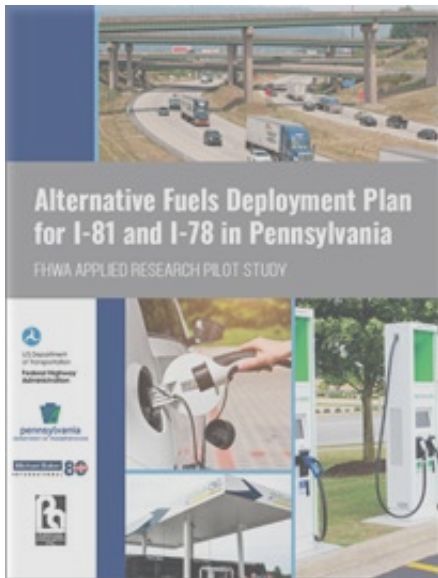


Collaborate with DEP **funding programs** to explore opportunities to incorporate Deployment Plan priorities into program application



What is in the Study Report?

Intended as a **Resource** for future deployment plans ... not a template



Introduction

- Basics on AFC Program
- Key steps for deployment plan

Understanding the Basics

- Basics on EV Charging & CNG
- Business models - Partners

Identifying Gaps & Needs

- Identify I-81 / I-78 gaps
- Demonstrate a process

Identifying Priority Locations

- Exit and site prioritization
- Process, data, criteria

Funding Opportunities

- Overview of available grants
- PennDOT P3; Utility programs

Outreach and Implementation

- Approach to support deployment
- EV Networks, MPOs, Businesses

Conclusions and Lessons Learned

- Priority locations for I-81/I-78
- Key process conclusions

Analysis Highlights: Identifying Gaps-Needs

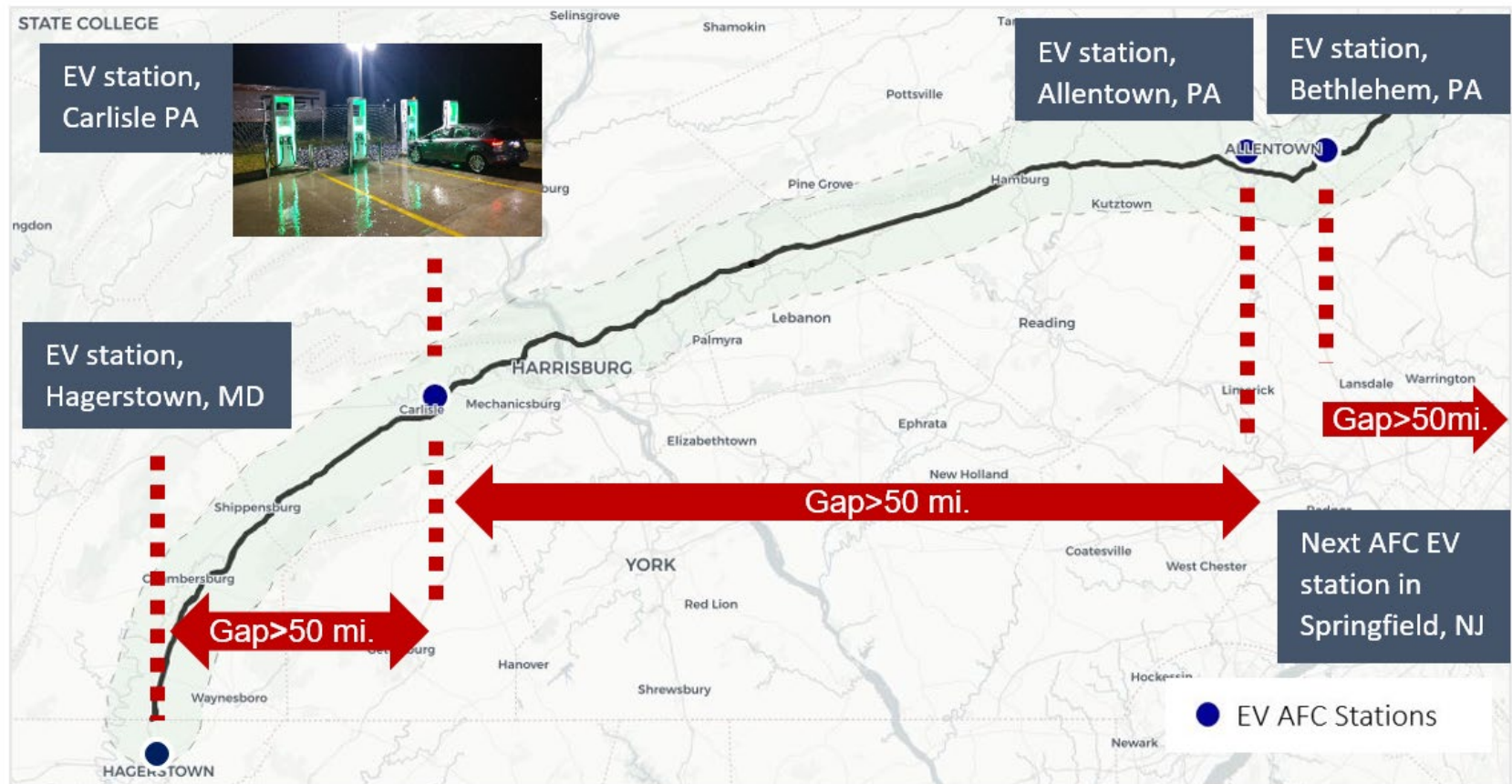
1. Identify and map existing alternative fuel infrastructure in the corridor
2. Identify and visualize the gaps where infrastructure is needed

FHWA AFC Designation Criteria for EV and CNG

Alternative Fuel Type	Corridor "Ready"	Corridor "Pending"
EV Charging	Public DC Fast Charging no greater than 50 miles between one station/site and the next on corridor, and no greater than 5 miles off the highway. Additionally, each DC Fast Charging site should have both J1772 combo (CCS) and CHAdeMO connectors.	Public DC Fast Charging chargers separated by more than 50 miles. Location of station/site no greater than 5 miles off the highway.
CNG Fueling	Public fast fill, 3,600 psi CNG stations no greater than 150 miles between one station and the next on the corridor, and no greater than 5 miles off the highway.	Public, fast fill, 3,600 psi CNG stations separated by more than 150 miles. Location of station no greater than 5 miles off highway.

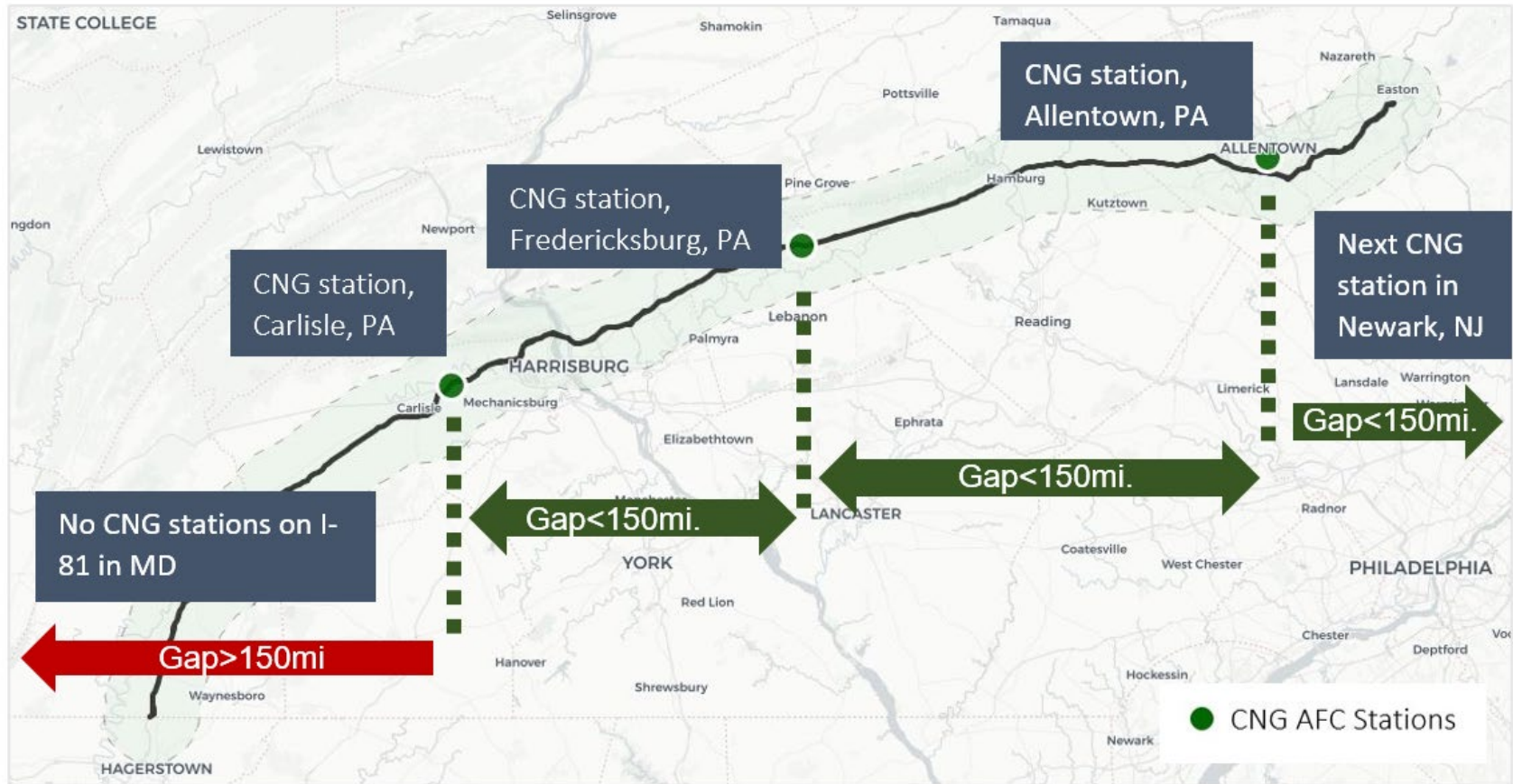
Analysis Highlights: EV Gaps

EV AFC Gaps in Corridor Infrastructure



Analysis Highlights: CNG Gaps

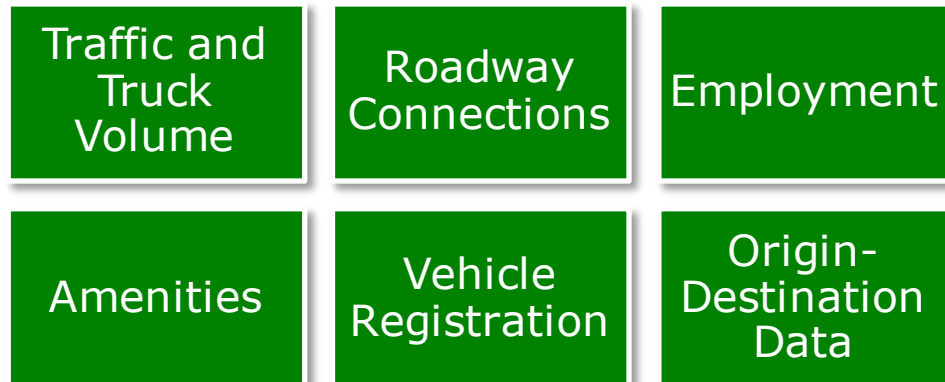
CNG AFC Gaps in Corridor Infrastructure



Analysis Highlights: Prioritizing Locations

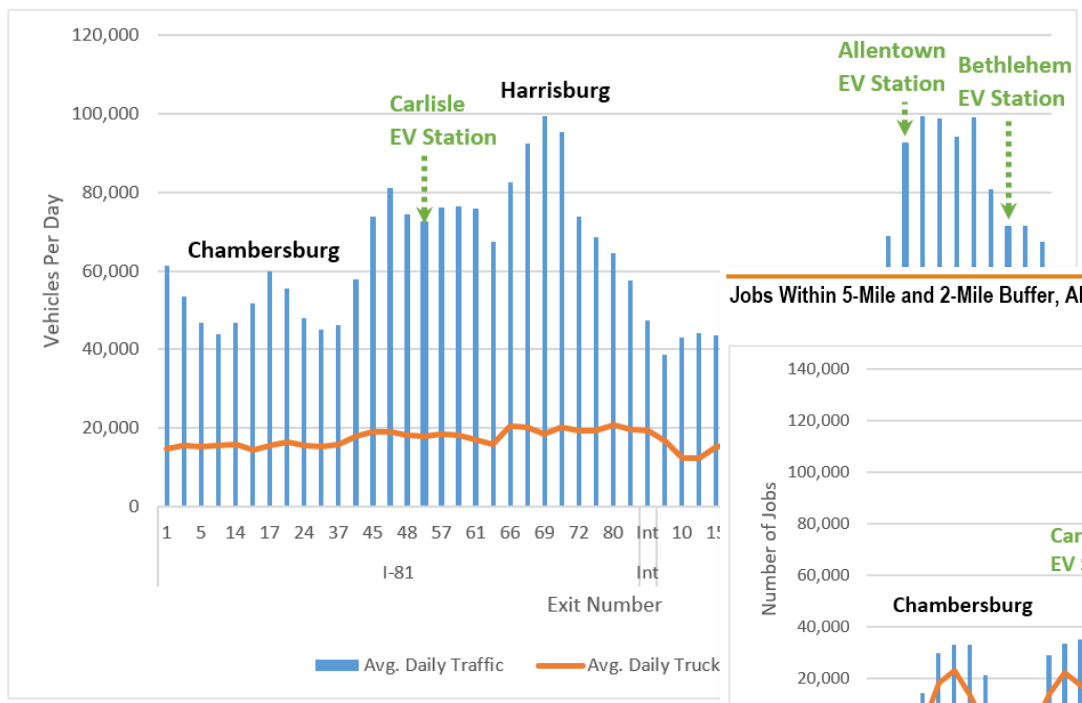
Stage of Analysis	Steps
Exit Prioritization	<ol style="list-style-type: none"> 1. Identify and summarize data to support prioritization 2. Develop exit prioritization scores based on data 3. Group exits by AFC gap locations and other prioritization needs
Site Identification (for priority exits)	<ol style="list-style-type: none"> 4. Evaluate types of businesses at priority exit locations 5. Develop scenarios to address AFC designation and other planning needs

Types of Data Used in Prioritization:

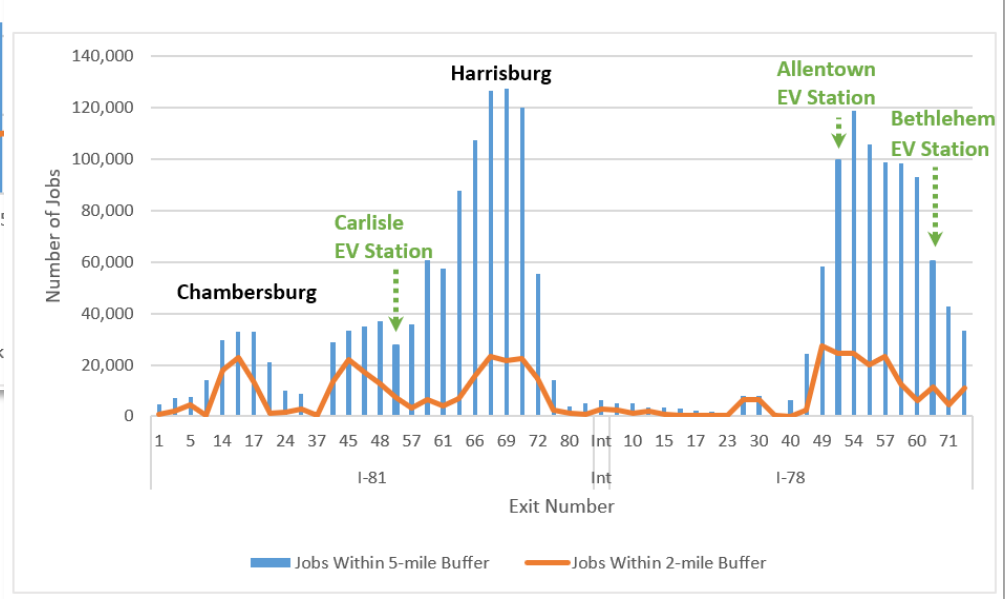


Analysis Highlights: Example of Exit Data

Traffic Volume, All Exits, I-81/I-78 PA Corridor



Jobs Within 5-Mile and 2-Mile Buffer, All Exits, I-81/I-78 PA Corridor



► Analysis Highlights: Scoring System

Data Item	Scoring Method
Total Traffic Volume	<ul style="list-style-type: none"> ▪ Apply EXCEL PERCENTILE.INC function to each exit volume ▪ If volume is in highest 20% of all exits, Score = 4 ▪ If volume is in highest 40% of all exits, Score = 3 ▪ If volume is in highest 60% of all exits, Score = 2 ▪ If volume is in highest 80% of all exits, Score = 1 ▪ Otherwise score = 0
Truck Volume	<ul style="list-style-type: none"> ▪ Treated as a bonus score point ▪ Apply EXCEL PERCENTILE.INC function to each exit volume ▪ If truck volume is in highest 20% of all exits, Score = 1 ▪ Otherwise score = 0
Ramp Volume	<ul style="list-style-type: none"> ▪ Treated as a bonus score point ▪ Same scoring as truck volume
Employment	<ul style="list-style-type: none"> ▪ Same scoring as Total Traffic Volume above, except based on total employment within a 2-mile buffer of corridor
NHS Connections	<ul style="list-style-type: none"> ▪ Treated as a bonus score point ▪ If exit connects to a National Highway System (NHS) route then an additional score point is assigned
Amenities	<ul style="list-style-type: none"> ▪ Based on exit amenities (points are additive) ▪ If food available then Score = 1 ▪ If gas or related amenities available then Score = 1 ▪ If other commercial amenities available then Score = 1-3 (assigned manually by reviewing businesses at each exit)

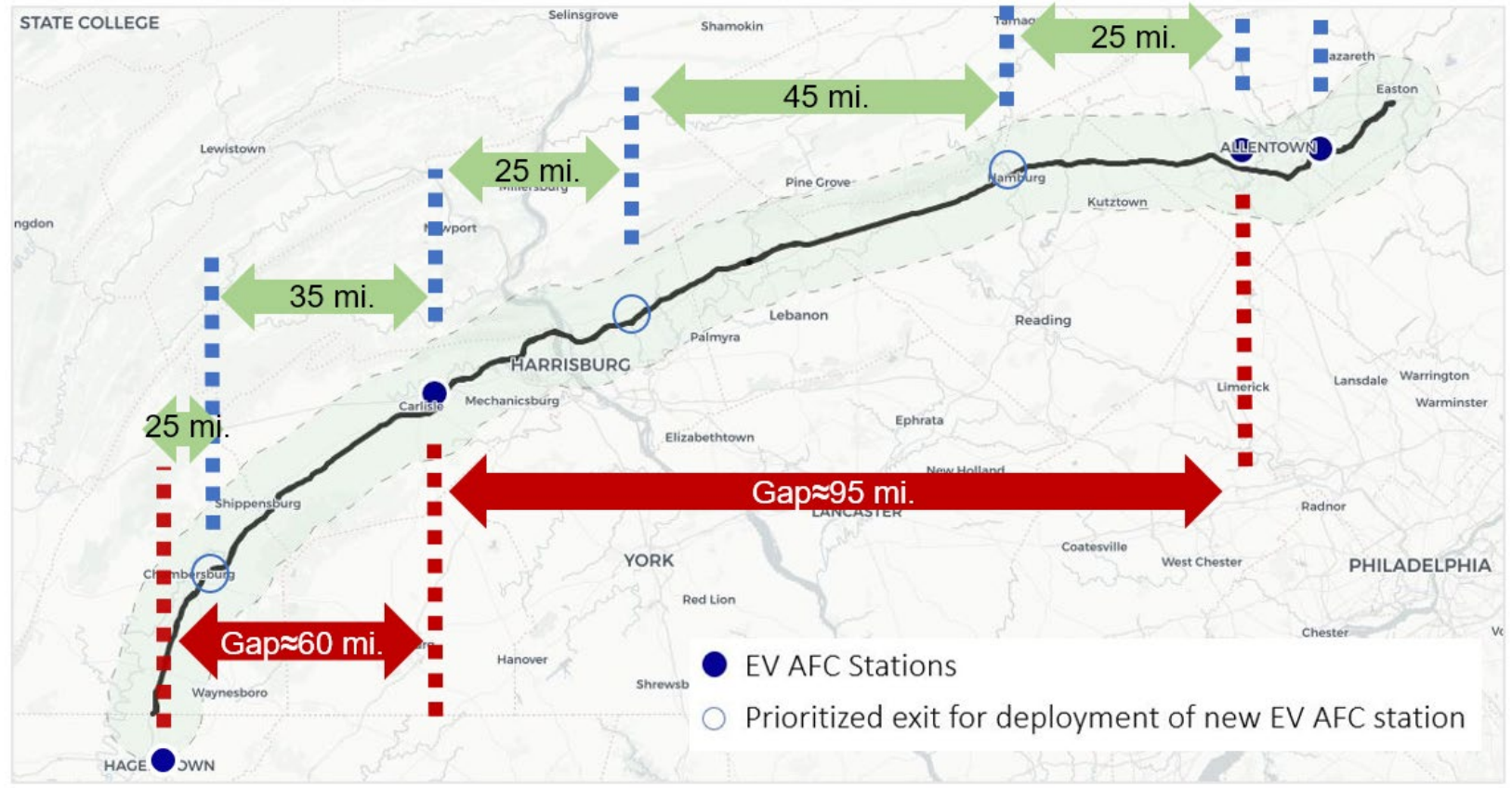
Analysis Highlights: Evaluating Potential Sites

Existing EV DC Fast Stations, PA

Type of Business	PA DCFC	Blink	Charge Point	Electrify America	EVgo	Green-lots	Non-Network	Tesla
Convenience/Gas	21	0	1	4	2	0	2	12
Sheetz	17	-	-	4	-	-	2	11
Rutter's	2	-	-	-	2	-	-	-
Royal Farms	1	-	1	-	-	-	-	-
Weis Markets	1	-	-	-	-	-	-	1
Auto	18	0	7	0	1	0	10	0
Food	10	0	0	0	8	0	0	2
Shopping Ctr/Plaza	17	5	0	2	5	0	0	5
Hotel	2	0	0	0	0	0	0	2
Other	13	4	0	4	2	1	1	1
Total	81	9	8	10	18	1	13	22

I-81 / I-78 Priority Locations for DCFC

Deployment Scenario 1: Fill Gaps (3 New Stations)



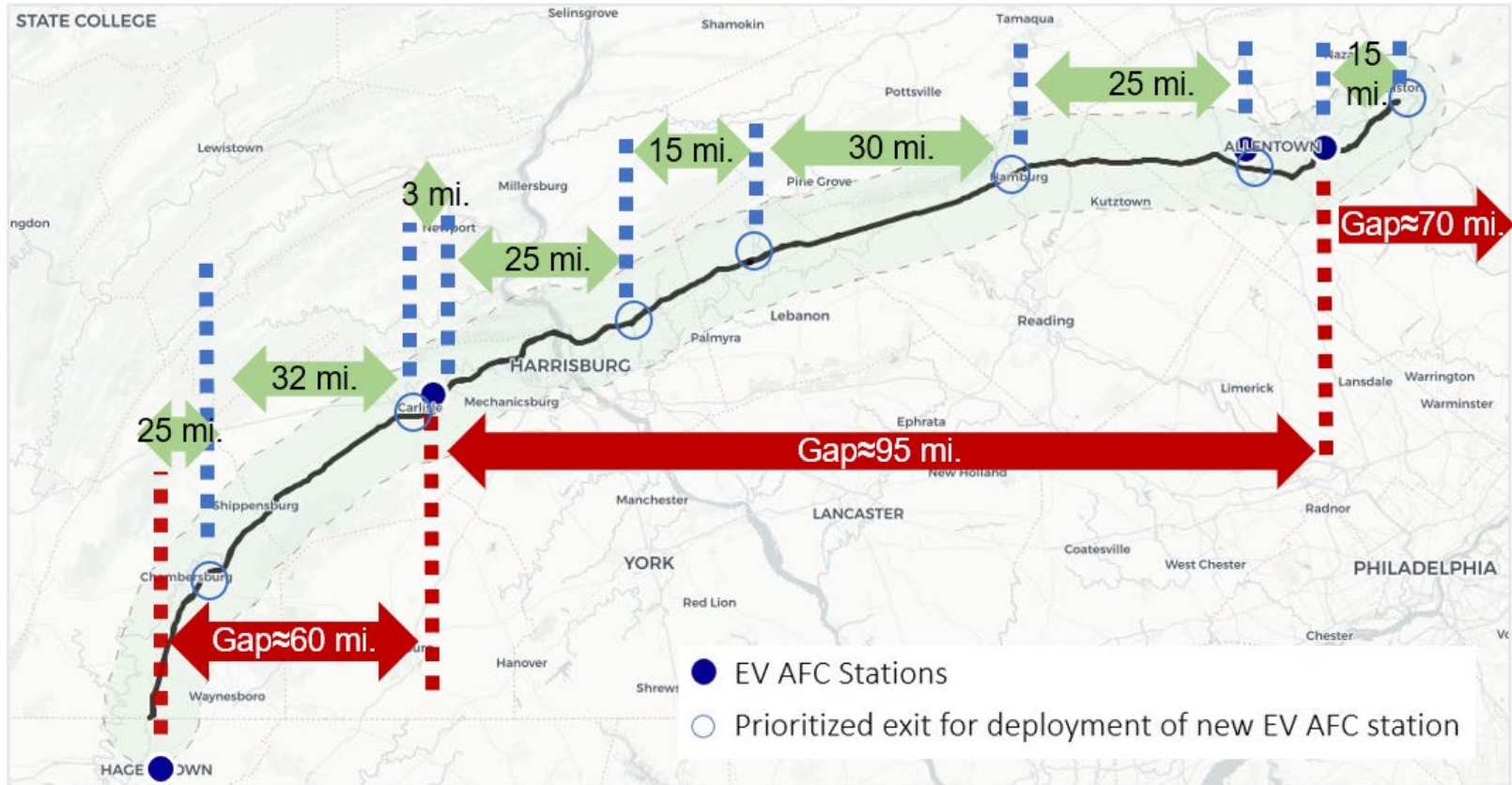
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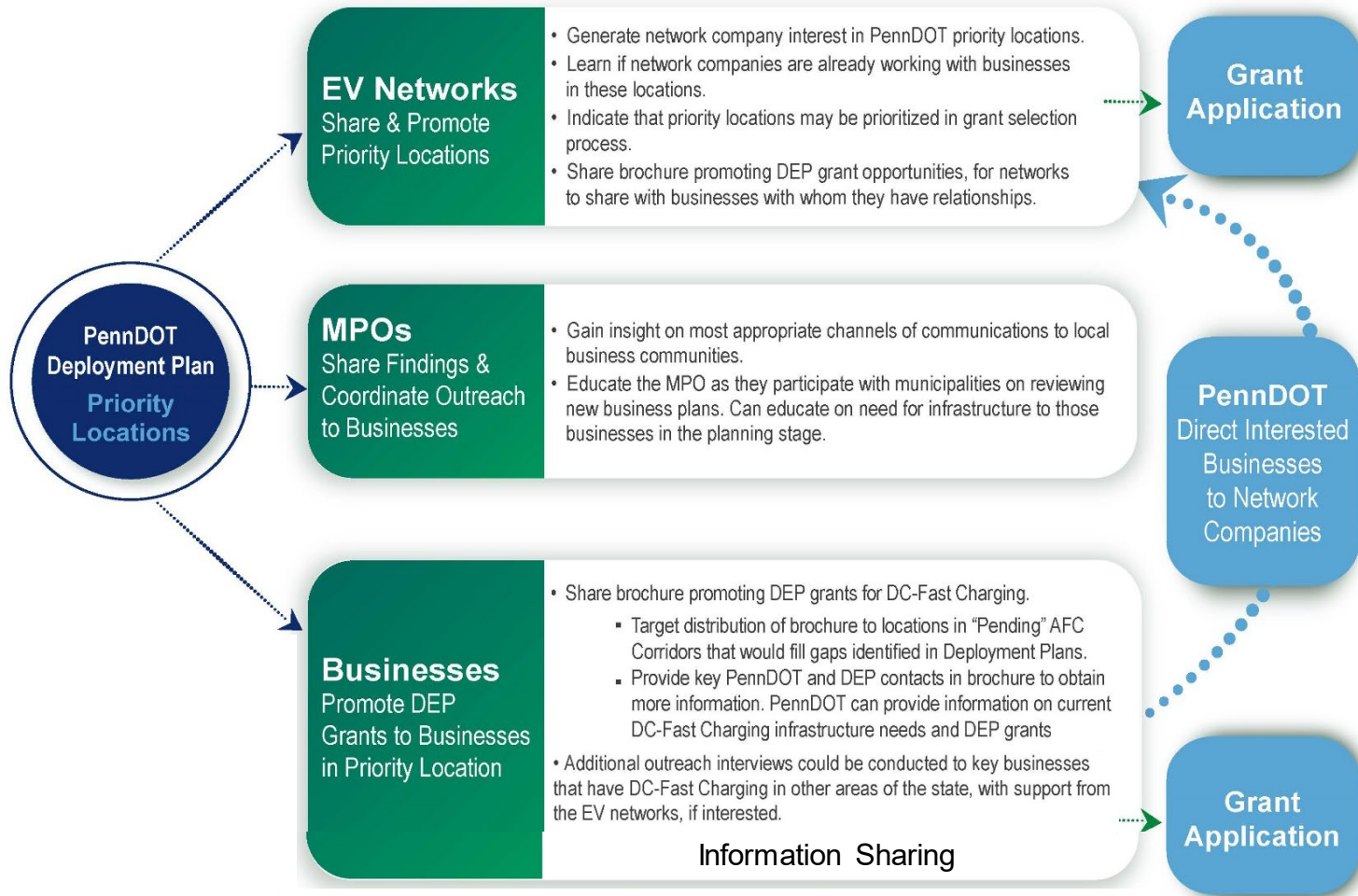
Deployment Role	Rt.	Exit	Sites for Potential Station(s) (Miles from Exit)
Existing Station: Hagerstown, MD	I-81	6 (MD)	
Gap 1: MD to Carlisle	I-81	14	Sheetz (<1), Dunkin (<1), Weis (<1), Wendy's (<1), Arby's (<1), Giant (<1), Shopping Mall (<1)
		16*	Sheetz (<1), Shopping Mall (<1), Nissan (<1), Harley-Davidson (<1), Battery Warehouse (<1), Dunkin (1), Walmart (1.8)
		17	Sheetz (<1), Shopping Mall (<1), Giant (<1), Target (<1), Aldi (<1)
Existing Station: Carlisle, PA	I-81	52	
Gap 2: Carlisle to Bethlehem, West	I-81	72*	Sheetz (<1), Dunkin (<1), Harley-Davidson (<1), Wendy's (2), Arby's (2), Shopping Mall (2)
		77	Sheetz (<1), Travel Centers of America (<1), Flying J Travel Center (<1), Pilot Travel Center (<1)
Gap 3: Carlisle to Bethlehem, East	I-78	13	Sheetz (<1)
	I-78	23	Love's (<1), Dunkin (<1)
	I-78	29*	Rutter's (<1), Dunkin (1), Wendy's (1), Walmart (1.3), Wawa (1.3), Arby's (2)
Existing Station: Allentown, PA	I-78	51/53	
Existing Station: Bethlehem, PA	I-78	67	
<i>Gap to NJ station (53 mi. from PA border) unable to be filled in PA</i>			
Existing Station: Springfield, NJ	I-78	49 (NJ)	

I-81 / I-78 Additional Scenario for EV

Deployment Scenario 2: Aggressive Deployment (7 New Stations)



Study Outreach



Products for Future Business Outreach

ELECTRIC VEHICLE FAST-CHARGING
FAQS & FUNDING OPPORTUNITIES

What Businesses Need to Know

What Is DC Fast Charging?
Direct current (DC) fast chargers are game-changers for electric vehicles (EVs). While many EV owners rely on home-charging overnight, DC fast chargers can charge an EV in only 20 to 30 minutes. In PA, over 80 locations – most of them businesses – currently have at least one DC fast charger installed in their parking lots.

Why Is Pennsylvania Investing?
One challenge to more rapid adoption of EVs is the lack of public DC fast chargers. By providing funding for fast charge projects in strategic locations – such as along highways and in underserved metro areas – Pennsylvania aims to increase drivers' confidence in the availability of public EV chargers, slow down climate change, and improve public health.

Which Businesses Are the Best Locations?
The best types of businesses for hosting DC fast chargers are restaurants, gas/convenience stores, truck stops, grocery stores, shopping centers, or any interested business with available parking spaces where an EV driver could shop and use amenities during the 20-30 min of charging time. Businesses that are 24/7 and offer food and restrooms are ideal. The best locations for businesses interested in hosting fast chargers are near interstate exits or in metro areas.

What Are the Benefits to Businesses?

- Attract customers looking to stop at a location that offers fast charging
- Increase customer spending at site amenities
- Minimize costs by choosing from a range of business models offered by EV charging hardware & network companies
- Gain customer recognition as a leader in reducing carbon emissions

Is Your Business Located On I-81/I-78?
The Pennsylvania Department of Transportation (PennDOT) is developing a Deployment Plan for alternative fuel infrastructure, including DC fast charging, along the I-81/I-78 corridor in PA. (plans for other interstates are anticipated in the future). If you are interested in a project consultation on fast-charging options and possible grant funding for a property located along the I-81/I-78 corridor, please contact:
RA-PDEVCorridors@pa.gov

DRIVING PA FORWARD

YOUR BUSINESS MAY BE ELIGIBLE FOR FUNDING

DC Fast Charging Grant Program
The Pennsylvania Department of Environmental Protection *Driving PA Forward* initiative includes reimbursements for the acquisition, installation, operation and maintenance of DC fast charging equipment. Program funding and eligibility details include:

- More than 1/2 of costs reimbursed for DC fast charging projects, or \$250,000 maximum per award
- Projects must be in PA, publicly accessible, 24/7 operational, networked, and include both CCS and CHAdeMO connector types
- Preferred locations include projects off interstate exits (<5 miles) or in metro areas

Application Opens Early Summer 2021

Web Link:
[Driving PA Forward Homepage](#)

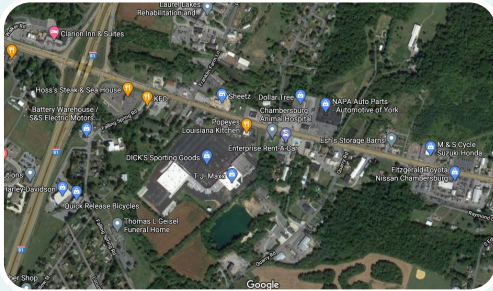
Scroll down to DC Fast Charging Grant Program to see Guidelines and Instructions

Pennsylvania is Committed to Supporting Growth in EV Vehicles. See the Pennsylvania EV Roadmap.
[Web Link to Road Map](#)

Survey Form for Business Interested in Hosting DC Fast Charging Stations

- Contact Information**
Name: _____
Site Name: _____
Site Address: _____
Email Address: _____
Phone Number: _____
- Nearest interstate exit to site: _____
- Distance from interstate exit (roadway miles)
 - Less than mile
 - 1-2 miles
 - 2-3 miles
 - 3-5 miles
 - Greater than 5 miles
- Type of Facility (Choose as many that apply)**
 - Convenience
 - Gas
 - Grocery
 - Hotel
 - Restaurant
 - Retail
 - Other (please specify): _____
- Why are you interested in hosting electric vehicle fast charging on your site?** _____
- Are you interested in owning the electric vehicle charging equipment on site or having the equipment be owned by the charging company?**
 - Your site owns and operates the charging equipment
 - EV network company owns and operates the charging equipment
 - Not sure
- Have you or your company previously worked with or contacted any EV network or infrastructure companies?**
 - No, we have not
 - Blink
 - ChargePoint
 - Electrify America
 - EVGo
 - FreeWire
 - Greenlots
 - Not sure
 - Other (please specify): _____

Key Corridor Conclusions



Identified 3 locations and potential businesses for new EV fast-charging stations:

- I-81 Exit 14, 16, or 17 in Chambersburg
- I-81 Exit 72 or 77 in Harrisburg
- I-78 Exit 29 in Hamburg



The EV-“Pending” gap from Bethlehem to Springfield, NJ, and the CNG-“Pending” gap from Carlisle to Knoxville, TN, would be filled more efficiently with new stations not in PA, but in NJ and MD, respectively



An additional “aggressive” EV scenario was developed that aims to both fill existing gaps and provide additional stations at key exits in the Harrisburg and Allentown metro areas

Other Lessons Learned

Data Driven Approach

- Demonstrates that locations have been prioritized not merely to meet FHWA distance requirements, but also because of their potential economic viability

Role for PennDOT and/or MPO/RPOs

- Identifying and sharing priority locations
- Promotion and education of funding opportunities to EV charging companies & businesses

Other Lessons Learned

Methods for Outreach

- Outreach with EV charging companies is critical, as they are the primary stakeholders responsible for implementation

Understanding Business Models

- Understanding EV station business models (for site owner and charging company) informs and enhances every aspect of the Deployment Plan

Other Lessons Learned

Collaborate with DEP on Funding Programs

- Collaboration with administrators of funding programs is critical, as this is the strongest incentive that PennDOT has that can facilitate the deployment of new AFC infrastructure

Next Steps

Next Steps

- ★ **Continue Outreach to Businesses**
- 🚗 **Maintain Discussions with EV Network Companies**
- 💰 **Work with PA DEP on Grant Opportunities**
- 📅 **Track Infrastructure Installations**
- 👥 **Share Lessons Learned with Planning Partners**

Are MPO/RPOs willing to support this?

Integration of Deployment Plan Priorities as Application Selection Criteria

Sharing at upcoming Planning Partners Meeting (Nov)

Discussion

- Who will lead future outreach to businesses and EV-Network companies? What roles can state, regional and local agencies play?
- What other ideas do you have on ways that PennDOT or other regional planning partners can support alternative fuel planning?

Discussion – Questions for Fall Planning Partners Meeting

What MPO/RPOs are interested in planning for alternative fuel infrastructure?

Have any MPO/RPOs already conducted studies or identified priorities for alternative fuel infrastructure?

What other ideas do you have on ways that PennDOT or other regional planning partners can support alternative fuel planning?

Do you feel this study will be useful as a resource for your agency planning related to alternative fuel infrastructure?