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I-80 Mid-America Clean Fuels Corridor: Deployment Plan Report

Energy Systems and Infrastructure Analysis Division

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Energy Systems and Infrastructure Analysis Division, Argonne National Laboratory

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ABBREVIATIONS

AADT	annual average daily traffic
AC	alternating current
AFC	Alternative Fuels Corridor
AFDC	Alternative Fuel Data Center
AFV	alternative fuel vehicle
Argonne	Argonne National Laboratory
BEV	battery electric vehicle
CCS	SAE J1772 Combined Charging System
CEJA	Climate and Equitable Jobs Act (Illinois) CEJA
CNG	compressed natural gas
CNGV	compressed natural gas vehicle
CT	census tract
DAC	disadvantaged community
DC	direct current
DCFC	direct current fast charging or charger
DER	distributed energy resources
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EB	eastbound
EV	electric vehicle
EVSE	electric vehicle service equipment
FHWA	Federal Highway Administration
GGE	gasoline gallon equivalent
GHG	greenhouse gas
GIS	Geographic Information System
IACT	Illinois Alliance for Clean Transportation (formerly Chicago Clean Cities)
IIJA	Infrastructure Investment and Jobs Act
JO	Joint Office of Energy and Transportation
kW	kilowatt
LNG	liquefied natural gas
mi	mile(s)
MPO	municipal planning organization

NEVI	National Electric Vehicle Infrastructure (program)
NG	natural gas
NHS	National Highway System
NJDEP	New Jersey Department of Environmental Protection
O&M	operations and maintenance
PennDOT	Pennsylvania Department of Transportation
PM2.5	particulate matter with a diameter of 2.5 micrometers or less
psi	pounds per square inch
RNG	renewable natural gas
WB	westbound
ZEV	zero-emission vehicle

EXECUTIVE SUMMARY

The I-80 Mid-America Clean Fuels Corridor, which spans I-80 from Fort Lee, New Jersey, to Council Bluffs, Iowa, was designated an Alternative Fuels Corridor (AFC) in Round 1 of the Alternative Fuels Corridor program administered by the U.S. Department of Transportation's (DOT's) Federal Highway Administration (FHWA). Originally called the "I-80 Mid-America Alternative Fuels Corridor," it is now named the "I-80 Mid-America Clean Fuels Corridor." As of Round 6 AFC designation, parts of the corridor have sufficient direct current fast charging (DCFC) stations to be designated Electric Vehicle (EV)-Ready and sufficient compressed natural gas (CNG) fueling stations to be designated CNG-Ready. However, much of the corridor's approximately 1,240 miles (mi) are not yet EV- or CNG-Ready. This includes about 1,130 mi that are designated EV-Pending and 700 mi that are designated CNG-Pending. This report presents a plan to develop EV charging and CNG fueling infrastructure sufficient to convert the entire length of the corridor to EV-Ready and CNG-Ready. Specific sites are not identified for future infrastructure. Rather, priority exits are identified, and information, analysis, and additional steps are recommended to support further refinement of these locations, as well as additional outreach and deployment efforts.

This plan was developed by a team representing entities in the six states traversed by the corridor: New Jersey, Pennsylvania, Ohio, Indiana, Illinois, and Iowa. These included:

- State DOTs from New Jersey, Pennsylvania, Ohio, Illinois, Indiana, and Iowa
- Tollway authorities from Ohio, Pennsylvania, and Indiana
- State Environmental Protection Agencies from New Jersey and Pennsylvania
- U.S. DOE Clean Cities Coalitions: Iowa Clean Cities, Illinois Alliance for Clean Transportation (formerly Chicago Area Clean Cities), Drive Clean Indiana (formerly South Shore Clean Cities), Clean Fuels Ohio, Pittsburgh Region Clean Cities, Eastern Pennsylvania Alliance for Clean Transportation, and New Jersey Clean Cities
- Love's Travel Stops, and their subsidiary, Trillium Energy
- Argonne National Laboratory

Exits along the corridor were prioritized for DCFC and CNG fueling station suitability, based on publicly available information, including types and capacities of existing DCFC stations and CNG fueling. Team members in Clean Cities Coalitions verified information at existing DCFC and CNG stations along the corridor. Additional data were collected on traffic volume, proximity of the nearest stations along the corridor, and amenities near each exit, including:

- Numbers of fueling stations
- Numbers of restaurants

- Numbers of convenience stores and pharmacies
- Numbers of motels/hotels
- Numbers of big box stores and supermarkets
- Number of major attractions/destinations, such as amusement parks or large shopping centers (for EV)
- Numbers of truck repair shops or dealers (for CNG), and
- Existence of truck parking (for CNG)

Exits recommended for new DCFC stations (or combinations of recommended exits) are listed in Table ES-1. No exits in New Jersey were recommended for DCFC stations, since all of I-80 in New Jersey is now designated as EV-Ready (following AFC Round 6, which added DCFC stations in Denville and Fort Lee).

Table ES-1. Recommended I-80 Exits for New DCFC Stations between Existing DCFC Stations to Change the Corridor from EV-Pending to EV-Ready

State	Exit Number or Mile Marker	Interchange
One new DCFC station recommended at one of the following two exits		
Pennsylvania	15	I-80 and US-19, PA-158 near Mercer
	19	I-80 and PA-8, Barkeyville
Two new stations recommended, one at each of the following two exits		
Pennsylvania	147	I-80 and PA-144 in Snow Shoe
	192	I-80 and PA-880 near Eastville
Three new stations recommended, as alternative to the previous two exits		
Pennsylvania	133 (or 147)	I-80 and PA-53 in Kylertown
	173	I-80 and PA-64 in Mill Hall
	215	I-80 and PA-254 near Milton
One new DCFC station recommended at one of the following exits		
Pennsylvania	262	I-80 and PA-309, Drums, Hazelton
	273	I-80 and PA-940, PA-437 in White Haven
	284	I-80 and PA 115 in Blakeslee
One new DCFC station recommended at one of the following exits		
Ohio	34	I-80 and OH-108 near Wauseon
	39	I-80 and OH-109 near Delta
	59	I-80 and I-475, US-20, Maumee
	64	I-80 and I-75 in Perrysburg
Three new stations recommended, one at each of the following three exits		
Ohio	118	I-80 and US-250, Milan
	145	I-80 and OH-57 near Elyria
	177	I-80 and I-77 in Richfield

Table ES-1. (Cont.)

State	Exit Number or Mile Marker	Interchange
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits		
Ohio	118	I-80 and US-250, Milan
	152	I-80 and OH-10 in North Ridgeville
	177	I-80 and I-77 in Richfield
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits		
Ohio	118	I-80 and US-250, Milan
	152	I-80 and OH-10 in North Ridgeville
	187	I-80 and OH-14 in Streetsboro
Four new stations recommended, one at each of the following four exits, as alternative to the previous three exits		
Ohio	100	Commodore Perry and Erie Island service plazas
	139.5	Vermillion Valley and Middle Ridge travel plazas
	170.1	Towpath & Great Lakes service plazas
	187	Brady's Leap & Portage service plazas
One new station recommended, at either of the following two exits		
Indiana	121	I-80 and IN-9 in Howe
	126	Gene Stratton Porter and Ernie Pyle travel plazas
One new station recommended, in addition to one of the previous two exits		
Ohio	13	I-80 and US-20 Alt, OH-15 near Holiday City, Ohio
One new station recommended at the following exit		
Indiana	56	Knute Rockne /Wilbur Shaw travel plazas
One new station recommended, at one of the following exits, in addition to the previous exit		
Indiana	6	I-80 and Burr St. in Gary
	9	I-80 and Grant St. in Gary
	10	I-80 and IN-53 in Gary
	12	I-80 and I-65 in Gary
	15	I-80 and I- 94, US 6, SR 51 in Lake Station
Two new stations recommended, one at each of the following two exits		
Illinois	56	I-80 and IL-26 in Princeton
	90	I-80 and IL-23 in Ottawa
One new station recommended, at either of the following two exits		
Iowa	46	I-80 and Antique City Dr near Walnut
	51	I-80 and M56 near Marne
One new station recommended, in addition to one of the previous two exits		
Iowa	93	I-80 and Division St. in Stuart

Exits recommended for new CNG stations are listed in Table ES-2. Exits in New Jersey, Illinois, and Indiana are not listed in Table 1, since all of I-80 in Illinois and most of I-80 in Indiana are currently CNG-Ready, and a new CNG station at one of the exits listed for Pennsylvania and another at one of the exits listed for Ohio would convert all of I-80 in New Jersey and the CNG-Pending portion of I-80 in Indiana to CNG-Ready.

Table ES-2. Recommended I-80 Exits for New CNG Stations to Change the Corridor from CNG-Pending to CNG-Ready

State	Exit Number or Mile Marker	Interchange
One new CNG station recommended at one of the following two exits		
Pennsylvania	241/242	I-80 and PA-339 in Berwick/Nescopeck
One new CNG station recommended at one of the following 5 exits		
Ohio	13	I-80 and US-20 Alt, OH-15 near Holiday City
	20.8	Tiffin River and Indian Meadow service plazas, in West Unity
	34	I-80 and OH-108 near Wauseon
	39	I-80 and OH-109 near Delta
	59	I-80 and I-475, US-20, Maumee
One new CNG station recommended at one of the following three exits		
Iowa	240	I-80 and US-6 in Coralville
	242	I-80 and 1st Ave in Iowa City
	246	I-80 and IA-1 in Iowa City

The team conducted public outreach activities to engage stakeholders. Press releases, posters, and other materials were developed to be used in publicizing the I-80 Mid-America Corridor and distributed to team members. The team also held convenings to inform regional and local authorities, planners, businesses, and the general public about the project, to gather input on preferences or concerns about CNG and DCFC infrastructure planning and deployment, and to identify and publicize funding opportunities and other programs to support deployment.

The two Pennsylvania Clean Cities Coalitions held two convenings in Pennsylvania, the Ohio coalition held two in Ohio, and the Illinois coalition held one convening in eastern Illinois and another near the Iowa-Illinois border in conjunction with the Iowa coalition. A wide range of interested parties attended the convenings, including regional municipalities, municipal planning organization (MPOs), utilities, fuel suppliers, electric charging network companies, EV charging equipment suppliers, electric and natural gas utilities, fleets, nonprofit organizations, county governments, educational institutions, electric vehicle manufacturers, and the press. Participants asked about potential funding opportunities and other incentives for EV charging and CNG fueling infrastructure, especially the NEVI (National Electric Vehicle Infrastructure) program. Participants also asked about how NEVI related to other programs, and about relevant codes and standards. Participants expressed concerns about costs of DCFC deployment and requirements for project funding. Participants also offered information on some potential sites, citing the paucity of electric power and potential site hosts near some exits in rural areas. Many participants were interested in engaging with the Corridor project and with the NEVI program. The Clean Cities Coalitions conducted additional outreach and follow-up with interested parties. The Mid-America Corridor project has established a network of interested parties and provided a basis for continued collaboration on EV and CNG infrastructure deployment.

Further actions will be needed to select specific locations and to secure investor interest, public funding, and public support for the deployment of the CNG fueling and EV charging infrastructure needed to convert the Mid-America Clean Fuels Corridor to NG-Ready and EV-

Ready. Clean Cities Coalitions and other partners will continue to engage with state, regional, and local government agencies, utilities, CNG retailers, EV charging network companies, and other stakeholders and interested parties. Additional data and analysis of specific sites will be required, and some resources useful for such analysis are identified in Section 3.4. Planning for CNG and EV infrastructure should include participation by disadvantaged communities, and special effort should be made to engage these communities in planning and deployment of CNG fueling and EV charging infrastructure, and in procurement awards, job training, and employment opportunities.

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1 INTRODUCTION

1.1 BACKGROUND

The U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA), under the authority of the Fixing America's Surface Transportation Act (Public Law 114-94), has designated alternative fuel corridors (AFCs) in the U.S. to identify near- and long-term needs for charging and fueling infrastructure along the National Highway System (NHS) for vehicles that use electricity, compressed natural gas (CNG), liquefied natural gas (LNG), propane, and hydrogen (FHWA, 2017). Based on nominations from State and local public agencies and on analyses by the U.S. Department of Energy (DOE) and the National Renewable Energy Laboratory, the FHWA assigned one of two designations to nominated highway segments: "Signage (or Corridor) Ready" to segments having sufficient availability of alternative fueling facilities to warrant signage, and "Signage (or Corridor) Pending" to segments without sufficient alternative fueling facilities to warrant such signage.

In 2022, as authorized by the Infrastructure Investment and Jobs Act (IIJA, Public Law 117-58), FHWA requested another round of AFC nominations (Round 6), with updated requirements for "Ready" and "Pending" designation (FHWA, 2022). A "Ready" designation requires that a segment have at least two stations within a certain distance. This distance and several other requirements for "Ready" segments depend on the fuel type. Table 1.1 lists the designation requirements for corridor segments with EV charging and CNG fueling stations. These requirements, and those for other alternative fuels are specified in the Round 6 AFC Request for Nominations memorandum (FHWA, 2022).

Table 1.1. Alternative Fuel Designation Requirements for EV and CNG Segments

Fuel/Technology	Signage/Corridor Ready	Signage/Corridor Pending
EV Charging	Public DC Fast Charging: • No greater than 50 mi between one station/site and the next on corridor • No more than 1 mile from end of Interstate exit ramp or highway intersection along the corridor.[a] • Stations include four Combined Charging System (CCS) connectors - Type 1 ports (able to simultaneously charge four EVs).[a] • Site power capability no less than 600 kW (supporting at least 150 kW per port simultaneously across four ports). • At least 150 kW maximum charge power per DC port.	A strategy/plan and timeline for deploying public DCFC stations between existing stations that are more than 50 mi apart, with locations of said stations/sites no more than 1 mile from the end of interstate exit ramps or highway intersections along the corridor.[b]
CNG	Public fast-fill, 3,600 lb/in^2 (psi) stations no more than 150 mi apart on the corridor, and no more than five mi from Interstate exits or highway intersections.	A strategy/plan and timeline for deploying public fast-fill, 3,600-psi stations separated by more than 150 mi, and stations located no more than 5 mi from Interstate exits or highway intersections along the corridor.[b]

[a] Connecter type defined in SAE Standard J1772 (SAE, 2017).

[b] Exceptions are permitted for distance from Interstate exits or highway intersections and between stations along the corridor, if justified.

Requirements for EV charging stations on Signage-Ready segments are consistent with guidance given by the National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance, as authorized under IIJA (FHWA 2022a). The NEVI Program Guidance places additional requirements on EV infrastructure not included in those for EV-Ready AFCs corridors, such as data collection, maintenance and sharing, EVSE reliability, signage, and traffic control devices, and other requirements as described in Section 1.7 below.

In 2019, FHWA solicited proposals to develop AFC deployment plans. In response, the Illinois DOT and several partners proposed the I-80 Mid-America Clean Fuels Corridor Deployment Plan (Illinois DOT, 2019) and the proposal was selected for funding. Funding and support for this work also came from DOE. The goals of the effort are to identify and plan for actions needed to upgrade segments of I-80 between Omaha, Nebraska, and Fort Lee, New Jersey, from Signage-Pending to Signage-Ready for electric vehicles (EVs) and CNG vehicles (CNGVs). To develop this plan, the Illinois DOT assembled the following team:

- State DOTs from New Jersey, Pennsylvania, Ohio, Illinois, Indiana, and Iowa
- Tollway authorities from Ohio and Pennsylvania
- State Environmental Protection Agencies from New Jersey and Pennsylvania
- U.S. DOE Clean Cities Coalitions: Iowa Clean Cities, Illinois Alliance for Clean Transportation (formerly Chicago Area Clean Cities), Drive Clean Indiana (formerly Indiana Clean Cities), Clean Fuels Ohio, Pittsburgh Region Clean Cities, Eastern Pennsylvania Alliance for Clean Transportation, and New Jersey Clean Cities
- Love's Travel Stops, and their subsidiary, Trillium Energy
- Argonne National Laboratory

The team focused on electrification and CNG because these vehicles and fuels offer significant environmental benefits and are already in wide use along the corridor. Although CNG may be produced from fossil sources, it is increasingly derived from anaerobic digestion of organic materials. Thus, trucks fueled with renewable natural gas (RNG) have not just lower tailpipe emissions of soot or particulate matter, but also much lower lifecycle greenhouse gas emissions than conventional diesel-fueled trucks.

To support the effort, the team collected and analyzed available information needed to prioritize locations for EV and CNG infrastructure, developed outreach strategies and prepared materials for partners to engage with potential EV charging and CNG fueling station hosts and other stakeholders. This report documents the results of this effort.

- Verifying existing EV charging and CNG fueling facilities,
- Collecting and analyzing data on current conditions,

- Identifying potential AFC facility hosts, users, public and private partners, and interest groups,
- Developing outreach strategies to engage these potential hosts, users, and groups,
- Prioritizing potential facility locations (interstate exits),
- Identifying potential funding for new charging and fueling infrastructure, and
- Provide recommendations about signage.

1.2 I-80 MID-AMERICA CLEAN FUELS CORRIDOR

The I-80 Mid-America Clean Fuels Corridor (initially called the I-80 Mid-America Alternative Fuels Corridor) extends along I-80 from I-95 in New Jersey to I-29 in Council Bluffs, Iowa, approximately 1,240 mi, as shown in Figure 1.1. It crosses the states of New Jersey, Pennsylvania, Ohio, Indiana, Illinois, and Iowa and serves portions of the New York metropolitan area and the cities of Youngstown, Cleveland, Toledo, South Bend, Gary, Chicago, Joliet, Iowa City, Des Moines, and Omaha. Annual average daily traffic (AADT) on most segments exceeds 20,000 vehicles per day, including more than 8,000 trucks per day (FHWA, 2023).

Figure 1.1. I-80 Mid-America FHWA-Designated Alternative Fuels Corridor (shown in red). (Map based on FHWA National Highway System map, https://hepgis.fhwa.dot.gov/fhwagis/), as of September 30, 2023 (through Round 6 of the FHWA's Alternative Fuel Corridors program.

The I-80 Mid-America Corridor was designated an AFC by the FHWA in the initial round of corridor nominations. Some segments of the corridor are designated as ready for EV and CNG vehicle fueling, and all portions of the corridor are designated as Pending for propane and hydrogen fueling (FHWA 2022b).

Figure 1.2 below shows the one segment in New Jersey and one in eastern Pennsylvania that are considered EV-Ready (green) and the remainder of the corridor that is EV-Pending (gold). The EV-Ready segments shown in Figure 1.2 were identified based on locations of DCFC stations conforming to the Round 6 AFC criteria, however, the map of EV corridors available from the FHWA National Highway Map (https://hepgis.fhwa.dot.gov/fhwagis/ViewMap.aspx?map=Highway+Information|Electric+Vehicle+(EV-Round+1,2,3,4,5+and+6) shows portions of I-80 in Ohio, Illinois, Indiana, and Iowa as EV-Ready that were determined from station locations to be EV-Pending. For the present planning effort, the EV status was taken to be as shown in Figure 1.2.

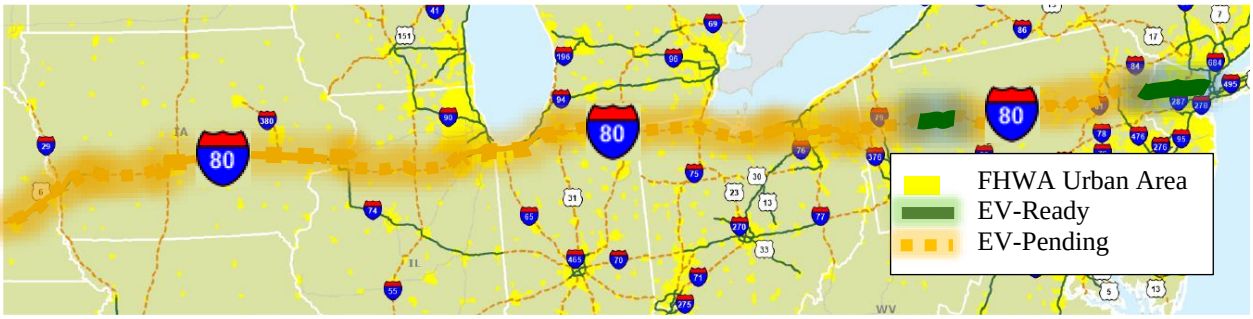

Figure 1.2. I-80 Mid-America FHWA-Designated EV Corridor by Status as of August 2023. (Corridor ready = green; pending = gold). (Map based on https://hepgis.fhwa.dot.gov/fhwagis/ViewMap.aspx, with corrections).

Figure 1.3 shows the CNG-Ready segments in green and the CNG-Pending segments in gold.

Figure 1.3. I-80 Mid-America FHWA-Designated CNG Corridor by Status as of August 2023. (Corridor ready = green; pending = gold). (Map based on https://hepgis.fhwa.dot.gov/fhwagis/ViewMap.aspx).

1.3 EXISTING EV CHARGING AND CNG FUELING INFRASTRUCTURE ON THE CORRIDOR

The I-80 Mid-America AFC has DCFC stations that meet the FHWA AFC Round 6 criteria, and these are listed in Table 1.2 by exit number and physical address. Figure 1.4 shows the locations of these DCFC stations on the eastern portion, including Ohio, Pennsylvania, and New Jersey, and Figure 1.5 shows such stations on the western portion, including Iowa, Illinois, and Indiana.

Table 1.2. Exits with DCFCs Meeting FHWA AFC Round 6 Criteria

I-80 Exit	Station Name and Address	Station Information	Distance from End of Off-ramp (mi)	Driving Distance to Nearest AFC EV Stations on the Corridor (mi)
3	Walmart 1965 3201 Manawa Centre Dr. Council Bluffs, IA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.5 (EB) 0.7 (WB)	EB: 116 WB:63 (near Exit 397 in Lincoln, NE)
118	Waukee Kum & Go 540 3105 Grand Prairie Pkwy. Waukee, IA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.5 (EB) 0.2 (WB)	EB: 102 WB: 116
220	Casey's Williamsburg #2 130 W. Evans St. Williamsburg, IA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.5 (EB) 0.2 (WB)	EB: 107 WB: 102
19	Casey's Geneseo 100 E Bestor Dr. Geneseo, IL	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.3 (EB) 0.1 (WB)	EB: 112 WB: 106
130	Walmart 1256 2424 W Jefferson St. Joliet, IL	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	1.6 (EB)* 1.4 (WB)*	EB: 111 WB: 112
83	University Park Mall 6503 Grape Rd. Mishawaka, IN	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	2.9 (EB)* 2.9 (WB)*	EB: 98 WB: 111
21	Tiffin River and Indian Meadow Service Plazas West Unity, OH	8 Ports (4 Ports and each service plaza): 2 CCS-1, 150kW 2 CHAdeMO, 50kW or CCS-1, 150kW 4 CCS-1, 350kW Network: Electrify America	0.2 (EB) 0.2 (WB)	EB: 56 WB: 98

Table 1.2. (Cont.)

I-80 Exit	Station Name and Address	Station Information	Distance from End of Off-ramp (mi)	Driving Distance to Nearest AFC EV Stations on the Corridor (mi)
77	Wyandot and Blue Heron Service Plazas Genoa, OH	8 Ports (4 Ports and each service plaza): 2 CCS-1, 150kW 2 CHAdeMO, 50kW or CCS-1, 150kW 4 CCS-1, 350kW Network: Electrify America	0.2 (EB) 0.1 (WB)	EB: 150 WB: 56
226	Sheetz 248 2721 Salt Springs Road Girard, OH	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.3 (EB) 0.1 (WB)	EB: 74 WB: 149
62	Walmart 2540 63 Perkins Rd. Clarion, PA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.4 (EB) 0.6 (WB)	EB: 38 WB: 74
97/101	Walmart 1769 20 Industrial Drive DuBois, PA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	1.8 (EB)* 2.1 (WB)*	EB: 139 WB: 38
236	Sheetz 213 2511 New Berwick Hwy. Bloomsburg, PA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	1.6 (EB)* 1.8 (WB)*	EB: 72 WB: 139
308	Walmart 2368 355 Lincoln Ave. East Stroudsburg, PA	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.9 (EB) 1.0 (WB)	EB: 44 WB: 72
38/39	Lener Denville Square 28 West Main St. Denville, NJ	4 Ports: 1 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW 2 CCS-1, 350kW Network: Electrify America	0.8 (EB) 0.6 (WB)	EB: 33** WB: 44
73***	Bank of America 154 Main St, Fort Lee, NJ	4 Ports: 3 CCS-1, 150kW 1 CHAdeMO, 50kW or CCS-1, 150kW Network: Electrify America	0.3 (EB) 0.5 (WB)	WB: 34**

*Stations that meet all FHWA AFC Round 6 criteria with exception for distance from the corridor.

**Distance shown is between Lener Denville Square station in Denville, NJ, and Bank of America station in Fort Lee, NJ, off I-95.

***Exit number on I-95, at the Bank of America DCFC station in Fort Lee, which is the nearest station to the Lener Denville Square station in Denville, NJ.

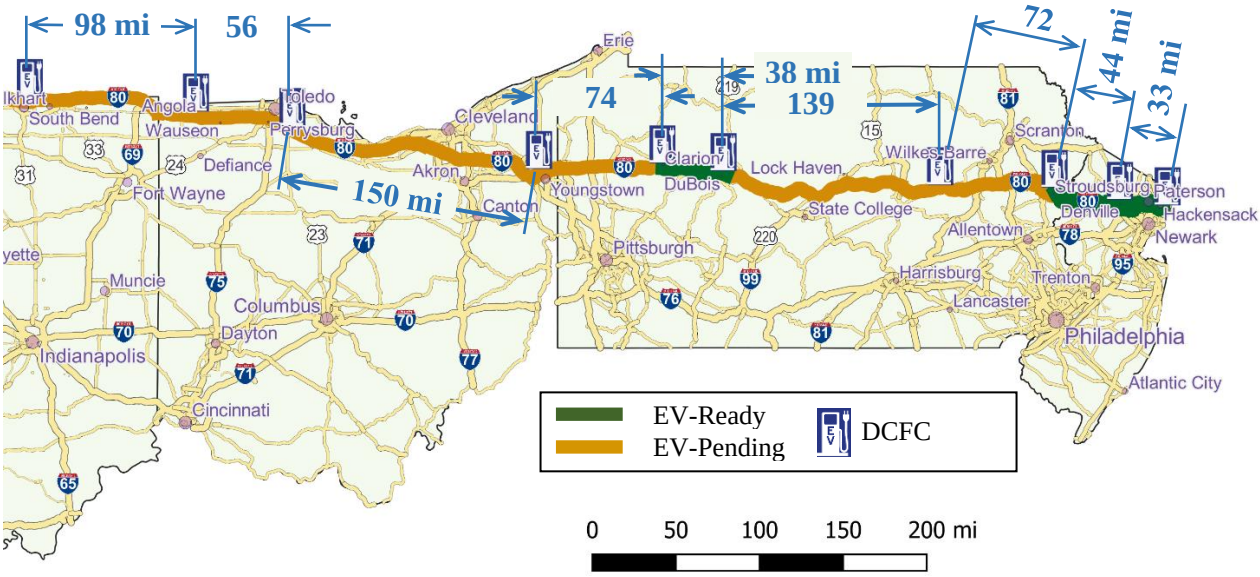

Figure 1.4. I-80 Mid-America AFC with the EV-Ready segment shown in green and EV-Pending segments in Ohio, Pennsylvania, and New Jersey shown in gold. Locations of DCFC stations meeting FHWA AFC Round 6 criteria are labeled with an EV charging symbol. The distances between stations separated by more than 50 mi are shown in blue.

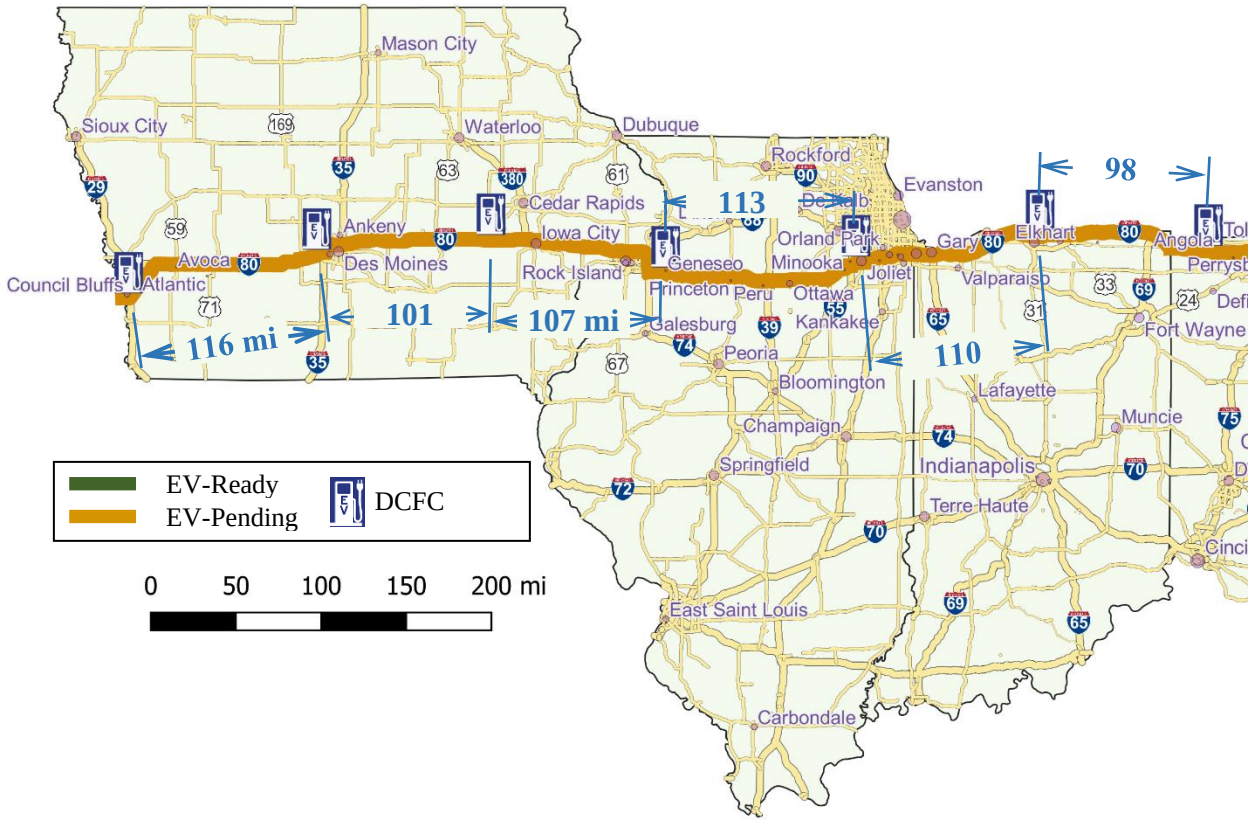

Figure 1.5. I-80 Mid-America AFC with EV-Pending segments in Iowa, Illinois, and Indiana shown in gold. Locations of DCFC stations meeting FHWA AFC Round 6 criteria are labeled with an EV charging symbol. The distances between stations separated by more than 50 mi are shown in blue.

Figure 1.4 shows DCFC stations in DuBois and Bloomsburg, Pennsylvania (near Wilkes-Barre), even though these are slightly more than 1 mi from the end of the nearest I-80 off-ramp (distances are given in Table 1.2). Figure 1.4 also shows the section between Denville and Fort Lee, New Jersey as EV-Pending, since the station in Fort Lee is actually off I-95 (I-80 terminates a few miles to the west in Teaneck, New Jersey).

Figure 1.5 shows the DCFC station in Joliet, Illinois, even though it is slightly more than 1 mi from the end of the nearest I-80 off-ramp, as listed in Table 1.2.

Table 1.3 lists the interchanges at the beginning and end points of EV signage-ready and -pending segments. As of Round 6, only two segments are EV-ready: 1) between exit 62 near Clarion, Pennsylvania, and exit 101 near DuBois, Pennsylvania, and 2) between exit 308 in East Stroudsburg, Pennsylvania, and exit 38 in Denville, New Jersey. However, since the DCFC station in Fort Lee, New Jersey is only 33 mi from the station in Denville, New Jersey, for many travelers on the eastern end of I-80, this segment is effectively EV-Ready.

Table 1.3. Status of the I-80 Mid-America Clean Fuels Corridor for Electrification

Distance from Western End, mi	I-80 Mile Marker or Exit Number	Location (interchange, city, state)	EV Designation	Length of Segment (mi)*
0	1	I-80 and I-29 in Council Bluffs, IA	Pending	919
919	62	I-80 and PA-63 near Clarion, PA	Ready	38
954	101	I-80 and US-219 near DuBois, PA	Pending	211
1,165	308	I-80 and Prospect St., East Stroudsburg, PA	Ready	77
1,239	70	I-80 and I-95, Teaneck, NJ		

*Driving distances between stations obtained from AFDC Alternative Fueling Station Locator Fuels Corridor Tool, which may differ from the distance between mile markers.

**This segment may be considered EV-Ready if the DCFC station in Teaneck, NJ, is considered.

The I-80 Mid-America Corridor has CNG stations that meet the Round 6 AFC criteria, and these are listed in Table 1.4 by exit number and physical address. Figure 1.6 shows the locations of these CNG station on the eastern portion, including Iowa, Illinois, and Indiana, and Figure 1.7 shows such stations on the western portion, including Ohio, Pennsylvania, and New Jersey.

Table 1.4. Exits with CNG Stations Meeting Round 6 Criteria

I-80 Exit	Station Name and Address	Station Information	Distance from End of Off-ramp (mi)	Driving Distance to Nearest AFC CNG Stations (mi)
1	Sapp Bros. Travel Center 2608 S 24th St. Council Bluffs, IA	Fast fill	0.4 (EB) 0.2 (WB)	EB: 135 WB: 8 (near Exit 450 in Omaha, NE)
136	GAIN Clean Fuel 1205 NE Broadway Ave. Des Moines, IA	Fast fill	0.4 (EB) 0.6 (WB)	EB: 161 WB: 135
295A/B	Kwik Star #215 100 W 65th St. Davenport, IA	Fast fill	0.6 (EB) 1.1 (WB)	EB: 142 WB: 161
127	GAIN Clean Fuel 1747 Irish Indian Tr. Joliet, IL	Fast fill	2 (EB) 2.1 (WB)	EB: 21 WB: 142
145	Ozinga Energy 19001 Old Lagrange Rd., Ste 200 Mokena, IL	Fast fill	1.2 (EB) 1.4 (WB)	EB: 13 WB: 21
4	Clean Energy - Homewood Disposal 1501 W 175th St. Homewood, IL	Fast fill	1.2 (EB) 1.6 (WB)	EB: 10 WB: 13
161	CNG Calumet 130 State St. Calumet City, IL	Fast fill	4.1 (EB) 3.8 (WB)	EB: 6 (11 via I-80/94) WB: 10
5	Homewood Disposal Services 400 E. Blaine St. Gary, IN	Fast fill	4.1 (EB) 2.2 (WB)	EB: 2 (7 via I-80/94) WB: 6 (11 via I-80/94)
6	GAIN Clean Fuel 6700 W. 15th Ave. Gary, IN	Fast fill	1.3 (EB) 1.3 (WB)	EB: 8 (10 via I-80/94) WB: 2 (7 via I-80/94)
12	Ozinga Energy 2555 E. 15th Ave. Gary, IN	Fast fill	2 (EB) 2 (WB)	EB: 61 WB: 8 (10 via I-80/94)
72	IGS CNG Services – Speedway 6161 W. Brick Rd. South Bend, IN	Fast fill	1.3 (EB) 1.3 (WB)	EB: 251 WB: 61
161	Clean Energy Cleveland Hopkins Int'l Airport 18899 Snow Rd. Brook Park, OH	Fast fill	5.2 (EB) 5.2 (WB)	EB: 70 WB: 251
227	IGS CNG Services - Mr. Fuel 2840 Salt Springs Rd. Girard, OH	Fast fill	0.2 (EB) 0.3 (WB)	EB: 75 WB: 70
60	CNG Fuel, LLC 20511 Paint Blvd. Shippenville, PA	Fast fill	2.8 (EB) 2.8 (WB)	EB: 8 WB: 75
62	Palo CNG 12600 State Rte. 66 Clarion, PA	Fast fill	0.3 (EB) 0.6 (WB)	EB: 14 WB: 8

Table 1.4. (Cont.)

I-80 Exit	Station Name and Address	Station Information	Distance from End of Off-ramp (mi)	Driving Distance to Nearest AFC CNG Stations (mi)
78	GAIN Clean Fuel - "O" Ring CNG Fuels Systems 228 Allegheny Blvd. Brookville, PA	Fast fill	0.2 (EB) 0.3 (WB)	EB: 21 WB: 14
101	GAIN Clean Fuel 301 Dubois St. Dubois, PA	Fast fill	2.2 (EB) 2.5 (WB)	EB: 97*, 292 to Clean Energy in Bronx, NY WB: 21
185	Wayne Township Landfill 267 Fritz Rd. Lock Haven, PA	Fast fill	11.7 (EB) 11.6 (WB)	EB: 235** WB: 97*
4A/B***	Clean Energy - Bronx NY 1361 Ryawa Ave Bronx, NY	Fast fill	2.8 (EB) 3.5 (WB)	WB: 235**, 293 to GAIN station in DuBois, PA

*Distance shown is between GAIN Clean Fuel station in DuBois, PA, and Wayne Township Landfill station in Lock Haven, PA, which is more than 5 mi from I-80.

**Distance shown is between the Wayne Township Landfill station in Lock Haven, PA, and the Clean Energy station in Bronx, NY, off I-95.

***Exit number on I-95 at the Clean Energy - Bronx NY CNG station, which is the nearest to the GAIN Clean Fuel station in DuBois, PA.

Figure 1.6 shows the two CNG gaps in the eastern portion of the I-80 Mid-America Corridor. One spans 250 mi between the CNG station in South Bend, Indiana, and the one in Brook Park, Ohio, and the other gap spans 293 mi from the station in DuBois, Pennsylvania, to the CNG station in Bronx, New York. Not shown in Figure 1.6 is a CNG station in Lock Haven, Pennsylvania (listed in Table 1.4), which is located more than 5 mi from the end of the nearest I-80 exit ramp. If an exception were granted for the Lock Haven station, then the corridor east of Lock Haven would be CNG-Ready, since there is a station in Bronx, New York, that is less than 150 mi from the station in Lock Haven. However, the station in Bronx, New York, is off an I-95 exit (I-80 terminates in Teaneck, New Jersey, a few mi to the west of Bronx, New York).

Figure 1.7 shows the CNG gap in the western portion of the I-80 Mid-America Corridor, one of 161 mi between the CNG stations in Des Moines and Davenport, Iowa.

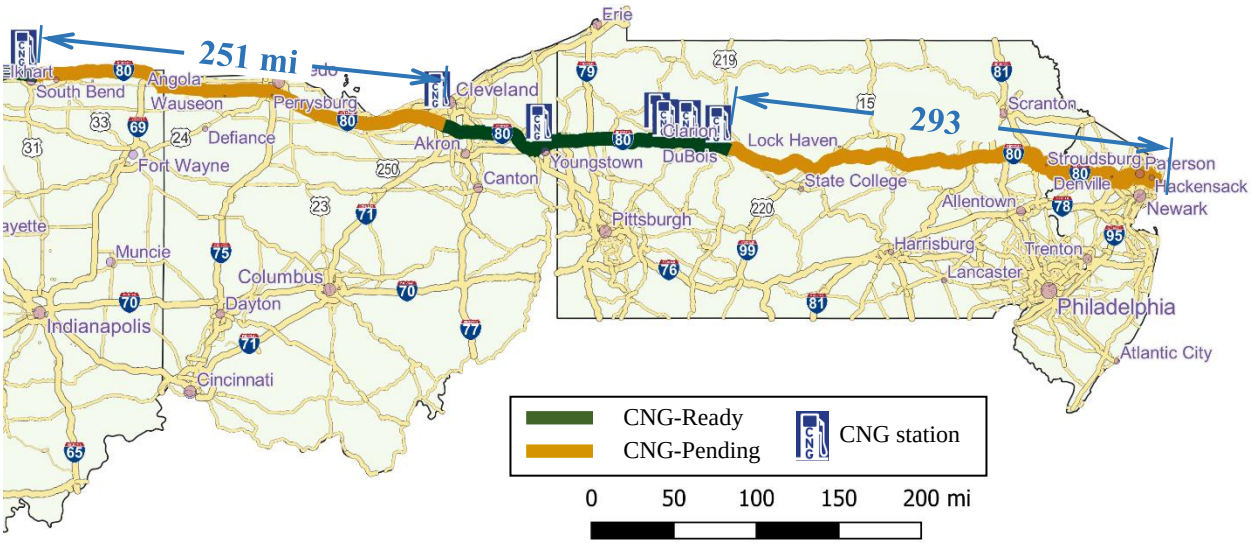

Figure 1.6. I-80 Mid-America AFC with CNG-Ready segments in Ohio, Pennsylvania, and New Jersey shown in green and CNG-Pending segments shown in gold. Locations of CNG stations meeting AFC Round 6 criteria are labeled with a CNG fueling symbol. The distances between stations separated by more than 150 mi are shown in blue.

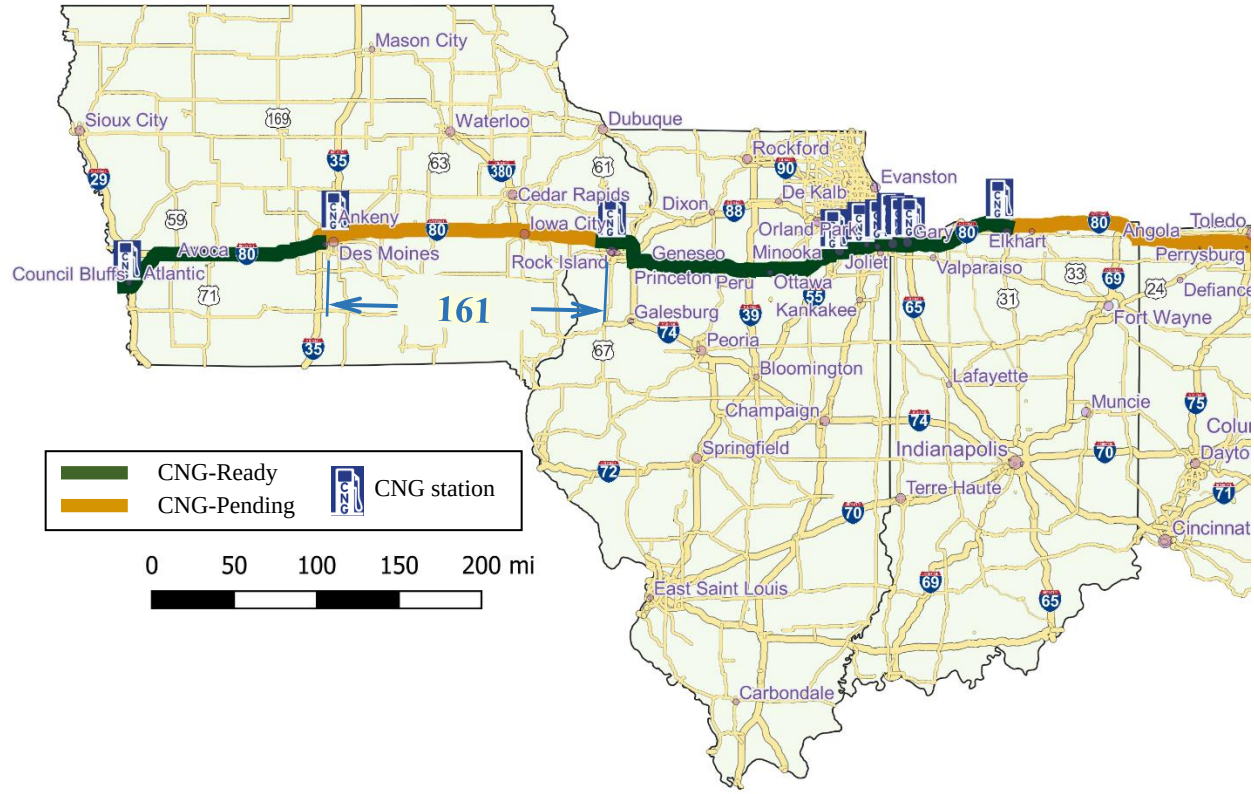

Figure 1.7. I-80 Mid-America Clean Fuels Corridor with CNG-Ready segments in Iowa, Illinois, and Indiana shown in green and CNG-Pending segments shown in gold. Locations of CNG stations meeting AFC Round 6 criteria are labeled with a CNG fueling symbol. The distances between stations separated by more than 150 mi are shown in blue.

Table 1.5 lists the interchanges at the beginning and end points of CNG signage-ready and -pending segments of the corridor. The CNG-ready segments total 549 mi.

Table 1.5. Status of the I-80 Mid-America Clean Fuels Corridor for CNG

Distance from Western End, mi	I-80 Mile Marker or Exit Number	Location (interchange, city, state)	CNG Designation	Length of Segment (mi)*
0	1	I-80 and I-29 in Council Bluffs, IA	Ready	137
136	137	I-80 and I-35, West Des Moines, IA	Pending	160
294	295	I-80 and I-280, Davenport, IA	Ready	245
537	72	I-80 and IN-933/N. Dixie Hwy, Roseland, IN	Pending	250
782	161	I-80 and I-71/US-42, Strongsville, OH	Ready	180
958	101	I-80 and PA-255, Sandy Township, PA	Pending	292**
1,239	70	I-80 and I-95, Teaneck, NJ		

*Driving distances between stations obtained from AFDC Alternative Fueling Station Locator Tool, which may differ from the distance between mile markers.

**The distance shown is to the end of I-80, but the distance from the CNG station in Sandy Township, PA, to the nearest CNG station (in Bronx, NY) is 305 mi, as shown in Table 1.4 and in Figure 1.7.

1.4 EVS AND CNGVS

EVs and CNGVs offer alternatives to gasoline and diesel-powered vehicles. Electricity and CNG are abundant and almost always domestically produced. Electricity and CNG prices are typically lower (per gallon of gasoline equivalent) and less volatile than gasoline and diesel fuel prices (DOE, 2022). CNG can be produced from biogas, which offers reduced greenhouse gas emissions (DOE, 2022a). EVs include all-electric vehicles that use only electricity and plug-in hybrid EVs that use both electricity and gasoline. EVs can reduce emissions of greenhouse gases (GHGs) and other pollutants, depending on how the electricity is generated (DOE, 2022b).

A growing number and increasingly diverse range of light-duty EVs are on the market (ANL, 2022a), and medium- and heavy-duty EVs have entered the market as well.

Sales share of light-duty EVs in the U.S increased from approximately 2% in 2020 to over 4% in 2022. Contributing to this were factors such as:

- Increasing number and diversity of EV models (EPA, 2022)
- Increasing EV driving ranges (DOE, 2021)
- Decreasing EV battery costs and vehicle prices (DOE, 2023; Cox Automotive, 2023)

- Federal and state EV incentives to vehicle purchasers (DOE, 2022c)
- Lower operating costs of EVs than for gasoline vehicles, rising gasoline prices (O'Dell, 2022; Burnham et al., 2021)
- Increasing number of EV charging stations (Brown et al., 2022)
- Credits and incentives to automakers under zero-emission vehicle (ZEV), GHG emission regulations, and other state and federal policies

Increasing the number of public EV charging stations would promote EV adoption. Greene et al. (2020) analyzed a case study based on California's public charging network in 2017 and estimated consumers' willingness to pay for public charging infrastructure. They found that, on average, a purchaser of a new battery electric vehicle (BEV) with a 100-mile range and home recharging would be willing to pay (or place a value of) about $1,500 for existing public fast chargers for intraregional travel, and fast chargers along intercity routes are valued at over $6,500. Neaimeh et al. (2017) analyzed public fast charger use in the U.S and the U.K., and their findings suggested that increasing availability of public DCFC stations would promote EV adoption.

Vehicle manufacturers in the U.S. offer many different models of medium- and heavy-duty CNGVs. A number of commercial fleets using medium- and heavy-duty vehicles have adopted CNG trucks. Gasoline- or diesel-powered vehicles can be converted to CNGVs, but converted vehicles must meet emissions and safety regulations and standards set by the U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration and other codes (DOE 2022a). Some fleets use public CNG stations in their operational areas, while others have installed dedicated CNG fueling stations at their depots (NGVAmerica 2023). More public CNG fueling stations would enable more fleets to use CNGVs.

1.5 EV AND CNGV CHARGING/FUELING INFRASTRUCTURE

1.5.1 EV Infrastructure

For EVs, charging equipment is classified by the voltage and current type (AC or DC). Level 1 chargers provide alternating current (AC) at up to 120V, Level 2 chargers provide AC at up to 240V (up to 19.2 kW), and DC fast chargers (DCFCs) that deliver DC power up to 350kW. For EVs that can charge at high power, DCFCs offer much quicker recharging than Level 1 or 2 chargers.

In the U.S., three connector types are used in light-duty EVs, including the SAE J1772 combined charging system type-1 (CCS-1) connector, the CHAdeMO connector, and the Tesla Supercharger connector (DOE, 2022e). While the CHAdeMO and Tesla connectors are proprietary to specific automakers, the CCS-1 connector has been adopted by most automakers that offer EVs in the U.S. While only a few light-duty EVs can charge at a power of 150kW, the number of models of these high-power-charging EVs is increasing (McCandless, 2022). Actual

charging rates depend not only on the charger power rating, but also on the EV model and temperature and the state of charge and condition of its battery pack.

1.5.2 EV Infrastructure Costs

Costs to install DCFC stations vary widely. The charging equipment, or EV service equipment (EVSE), can cost over $100,000 depending on the features, including the rated power, number of connectors, data networking capability, credit card reader, display screen, weatherization package, etc. For example, Nicholas (2019) estimated that the equipment cost for a network-ready DCFC charger (EVSE purchase price) with a single connector at 150kW was $75,000 while that for a 350kW DCFC EVSE was $140,000. Borlaug et al. (2020) collected costs for nearly 100 DCFCs and report a median cost of approximately $90,000 for the equipment and $60,000 for installation. Installation costs vary widely depending on station features, electric service upgrades required, station design and permitting costs, other site preparation and construction costs.

DCFC maintenance and operation costs include cost of electricity, data/network contracts, credit card service, maintenance, repair, rent, insurance, and taxes. Nelder and Rogers (2019) surveyed publicly available information on charging station costs and collected additional information from utilities, hardware and software providers, charging network companies and other and report ranges of costs of equipment, installation, and data and network fees. Their reported DCFC EVSE costs range from $75,600 to $100,000 for 150kW EVSE and $128,000 to $150,000 for 350kW EVSE. They reported cost ranges for a 700-750kVA transformer of $44,000 to $69,600, data contracts of $84 to $240 per year per charger, and network contacts of $200 to $250 per year per charger. They estimated that charging hardware, management software, and maintenance and communications contracts were typically 10% to 30% of the total project costs, and that remaining costs incurred included installation costs. Maintenance and operation costs depend strongly on electricity costs, especially if demand charges apply (DOE 2022e, Muratori et al., 2019).

1.5.3 EV Infrastructure Costs and Utility Considerations

As listed in Table 1.1, the criteria for DCFC stations on EV-Ready corridors include station power sufficient to supply four 150kW EVSEs being used simultaneously. The total electric power capacity required at such a site, including electricity required for associated buildings, lighting, and other loads will significantly exceed 600kW. This may be much higher than the electric service at a typical fueling station. Installing or upgrading electric service at a site often requires upgrades to infrastructure owned by the electric utility (distribution and feeder lines, transformer and other equipment, and the electric meter. Upgrades are typically required to electric infrastructure owned by the site host, which may include connecting conduits and wiring, power panels and circuit breakers, and transformers or other equipment. Costs to install or upgrade various infrastructure components can involve significant design and construction work. Site assessment and design, equipment procurement and installation, and construction and commissioning can take over a year, so it is important that entities considering hosting a DCFC station communicate with electric utilities early and coordinate closely. Many utilities have or

are establishing programs designed to assist charging station site hosts in assessing their sites, performing design work, and assisting in covering service upgrade costs.

Many utilities also offer special rate structures specifically for EV charging and public EV charging stations in particular. DCFC stations, with potentially high peak electric power demand but not necessarily high utilization throughout the day require high-power electric service, but may not use a large amount of energy. Utilities that have to recover high costs of installing or upgrading electric service to stations, but cannot recover these costs by charging for a small amount of electric energy, often charge a one-time connection fee and may also apply a demand charge based on the peak power delivered during specific periods. For stations that are not highly utilized, demand charges can lead to high cost of electricity delivered to the site (Francfort et al., 2017; Borlaug et al., 2020). At sufficiently high utilization, however, a rate structure with a demand charge and low per-kW-hour (kWh) rate can be economical.

1.5.4 CNG Infrastructure

Public CNG are fast-fill stations using high-pressure (4,300 psi) tanks to enable much quicker refueling times than time-fill stations that refuel vehicles over several hours (DOE, 2022d). The cost to install a fast-fill CNG station was estimated to be as high as $1.8 million in 2014 (Smith et al., 2014), but actual costs vary widely, depending on the number of CNG vehicles that can fuel simultaneously, CNG storage capacity, station design features, permitting costs, and natural gas (NG) and electric service upgrades required, if any. Costs of installing a new station or expanding an existing station will include permitting, site preparation, and construction costs. CNG station maintenance and operation costs include the costs of CNG, electricity, labor (including on-call staff, if applicable), breakdowns, repair, consumables and parts, rent, insurance, and taxes. These costs vary but have been estimated to range from 5% to 8% of the upfront cost of the station installation annually (Mitchell, 2015).

Businesses cases for fleets using CNG were examined by Mitchell (2015) using DOE's Vehicle and Infrastructure Cash-Flow Evaluation (VICE) model to evaluate the return on investment for NG vehicles and fueling infrastructure. Mitchell reported that the factors that influenced the net present value of the investment on CNG vehicles and infrastructure depended on assumptions about the fleet type (mix of vehicle types and uses), vehicle utilization (annual distance driven), incremental costs of CNG vehicles (incremental to gasoline or diesel vehicles), incremental cost of CNG (incremental to the price of gasoline or diesel), vehicle service life, CNG vehicle maintenance and repair costs, and fuel economy of CNG vehicles compared with that of gasoline or diesel vehicles.

CNG fueling stations currently located on the I-80 Mid-America Corridor include fuel retailers, including some associated with convenience stores, travel centers, and truck stops, fleet locations that allow public access to their CNG stations, and a compressed gases supplier.

1.5.5 Other Considerations

For both CNG and DCFC stations, there are many factors other than cost that must be considered. These include codes and regulations, permitting, safety, accessibility, ownership and

business model, and more. Charging stations must be installed in compliance with local, state, and federal codes and regulations, and installation should be performed by licensed contractors.

Installation guidance and codes and permitting processes for CNG fueling facilities in Pennsylvania were presented at a webinar by the Delaware Valley Regional Planning Commission (DVRPC, 2015). Public charging stations should be configured to meet applicable accessibility standards, and the U.S. Access Board has developed recommendations for designing EV charging station that are accessible and usable by people with disabilities (U.S. Access Board, 2022).

Public EV charging stations can be owned by the site host who assumes all the installation, maintenance, and operation costs but controls the site and can keep any station revenue, or owned by a third party such as a charging network company that installs and maintains the charging infrastructure. Other arrangements are also possible (DOE 2022e).

Surveys have indicated that EV drivers prefer to charge at public stations that have characteristics such as: publicly available 24 hours/day and 7 days/week, not requiring a lengthy detour (close to the highway), high reliability, short or no waiting times, ability to check charger availability, status, and charging cost on-line, with amenities such as weather protection, restrooms, restaurants, shopping or other services close by (Hardman et al, 2018; Visaria et al., 2022; Brückmann et al., 2023). Concerns about public EV charger reliability were reviewed by Bernard (2023) who concluded that there is a need to assess and improve public charging reliability in order to support a transition to electric EVs.

DCFC stations are located at a number of different businesses on the I-80 Mid-America Clean Fuels Corridor. Those that meet FHWA AFC Round 6 criteria for EV-Ready status are located at shopping centers, next to Walmart stores, next to a bank branch, at gas stations with convenience stores, and service or travel plazas along tollway sections of the corridor.

1.6 EQUITY AND ENVIRONMENTAL JUSTICE CONSIDERATIONS

1.6.1 Overview

Along its 1,239-mile length, the corridor passes through several low-income, front-line communities where diesel truck emissions result in unhealthful air quality, especially high levels of small particulates, which could be reduced significantly by the use of CNGVs or EVs. As discussed in Section 1.6, additional CNG fueling and EV charging infrastructure along corridors and increased adoption of CNGVs and EVs have potential implications for disadvantaged communities (DACs). The census tracts within 2 mi and within 5 mi of interchanges along the corridor that are designated as DACs in the interim guidance from the Joint Office of Energy and Transportation (Joint Office) are listed in tables in Section 3.3.

Adding CNG fueling and EV charging infrastructure along corridors and increased adoption of CNGVs and EVS have potential implications for disadvantaged communities (DACs). Level 1 charging stations at residential locations or Level 2 public chargers at local businesses and community centers typically enable charging of EVs in a few hours or overnight,

but are less costly than DCFC stations. Depending on the cost of charging at DCFC stations on corridors, such stations can offer local EV drivers additional opportunity to charge.

Increasing the share of CNGVs can, over time, decrease emissions and improve air quality, which could potentially benefit communities disproportionately impacted by tailpipe emissions from commercial gasoline and diesel vehicles. In addition to providing convenient CNG fueling stations at or near communities experiencing large volumes of commercial vehicle traffic, other incentives are necessary to promote compressed natural gas vehicle (CNGV) adoption by fleets, distribution centers, and other entities that use commercial vehicles.

Low-income households tend to own fewer vehicles than the average household does, but many are heavily reliant on vehicles for transportation. EVs, with their higher purchase prices, are more likely to be owned by higher-income households. Higher-income households are more likely to own a home with a garage or parking place where they can charge an EV, and they can more easily afford EVSE and any required electric service upgrade. Lower-income households are more likely to live in multi-unit dwellings, with more limited options to charge an EV or even to install an EV charger.

Recent studies have highlighted concerns about the lack of EV charging infrastructure in DACs (Carlton and Sultana 2022; Hsu and Fingerman 2021). The lack of charging infrastructure is a barrier to households considering an EV.

As EV adoption continues to increase, EV prices should decrease and EV availability should increase, along with growth in the availability of used EVs, which will be more affordable than new EVs. In addition, more public charging stations are being built. EVs are becoming more attractive to ride-hailing drivers, who tend to have lower incomes. It is important to provide alternative fuel infrastructure that is accessible to all.

1.6.2 Possible Benefits and Disbenefits

To the extent that DCFC stations are used by residents of DACs, they can realize such benefits as increased utility of EVs (owned, leased, or for ride-hailing), increased foot traffic at retail businesses by EV drivers charging at a nearby DCFC station, and long-term decrease in tailpipe emissions. In some locations, utilities may upgrade electric distribution infrastructure and perhaps some surrounding infrastructure supplying power to local businesses and homes. Nearer-term benefits to DACs could be realized through procurement solicitations and contracts for purchase and deployment of DCFC stations that have preferential provisions for members of DACs and businesses in these communities. Alternative fuel deployment plans can include workforce development requirements or incentives and preferences for union labor or workers from underrepresented groups.

Increased CNG and EV charging infrastructure can negatively impact communities as well, however. Potential impacts may include increased emissions from power plants and CNG facilities, increased vehicle traffic near charging/fueling stations, increased demand for public parking at DCFC locations and perhaps reduced parking for non-EVs. If utilities raise fixed fees for ratepayers to cover costs of electrification programs, this can adversely affect low-income

households that do not benefit from electrification but see an increase in the cost of electricity (Brown, 2020).

1.6.3 The Importance of Outreach and Engagement

The potential benefits and impacts of a new station will depend strongly on the local conditions and community needs. It is important to give members of communities, especially DACs, opportunities to participate meaningfully in and influence the outcomes of planning and deployment of alternative fuel infrastructure. State and local agencies, NG and electric utilities, non-profits, EV charging network companies, and local community organizations should work together to ensure that members of DACs participate in the planning, siting, and deployment stages of new CNG and DCFC stations near the corridor. The interim guidance on DACs from the Joint Office can be used as a screening tool to identity those communities that should be targeted for outreach and engagement. The census tracts identified in the interim guidance within 2 mi and 5 mi of each exit along the corridor, as measured from the interchange centroid, are listed in Tables in Section 3.

Although the Joint Office interim guidance DAC designation helps identify DACs, it is an aggregate metric and cannot reflect the disadvantages and inequities faced by any particular DAC. Planned infrastructure deployments should include engaging with members of these communities to convey the purpose and scope of the AFC program and relevant incentives and regulations. These communities should have opportunities to participate in planning and decision-making on infrastructure projects that affect them. Heuther et al. (2021) describe ways for state utility commissions and utilities to engage with underserved communities and metrics to assess needs and to track the effectiveness of efforts to address inequities.

1.7 RELATED ACTIVITIES AND FUNDING OPPORTUNITIES

States have developed plans for transportation electrification that complement this plan for the I-80 Mid-America Clean Fuels Corridor. The U.S. government, several state agencies, and utilities offer incentives or have other programs intended to influence adoption of CNGVs and EVs or incentivize or assist in planning for or deploying public EV charging infrastructure. Some of these programs provide funding for alternative fuel infrastructure. These are briefly described below.

1.7.1 U.S. National Electric Vehicle Infrastructure (NEVI) Program

The Bipartisan Infrastructure Law (enacted as the Infrastructure Investment and Jobs Act, Pub. L. 117–58) authorized a new National Electric Vehicle Infrastructure (NEVI) program. The NEVI program includes $7.5 billion over 5 years to help make EV charging accessible for local and long-distance trips. This includes $5 billion under a formula program and $2.5 billion under a discretionary grant program. Funds allocated under the formula program to each of the six states on the I-80 Mid-America Clean Fuels Corridor are listed in Table 1.6 (FHWA, 2022c).

Table 1.6. Estimated Federal NEVI Formula Program Funds Allocated to the I-80 Mid-America Clean Fuels Corridor's Six States (FHWA, 2022c)

State	Amount Allocation ($Million, over 5 years)
New Jersey	104.4
Pennsylvania	171.5
Ohio	140.1
Indiana	99.6
Illinois	148.6
Iowa	51.4

NEVI Formula Program funding is initially restricted to funding EV infrastructure on designated AFCs, but once all of the AFCs in a given state are signage-ready, NEVI funding may be used for alternative fuel infrastructure on other public roads in that state. To qualify for NEVI funds, EV charging stations must conform to Round 6 AFC criteria listed in Table 1 and additional requirements in NEVI Guidance (FHWA, 2022a) and in the NEVI Standards and Requirements (FHWA, 2023a). These requirements are summarized in Table 1.7.

Table 1.7. Summary of NEVI Program Requirements for EV Charging Infrastructure

Requirements Area	Station Information
Installation, operation, and maintenance	Requirements for ports, types of connectors, payment methods, customer support services, and standards for technicians
Interoperability of EV charging infrastructure	Chargers must be capable of charge management and Plug and Charge.
Traffic-control devices and on-premise signs	Must conform to Manual on Uniform Traffic Control Devices for Streets and Highways
Data collection and submission	Charging station use, reliability, and cost information
EV charging infrastructure network connectivity	Requirements for EV charger communications with the charging network and electric grid, enabling secure remote monitoring, diagnostics, control, and updates
Publicly available information	Information on location, connector type, reliability (uptime >97%), and power level, real-time status, and price to charge
Environmental justice	40 percent of the benefits from the NEVI program should flow to disadvantaged communities. State plans must include a public engagement process and how State DOTs will identify, prioritize, and measure benefits from EV charging infrastructure.

Additional requirements apply, as with any project funded with federal funds that is treated as a federal-aid highway project. (An exception is if the EV charging station is located outside of the interstate right-of-way and access is provided from another public road). These requirements include:

- Buy America requirements at 23 U.S.C. 313 and Build America, Buy America Act (Pub. L. No 117-58, div. G sections 70901–70927). Buy America requirements are waived for EV chargers assembled in the U.S. from March 23, 2023, through June 30, 2024, and for EV chargers assembled in the U.S. after June 30, 2023, provided that 55% of the cost of components manufactured in the U.S., is greater than 55% of the total cost of all components. Iron and steel housing components of EV chargers are still subject to Buy America requirements (FHWA 2023b).

- Davis-Bacon Act federal wage rate requirements included at subchapter IV of chapter 31 of Title 40, U.S.C must be paid for any project funded with NEVI Formula Program funds.

- The American with Disabilities Act (ADA) of 1990 regulations (49 CFR part 37) in 2006, and accessibility adopted by the Department of Justice into its ADA regulations (28 CFR parts 35 and 36) in 2010.

- Title VI of the Civil Rights Act of 1964.

- The National Environmental Policy Act of 1969.

State DOTs must submit a plan each year to the Joint Office of Energy and Transportation specifying how NEVI funds will be distributed under the NEVI Formula Program. The NEVI plans submitted by each of the six states along the I-80 Mid-America Corridor, as listed below, were approved by the Joint Office:

- New Jersey's National Electric Vehicle Infrastructure (NEVI) Deployment Plan
- Pennsylvania State Plan for Electric Vehicle Infrastructure Deployment
- Ohio Electric Vehicle Infrastructure Deployment Plan
- Indiana Electric Vehicle Infrastructure Deployment Plan
- Illinois Electric Vehicle Infrastructure Deployment Plan
- Iowa's Electric Vehicle Infrastructure Deployment Plan

In addition to the NEVI Formula Program, the NEVI Competitive Program will award $1.5 billion ($250 million annually) for community charging and award another $1.5 billion ($250 million annually) for corridor charging. Grants will be awarded to states, metropolitan planning organizations, local governments, political subdivisions, and tribal governments, and will cover up to 80% of costs of planning, acquisition, and installation of charging or alternative fueling infrastructure. Priority will be given to projects in rural areas, low-income neighborhoods, and communities having limited parking or with a high fraction of homes that are multi-unit dwellings. The FHWA released the notice of funding opportunity on March 14, 2023 (Grants.gov, 2023).

Individual states have their own plans for supporting CNGVs, EVs, and their refueling and charging infrastructure. Plans, incentives, and regulations relevant to infrastructure for CNG fueling and EV charging and to CNGV and EV adoption in each of the six states on the I-80 Mid-America Corridor are summarized below.

1.7.2 New Jersey CNG and EV Plans, Incentives, and Regulations

New Jersey's Energy Master Plan (New Jersey, 2023) calls for electrifying transportation and achieving 100% carbon-neutral electricity by 2050, including actions such as:

- Supporting deployment of 330,000 zero-emission vehicles (ZEVs, including EVs, plug-in hybrid electric EVs, and fuel cell vehicles) by 2025
- Deploying EV charging stations throughout the state
- Creating incentives for the deployment of EV charging stations

In 2019, New Jersey signed a Memorandum of Understanding committing the state to support the deployment of 330,000 ZEVs by 2025. The New Jersey Partnership to Plug-In supports the growth of EVs, including through vehicle rebates.

New Jersey, along with 16 other states and the District of Columbia, signed a memorandum of understanding to support the deployment of medium- and heavy-duty ZEVs and joined a Multi-state ZEV Task Force. In 2022, this Task Force issued an action plan that documents strategies to deploy medium- and heavy-duty ZEVs and to achieve a goal of 100% of new medium- and heavy-duty vehicles sold to be ZEVs by 2050. New Jersey has also adopted California's Advanced Clean Truck regulation that calls for 55% of new medium- and heavy-duty trucks sold in 2035 to be zero emission and sets reporting requirements for fleets operating 50 or more trucks.

New Jersey was awarded $104.4 million (over 5 years) under the NEVI Formula Program. New Jersey's amended Deployment Plan was approved in September of 2022, and issued a Request for Information, which closed on January 13, 2023 (NJDEP, 2023). The New Jersey Department of Environmental Protection (NJDEP) is making plans for the award process (NJDEP, 2023).

New Jersey statutes require municipal master plans to promote EV charging station installation on transportation corridors and other public locations. New Jersey has a goal of 200 public DCFC stations, including 75 along travel corridors, by December 31, 2025. Selected incentives and regulations established by New Jersey state agencies that promote adoption of CNGVs and EVs and deployment of fueling and charging infrastructure are listed in Table A.1 in Appendix A.

1.7.3 Pennsylvania CNG and EV Plans, Incentives, and Regulations

Pennsylvania developed an Alternative Fuels Deployment Plan for I-81 and I-78 in Pennsylvania that identified needs for CNG fueling and EV charging infrastructure along that corridor and laid out ways that the Pennsylvania DOT (PennDOT) could facilitate implementation and conduct outreach and coordination (Ndimbie et al., 2021).

Pennsylvania also signed the memorandum of understanding to support the deployment of medium- and heavy-duty ZEVs and joined the Multi-state ZEV Task Force, adopting the goal of 100% zero-emission medium- and heavy-duty vehicles of sales in 2050.

Pennsylvania was awarded $171.5 million under the NEVI Formula Program. The Pennsylvania Department of Transportation (PennDOT) released a Notice of Funding Opportunity (NOFO) for the NEVI Grant Program on January 6, 2023, which was updated adopting FHWA's final rulemaking on March 13, 2023 (PennDOT, 2023). PennDOT, along with other organizations, has conducted a number of outreach events to engage potential applicants and the general public, as well as a survey to solicit input on public opinion on the NEVI goals, objectives and priorities.

Incentives and regulations established by Pennsylvania state agencies that promote adoption of CNGVs and EVs and deployment of fueling and charging infrastructure are listed in Table A.2 in Appendix A.

1.7.4 Ohio CNG and EV Plans, Incentives, and Regulations

Ohio was awarded $140 million (over 5 years) under the NEVI Formula Program. Ohio's EV Infrastructure Deployment Plan identified candidate locations for new EV charging locations, which included one location near I-80/I-75 interchange (I-80/90 exit 64; DriveOhio, 2023). The New Jersey Department of Environmental Protection (NJDEP) is making plans for the award process (NJDEP, 2023).

The Ohio DOT had HNTB Corporation and Clean Fuels Ohio conduct a study of needs for EV charging along Ohio's highway corridors. The study, issued in 2020, recommended 24 locations for public DCFC stations along interstates, U.S. highways, and state routes and 10 locations for public DCFC stations at Ohio Turnpike service plazas (Zehnder et al., 2020). Along I-80, the study recommended DCFC stations at the Turnpike service plazas listed in Table 1.8.

Table 1.8. Recommended Locations for DCFC Stations on I-80 on the Ohio Turnpike (Zehnder et al., 2020)

Mile Marker	Service Plaza (Eastbound/Westbound)
100.0	Commodore Perry/Erie Islands
139.5	Vermilion Valley/Middle Ridge
170.1	Towpath/Great Lakes
197.0	Brady's Leap/Portage

In 2021, the Ohio DOT issued a second study on freight transportation (Zehnder et al, 2021), examining the potential benefits from, and challenges to, electrification of freight trucks. The study summarized economic and environmental benefits to Ohio from electrification of freight vehicles. It projected that electric freight trucks would become economically competitive in the near-to-mid term, depending on the vehicle size class and application. It recommended that

policies to accelerate adoption of electric freight trucks and to support EV manufacturers and suppliers of parts and technology for EVs in Ohio be undertaken.

The Transportation Subcommittee of the Northeast Ohio Areawide Coordinating Agency developed an Electric Vehicle Charging Stations Siting Plan for Cuyahoga, Geauga, Lake, Lorain, and Medina counties. The plan, presented in December of 2020, included anticipated needs for Level 2 and DCFC stations. None of these suggested DCFC locations were within a mile of I-80 (NOACA, 2020).

In 2022, the Ohio Department of Environmental Protection awarded grants under the Ohio Diesel Mitigation Trust DC Fast Charging Program, including awards to Universal EV, LLC, for DCFC stations to be located near I-80:

- Three dual-port 160kW chargers serving 6 parking spaces at the Red Roof Inn & Suites at 621 Midway Blvd in Elyria, about 0.3 mi from exit 145, and
- Three dual-port 160kW chargers serving 6 parking spaces at the Super 8 at 32801 Lorain Rd. in Ridgeville, about 0.5 mi from exit 152.

The state of Ohio has enacted regulations relevant to CNGVs, EVs, and fueling and charging infrastructure, as listed in Table A.3 in Appendix A.

1.7.5 Indiana CNG and EV Plans, Incentives, and Regulations

Indiana, along with Illinois, Michigan, Minnesota, and Wisconsin, signed a Renewable Electric Vehicle Midwest Coalition memorandum of understanding in 2021 to accelerate vehicle electrification in these states (Indiana, 2021). These five states committed to:

- Accelerate medium- and heavy-duty fleet electrification,
- Collaborate on regional EV charging station siting and deployment analyses with a focus on commercial routes,
- Standardize regulations, messaging, and customer experience related to electric vehicles (EVs) across state lines,
- Evaluate opportunities for workforce development;
- Identify historically underserved communities for equitable EV charging station development and EV adoption, and
- Educate consumers and fleet owners to raise EV awareness, reduce range anxiety, and increase EV adoption.

The Indiana Department of Transportation had the Joint Transportation Research Program conduct a study of needs and opportunities for providing appropriate infrastructure for EVs across Indiana, and a report was issued in April of 2022 (Konstantinou et al., 2022). The

study developed a framework to assess areas having deficient EV infrastructure and to analyze potential EV charging station deployments. The study also examined potential charging energy demand and impacts on fuel tax revenues from scenarios of EV adoption.

Under the NEVI Formula Program, Indiana was awarded $99.6 million (over 5 years) under the NEVI Formula Program. Indiana's Deployment Plan was approved in September of 2022, which identified potential locations for new DCFC stations. Along I-80 in Indiana, the plan listed exits 15, 56, 90, 101, and 126 as preliminary candidates, with exits 1, 6, 10, 22, 72, and 144 as alternates. In developing their state plan, the Indiana Department of Transportation surveyed electric utilities that served areas along AFCs. They also used an analysis by Purdue University of the number of trips and the dwell time at all interchanges along Indiana's AFCs (Desai et al. 2021). They also took into consideration land ownership and use patterns, geography and terrain, EV market conditions and passenger and freight travel patterns.

The Indiana DOT issued a Request for Information, which closed on April 29, 2022 (Indiana DOT, 2023). The Indiana DOT has held several public meetings to present the state's Electric Vehicle Infrastructure Deployment Plan and to allow stakeholders across Indiana to provide feedback on it.

The Indiana NEVI plan also identified interchanges where DCFC stations would be deployed under the Volkswagen Mitigation Settlement. Exits along I-80 identified are listed in Table 1.9.

Table 1.9. I-80 Interchanges Identified for DCFC stations under the Indiana Volkswagen Mitigation Settlement (Indiana DOT, 2022)

Exit	Interchange
6	Burr St. in Gary
16	I-80 and I-94 in Portage
31	I-80 and IN-49 in Chesterton
72	I-80 and US-31 in South Bend
92	IN-19 (Cassopolis St.) in Elkhart

State agencies in Indiana offer some incentives for CNGVs and EVs, and the state has enacted regulations relevant to CNGVs, EVs, and fueling and charging infrastructure as listed in Table A.4 in Appendix A. As listed in Table A.4 in Appendix A, the State of Indiana taxes CNG for motor fuel at a slightly higher rate than do neighboring states. It has been reported that interstate fleets driving CNG trucks through Indiana often choose not to refuel their trucks in Indiana (Lisek, 2023).

1.7.6 Illinois CNG and EV Plans, Incentives, and Regulations

As mentioned above, Illinois is a member of the Renewable Electric Vehicle Midwest Coalition. Illinois enacted the Reimagining Energy and Vehicles in Illinois Act in 2021 to attract

companies in the renewable energy and EV sectors. The act calls for 1,000,000 EV in Illinois by 2030. Also in 2021, Illinois enacted the Climate and Equitable Jobs Act (CEJA, P.A. 102-0662), This legislation is intended to:

- Incentivize renewable energy development
- Accelerate EV adoption and expand charging infrastructure
- Create clean energy workforce training programs
- Support communities dealing with energy transitions

Incentives include rebates of $4,000 to qualified Illinois residents for the purchase or lease of a new or pre-owned EV. Some restrictions apply, and the rebate amount will decrease to $2,000 on July 1, 2026, and to $1,000 on July 1, 2028. Low-income rebate applicants are given higher priority. CEJA also calls for rebates or grants that fund up to 80% of the cost of the installation of charging stations. CEJA amended the Illinois Electric Vehicle Act to require the two electric utilities, Ameren Illinois and ComEd, to file Beneficial Electrification plans with the Illinois Commerce Commission. These plans were required to include some or all of the following:

- Incentives for electrification and associated infrastructure for medium-duty and heavy-duty government and private fleet vehicles,

- Programs to provide access to EVs to low-income communities where car ownership is low,

- Incentives or programs to enable quicker adoption of EVs by developing public charging stations in dense areas, workplaces, and low-income communities,

- Incentives or programs to develop EV infrastructure that minimizes range anxiety, filling the gaps in deployment, particularly in rural areas and along highway corridors, and

- Other programs as defined by the Illinois Commerce Commission

In 2021, the Chicago Area Clean Cities Coalition (now the Illinois Alliance for Clean Transportation) conducted an alternative fuels readiness study of the northeast Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will (Milburn, 2021). The study mapped existing alternative fuel sites in the six counties in Illinois and nearby areas, collected inputs from fleets, retail refueling companies, highway authorities, utilities, and others, and made recommendations for siting additional alternative fuel stations. While the plan did not identify specific locations for fueling or charging stations, important considerations for planning and deploying alternative fuel infrastructure were discussed and valuable resources were identified.

The Illinois DOT developed a statewide Electric Vehicle Adoption Plan to provide guidance on equitable placement of public charging stations and to develop strategies to support the Illinois goal of 1 million EVs on the road in Illinois by 2030 (as called for in the Reimagining Energy and Vehicles in Illinois Act, Illinois Department of Commerce, 2023). In support of the plan, a study was conducted by the University of Illinois to analyze EV adoption rates in Illinois

and potential locations for public charging stations. The plan identified three locations along I-80 for new DCFC stations, including one in each of Bureau, La Salle, and Cook counties.

Under the NEVI Formula Program, Illinois was awarded $148.6 million (over 5 years). The Illinois Electric Vehicle Infrastructure Deployment Plan, approved in September of 2022, identified preliminary locations along I-80 (and other AFCs) for new DCFC stations but not specific exits. The Illinois DOT held several public outreach meetings to engage with potential site hosts and other stakeholders. The state of Illinois is planning for the NEVI Discretionary Program as well.

Illinois state regulations relevant to CNGVs, EVs, and fueling and charging infrastructure are listed in Table A.5 in Appendix A.

1.7.7 Iowa CNG and EV Plans, Incentives, and Regulations

In 2016, the Iowa Economic Development Authority and the Iowa Department of Transportation issued the Iowa Energy plan (IEDA and Iowa DOT 2016). The plan called for, among other goals, expanding the use of alternative fuel vehicles in Iowa. It offered general recommendations for planning for EV charging corridors and incentives for AFV infrastructure. Preliminary recommendations for new DCFC stations were based on an earlier study by the Iowa Clean Cities Coalition for the Iowa Economic Development Authority (IEDA 2016). This study, documented in the report Advancing Iowa's Electric Vehicle Market, proposed nine DCFC stations to be located within 1 mi of I-80, as listed in Table 1.10. Comparison with Table 1.2 shows that DCFC stations have been built at two of these exits or adjacent exits, which are indicated by an asterisk.

Table 1.10. Proposed Exits on I-80 in Iowa for New DCFC Stations in the Advancing Iowa's Electric Vehicle Market Study (IEDA 2016)

Exit No.	Location (nearby town or city)
5*	Council Bluffs
40	Avoca
93	Stuart
123B	West Des Moines
142	Altoona
164	Newton
220*	Williamsburg
240	Coralville
284	Walcott

*At or near exits with DCFC stations (see Table 1.2).

More recently, the Iowa Department of Transportation submitted Iowa's Electric Vehicle Infrastructure Deployment Plan. Iowa was awarded $51.4 million over five years in the NEVI Formula Program. In the development of the state plan, the Iowa Department of Transportation

conducted a survey to gauge public interest in public EV charging, travel patterns, and preferences for different types of amenities at or near DCFC stations. Iowa's Electric Vehicle Infrastructure Deployment Plan identified a number of locations where a new DCFC station would fill a gap in an EV-Pending segment and some locations that have EV charging locations that could be upgraded to meet NEVI standards. The plan also listed planned DCFC stations that had funding dedicated to them, one of which is at exit 93 in Stuart, although the station planned for this site will have only two DCFC ports. Exits in gaps along I-80 identified in the plan include exits 50, 64, 70, 179, 182, and 191.

Iowa state regulations relevant to CNGVs, EVs, and fueling and charging infrastructure are listed in Table A.6 in Appendix A.

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2 APPROACH, DATA, AND METHODS

2.1 APPROACH

One of the goals of this plan is to prioritize exits along pending segments of I-80 for locations of new DCFC stations and CNG fueling stations and to develop outreach strategies and materials for educating and engaging potential hosts of EV and CNG infrastructure. Locations for infrastructure were prioritized for pending segments by exits, not by individual businesses or sites at the street address level, which would require more detailed information than is available for the large number of sites. Rather, conditions within 1 to 5 mi of exits were assessed to compare and rank their suitability based on the available information about each location. The data used for assessments are described in Section 2.2, and the analysis of exits is described in Section 2.3.

Another goal is to support outreach and engagement of communities and stakeholders within each state. Section 2.4 describes outreach materials developed and convenings held to educate and engage with interested parties.

2.2 DATA

Data on annual average daily traffic (AADT) along the centerline of I-80 were obtained from the FHWA HEPGIS website (file for the National Highway System, dated May 27, 2021, FHWA 2023). Total AADT and AADT for combination trucks, single-unit trucks, and buses were used.

Locations of CNG and DCFC stations along the corridor were obtained from the AFDC Alternative Fueling Station Locator Tool, along with information about numbers of ports, connector types, and power capacities of DCFC stations. Distances from the ends of the nearest I-80 off-ramps were estimated using Google Maps.

Amenities within 1 mi and within 5 mi of the ends of exit off-ramps were collected from iexitapp.com and Google Maps, including:

- Numbers of fueling stations
- Numbers of restaurants
- Numbers of convenience stores and pharmacies
- Numbers of motels/hotels
- Number of major attractions/destinations with 1 mi, such as amusement parks or large shopping centers
- Numbers of truck repair shops or dealers, and
- Existence of truck parking

These are tabulated in Appendix B.

Census tracts identified as disadvantaged communities in the Joint Office interim guidance (ANL, 2022) within 2 mi or within 5 mi of the centroid of exit interchanges were identified using Geographical Information System (GIS) analysis (QGIS, 2023). As described in the following section, data on disadvantaged communities were not used in assigning a suitability score to exits for CNG or DCFC stations, but the numbers of disadvantaged communities near exits are listed in Tables in Section 3.3.

Data limitations restricted the analysis of the suitability of locations. Only publicly available data were used in this analysis. The publicly available data on CNG and electricity distribution infrastructure were not of sufficient spatial resolution to compare sites near interstate exits. Data on EV registrations were not used, since even though these can serve as a metric for current EV charging demand near households that own EVs, it is unclear how this translates to current or future demand for charging along the corridor, which is intended to serve long-distance travel rather than local EV charging.

The interim guidance on disadvantaged communities from the Joint Office provides an aggregated metric for each census tract, combining many types of data at different spatial resolutions (many at the census tract level, some coarser). It is difficult to relate this metric to any potential benefits or disbenefits to members of these communities of installing CNG fueling or EV charging stations along the corridor in or near these areas. Such benefits or disbenefits will be highly variable, depending on specific characteristics and conditions within each community. However, the interim guidance is useful for screening and identifying where communities are that might benefit from participating in CNG and DCFC station planning, siting, and deployment, including participation in procurements, contracting, job training, employment, and other opportunities. It is one set of data that can be used to identify communities that state and local agencies, utilities, and other entities can make appropriate efforts to engage with and encourage their participation.

2.3 METHODS FOR PRIORITIZING LOCATIONS

Exits within CNG-pending segments of the corridor were prioritized by their proximity to existing CNG stations. If new stations are spaced evenly within CNG-ready segments rather than in close proximity, then fewer new stations will be required. A new station in close proximity to another station will reduce the gap in pending segments less than stations spaced farther apart, but within 150 mi of each other.

To prioritize potential locations for new CNG stations, a proximity score was assigned to exits in the CNG-pending segments of the corridor. The score for each exit was calculated based on the approximate distance of the CNG-Pending corridor that would be converted to CNG-Ready by locating a CNG station at that location. A score of 1.0 was assigned to the exit(s) that would convert the largest distance to CNG-Ready within a given gap (i.e., between neighboring stations that were more than 150 mi apart). Scores assigned to other exits within the gap were proportional to the distance that would be converted to CNG-Ready by a station at that exit.

Proximity scores were given to all exits having at least some amenities within each gap between neighboring CNG stations in CNG-Pending segments. For each gap, the maximum distance converted by a new station anywhere within the gap was noted. The score for each station within a gap was normalized by dividing the distance converted at a given exit by the maximum distance converted by a new station at any exit within the gap. That is, the proximity score, Pr^{CNG}, was the ratio of the distance converted at exit N, to the maximum distance converted by a new station at any exit between the two nearest existing CNG stations. This score ranged from zero to 1.0. Details of the calculation of the proximity score are given in Appendix C.

The proximity scores were combined with scores for the AADT and numbers of amenities. The AADT value used for each exit was the largest value of any segment in the NHS data that was within, or partially within, a 400-meter radius of the centroid of the exit. As was done with the proximity score, the AADT and numbers of amenities were normalized by their maximum values for all exits within each gap. This combined metric was used to score the suitability of exits within each CNG-Pending and EV-Pending gap.

Exits were ranked for CNG stations in accordance with:

$$CNG\ suitability = \ (Pr^{CNG}) \left[\frac{\frac{(\#Amenities)}{\max{(\#Amenities)}} + \frac{(AADT)}{\max{(AADT)}}}{2} \right] \quad (5)$$

Where *#Amenities* was the sum of the approximate numbers of the amenities listed in Table 2.1 located within 5 mi of the ends of off-ramps of each exit, and AADT is the AADT for combination trucks, single-unit trucks, and buses (sum of AADT_COM and AADT_SINGL in the data from FHWA, 2023).

Table 2.1. Amenities and Ranges Counted for Potential CNG Station Locations

Amenity Type	Maximum Number Counted*
Fueling station	6
Restaurants	140
Hotels/motels	8
Convenience stores and pharmacies	4
Truck repair shops or dealers	6
Locations with truck parking	1 (value of "1" indicates presence, otherwise "0")

*Numbers in excess of this value were not counted.

Tables giving the numbers of amenities within 5 mi of exits, AADT, and CNG suitability scores for exits on the corridor for each state are in Appendix B, and values for exits that were deemed most suitable are listed in Tables in Section 3.1.

Exits were ranked for EV stations in accordance with:

$$EV\ suitability = \ (Pr^{EV}) \left[\frac{\frac{(\#Amenities)}{\max{(\#Amenities)}} + \frac{(AADT)}{\max{(AADT)}}}{2} \right] \quad (5)$$

Where Pr^{EV} is the proximity score (analogous to the proximity score used for CNG segments, as described in Appendix C), *#Amenities* as the sum of the approximate numbers of the amenities listed in Table 2.2 located within 1 mi of the ends of off-ramps of each exit, and *AADT* is the AADT for all vehicles (AADT in the data from FHWA, 2023).

Table 2.2. Amenities and Ranges Counted for Potential EV Station Locations

Amenity Type	Maximum Number Counted*
Fueling station	6
Restaurants	70
Hotels/motels	8
Convenience stores and pharmacies	4
Big box stores and supermarkets	5
Major attractions/destinations, such as amusement parks or large shopping centers	2

*Numbers in excess of this value were not counted.

Tables giving the numbers of amenities within 1 mi of exits, AADT and EV suitability scores for exits on the corridor for each state are in Appendix B, and values for exits that were deemed most suitable for new DCFC stations are listed in Tables in Section 3.2.

The presence or absence of disadvantaged communities along the corridor was not used in calculating a suitability score. The disadvantaged community data given in the interim guidance from the Joint Office is a general metric aggregating many types of data (demographic, economic, environmental, racial, health, etc.), and it is difficult to estimate or generalize the benefits or impacts of locating a CNG or DCFC station near such communities. Such potential benefits or impacts will vary widely depending on local conditions and communities' own priorities.

It is therefore important to identify communities that are disadvantaged that might benefit from, or be impacted by, new CNG or DCFC stations along the corridor in or near their communities. The number of disadvantaged census tracts within 2 mi and within 5 mi of exits having some amenities are given in Tables 3.16 to 3.21 in Section 3.3.

2.4 OUTREACH AND ENGAGEMENT

The team developed outreach materials and held convenings to engage with potential site hosts, authorities having jurisdiction over areas on or near the corridor, and other stakeholders. Goals of outreach efforts were to:

- Inform stakeholders about the project and potential funding opportunities
- Encourage coordination among organizations
- Publicize funding opportunities and other programs to support deployment
- Collect input on concerns, preferences, and potential barriers

Outreach materials developed for broad outreach and for use at convenings are described in Section 3.4.1. In planning convenings, regional authorities and other stakeholders were identified, including regional planning authorities, municipal and regional planning organizations, transportation departments, utilities, fuel retailers, and other businesses. Clean Cities Coalitions and other organizations contacted potential participants and publicized the convenings. Agendas for each convening were developed, and speakers were engaged to address relevant topics. A reporting template was developed for Clean Cities Coalitions to capture information from convenings, including agenda, attendees, and summary of input from participants. Summary reports from Coalitions that held convenings are in Appendix D. Some Clean Cities Coalitions held additional meetings, workshops, or other activities related to alternative fuels and infrastructure. Findings from convenings and other outreach activities are summarized in Section 3.4.

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3 FINDINGS

3.1 RECOMMENDED EXITS FOR EV STATIONS

Based on the analysis described above, exits along the corridor are prioritized for siting new DCFC stations to convert the EV-Pending Segments to EV-Ready as described for each state, below. These recommendations are preliminary, and specific sites for new stations should be assessed based on additional information, including property ownership, local zoning and land use regulations, existing utility services and estimate costs of any service upgrades, if needed, as well as input from surrounding residents and community authorities having jurisdiction.

In addition, in Section 3.1.7, the exits selected here are compared with exits or locations identified in state NEVI plans as potential DCFC locations.

3.1.1 Recommended Exits for EV Stations in New Jersey

The DCFC station at Lener Denville Square in Denville, New Jersey meets Round 6 criteria, so if the DCFC station at the Bank of America in Fort Lee, New Jersey York can serve as a station on the Mid-America corridor, then all of New Jersey can be considered to be EV-Ready. In any case, it seems appropriate not to assign a high priority to building a new DCFC station near the one in Fort Lee.

3.1.2 Recommended Exits for EV Stations in Pennsylvania

As shown in Figure 3.1, there are three gaps in Pennsylvania: 1) a gap of 74 mi between the stations at Clarion, Pennsylvania near exits 50 and 62 and the exit 226 near Girard, Ohio, 2) a gap of 139 mi between the stations at Walmart in DuBois near exits 97 and 101 and at the Sheetz in Bloomsburg near exits 232 and 236, and 3) a gap of 72 mi between the DCFC station at Sheets in Bloomsburg near exit 236 and the station at Walmart in East Stroudsburg near exit 308. This assumes that the DCFC stations in DuBois and Bloomsburg can qualify with exceptions, since they are located slightly more than one mile from the ends of I-80 off ramps.

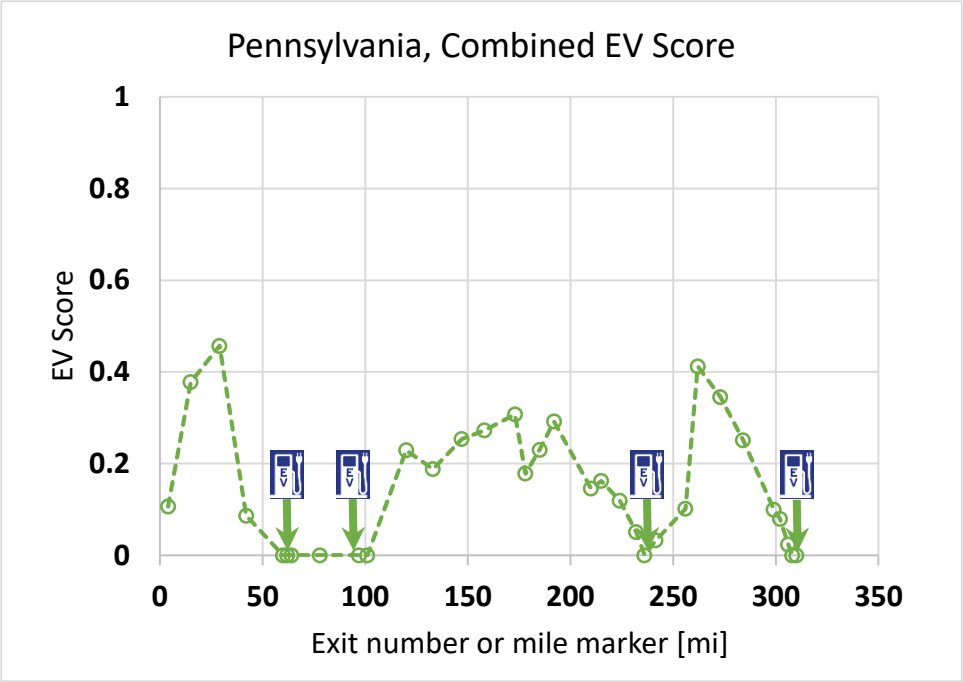

Figure 3.1. EV suitability score by exit mile marker in Pennsylvania. Existing Round 6 DCFC stations at exits 1 (near Council Bluffs), 136 (In Des Moines), and 295 (in Davenport) are indicated by green arrows and EV signs.

The gap between the station in Clarion, Pennsylvania, near exits 60 and 62 and exit 226 near Girard, Ohio, can be converted to EV-Ready by the addition of a single new DCFC station in Pennsylvania at either exit 15 near Mercer or at exit 29 near Barkeyville, Pennsylvania. These recommended exits are listed in Table 3,1, with the number of amenities within 1 mi, total AADT, and the EV suitability score. Note that a new DCFC station is needed at only one of exits 15 and 29.

Table 3.1. Recommended Exits for a New DCFC Station between Existing DCFC Stations between Exit 60 in Pennsylvania and Mile Marker 77 in Ohio, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new DCFC station recommended at one of the following two exits				
15	I-80 and US-19, PA-158 near Mercer	6	28,473	0.38
29	I-80 and PA-8, Barkeyville	12	30,464	0.46

The gap between the station in DuBois near exits 97 and 101 and the station in Bloomsburg near exits 232 and 236 will require at least two new DCFC stations. If two new stations were located within 50 mi of each other and within 50 mi of the nearest exiting station,

only two new stations will be required. These two new DCFC stations would need to be located at exit 147 in Snow Shoe and at exit 192 near Eastville. There are very few amenities near exit 192, however, so depending on conditions at this and other exits within this gap, it may be desirable instead to add three new DCFC stations, at exit 215 (near Milton), exit 173 (in Mill Hall) and at either exit 147 (in Snow Shoe) or exit 133 (in Kylertown), where there are more amenities.

These recommended exits are listed in Table 3.2, with the number of amenities within 1 mi, total AADT, and the EV suitability score. Note that a new DCFC station is needed at only one of exits 262, 273, or 284 to convert the gap to EV-Ready.

Table 3.2. Recommended Exits for New DCFC Stations between Existing DCFC Stations near Exits 101 and 232 in Pennsylvania, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
Two new stations recommended, one at each of the following two exits				
147	I-80 and PA-144 in Snow Shoe	7	23,580	0.25
192	I-80 and PA-880 near Eastville	3	21,331	0.29
Three new stations recommended, as alternative to the previous two exits				
133 (or 147)	I-80 and PA-53 in Kylertown	8	20,696	0.19
173	I-80 and PA-64 in Mill Hall	13	22,419	0.31
215	I-80 and PA-254 near Milton	11	31,711	0.16

The gap between the stations in East Stroudsburg (exit 308) and in Bloomsburg (exits 232, 236) can be converted by a new DCFC station at one of the exits 262 (near Drums and Hazelton), 273 (in White Haven), or 284 (in Blakeslee). These recommended exits are listed in Table 3.3, with the number of amenities within 1 mi, total AADT, and the EV suitability score. Note that a new DCFC station is needed at only one of exits 262, 273, or 284 to convert the gap to EV-Ready.

Table 3.3. Recommended Exits for a New DCFC Station between Existing DCFC Stations near Exits 232 and 308 in Pennsylvania, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new DCFC station recommended at one of the following exits				
262	I-80 and PA-309, Drums, Hazelton	15	24,554	0.41
273	I-80 and PA-940, PA-437 in White Haven	11	23,926	0.35
284	I-80 and PA 115 in Blakeslee	5	23,856	0.25

3.1.3 Recommended Exits for EV Stations in Ohio

There are two gaps in Ohio, as shown in Figure 3.2. The gap between the Tiffin River/Indian Meadow service plazas near mile marker 20.8 and the Wyandot/Blue Heron service plazas near mile marker 77 is 56 mi in length. The gap between the Wyandot/Blue Heron service plazas and the DCFC station at the Sheetz in Girard near exit 226 is 150 mi in length.

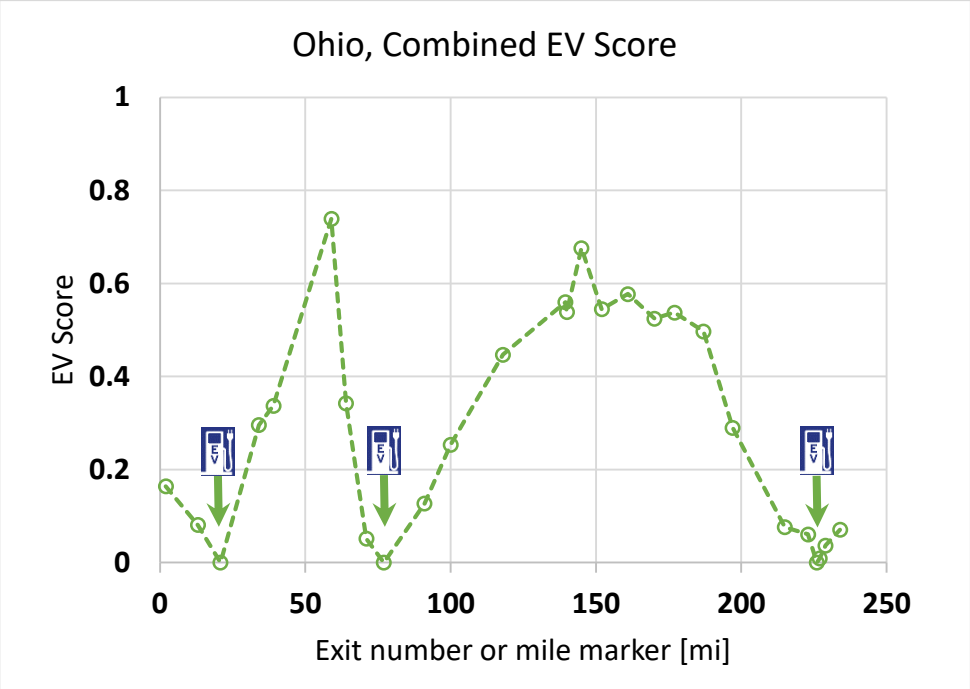

Figure 3.2. EV suitability score by exit mile marker in Ohio. Existing Round 6 DCFC stations at the Tiffin River/Indian Meadow service plazas near mile marker 20.8, at the Wyandot/Blue Heron service plazas near mile marker 77, and near exit 226 (Girard) are indicated by green arrows and EV signs.

A new DCFC station located at any one of exits 34 (near Wauseon), 39 (near Delta), 59 (in Maumee), or 64 (in Perrysburg) would convert this gap to EV-Ready. Exit 59 has a higher score due to a larger number of amenities, as shown in Table 3.4.

Table 3.4. Recommended Exits for a New DCFC Station between Existing DCFCs in Ohio at the Tiffin River/Indian Meadow Service Plazas near Mile Marker 20 and at the Wyandot/Blue Heron Service Plazas, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new DCFC station recommended at one of the following exits				
34	I-80 and OH-108 near Wauseon, Ohio	9	22,931	0.296
39	I-80 and OH-109 near Delta, Ohio	12	24,333	0.337
59	I-80 and I-475, US-20, Maumee, Ohio	52	26,228	0.739
64	I-80 and I-75 in Perrysburg	4	33,339	0.342

Three new DCFC stations are needed to convert the gap between the Wyandot/Blue Heron service plazas near mile marker 77 and exit 226 (Girard). Most of the exits in this gap have fairly high EV scores, but exits should be chosen so that they are spaced mostly evenly. As mentioned in Section 1.7.4, the Ohio Department of Environmental Protection awarded grants for DCFC stations at exits 145 and 152. If one or both of these exits are upgraded as needed to meet AFC Round 6 criteria, then two new DCFC stations at exits 118 and either of exits 177 or 187 would convert this segment to EV-Ready. Several combinations of exits having similar numbers of amenities, AADT and EV suitability scores are feasible, and four such combinations are listed in Table 3.5, with the number of amenities within 1 mi, total AADT, and the EV suitability score for each exit.

Table 3.5. Recommended Combinations of Exits for Three New DCFC Stations in Ohio between Existing DCFC Stations near the Wyandot/Blue Heron Service Plazas near Mile Marker 77 and near Exit 226, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
Three new stations recommended, one at each of the following three exits				
118	I-80 and US-250, Milan, Ohio	14	40,220	0.30
145	I-80 and OH-57 near Elyria	21	45,398	0.53
177	I-80 and I-77 in Richfield	10	47,174	0.36
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits				
118	I-80 and US-250, Milan, Ohio	14	40,220	0.30
145	I-80 and OH-57 near Elyria	21	45,398	0.53
187	I-80 and OH-14 in Streetsboro	20	42,041	0.36
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits				
118	I-80 and US-250, Milan, Ohio	14	40,220	0.30
152	I-80 and OH-10 in North Ridgeville	28	40,679	0.41
177	I-80 and I-77 in Richfield	10	47,174	0.36
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits				
118	I-80 and US-250, Milan, Ohio	14	40,220	0.30
152	I-80 and OH-10 in North Ridgeville	28	40,679	0.41
187	I-80 and OH-14 in Streetsboro	20	42,041	0.36

If locating new DCFC stations at Ohio Turnpike service plazas is desirable, this gap could be converted to EV-Ready by new stations at the Commodore Perry/Erie Island service plazas at mile marker 100, the Vermillion Valley/Ridge service plazas at mile marker 139.5, the Towpath/Great Lakes service plazas at miles marker 170.1, and the Brady's Leap & Portage service plazas at mile marker 187. However, this would be four new DCFC stations instead of three. These recommended exits are listed in Table 3.6, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.6. Recommended Exits for New DCFC Stations between Existing DCFC Stations on the Ohio Turnpike between Existing DCFC Stations near the Wyandot/Blue Heron Service Plazas near Mile Marker 77 and near Exit 226, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
Four new stations recommended, one at each of the following four exits				
100	Commodore Perry and Erie Island service plazas	13	42,156	0.17
139.5	Vermillion Valley and Middle Ridge travel plazas	14	42,217	0.39
170.1	Towpath & Great Lakes service plazas	10	43,815	0.35
187	Brady's Leap & Portage service plazas	12	37,993	0.20

3.1.4 Recommended Exits for EV Stations in Indiana

One of the two gaps in Indiana stretches from the DCFC station near exit 130 in Joliet, Illinois to the station in Mishawaka, Indiana near exits 77 and 83, as shown in Figure 3.3. The other gap is between exits 77 and 83 and the Tiffin River/Indian Meadow service plazas at mile marker 20.8 in Ohio.

The gap between Mishawaka and Tiffin River/Indian Meadow service plazas could almost be converted to EV-Ready by a single new station in Indiana at the Gene Stratton Porter/Ernie Pyle travel plazas at mile marker 126, except that this location is 52 mi from the nearest DCFC station to the east. Therefore, two new stations would be needed, one at either the Gene Stratton Porter/Ernie Pyle travel plazas at mile marker 126 or at exit 121 near Howe, and another at exit 13 near Holiday City, OH. Other combinations of exits are also feasible, but few of the other exits have many amenities. These recommended exits are listed in Table 3.7, with the number of amenities within 1 mi, total AADT, and the EV suitability score. Note that the low EV suitability score (0.080) for exit 13 in Ohio is due to its close proximity to the DCFC station at the Tiffin River/Indian Meadow service plazas, but this does not preclude its consideration as a possible DCFC location.

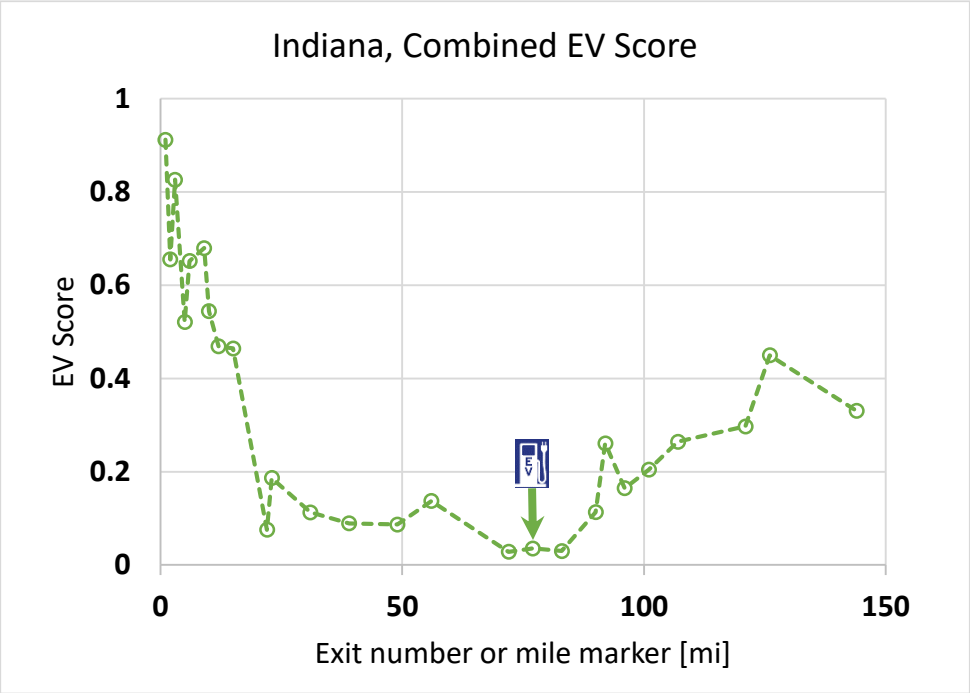

Figure 3.3. EV suitability score by exit mile marker in Indiana. The existing Round 6 DCFC station in Mishawaka, near exits 77 and 83 is indicated by the green arrow and EV sign.

Table 3.7. Recommended Exits for New DCFC Stations between Existing DCFC Stations in Mishawaka, Indiana, near Exits 77 and 83 and the Tiffin River/Indian Meadow Service Plazas at Mile Marker 20.8 in Ohio, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new station recommended, at either of the following two exits				
121	I-80 and IN-9 in Howe, Indiana	7	22,122	0.41
126	Gene Stratton Porter and Ernie Pyle travel plazas	6	22,122	0.45
One new station recommended, in addition to one of the previous two exits				
13	I-80 and US-20 Alt, OH-15 near Holiday City, Ohio	9	21,880	0.08

The gap between Mishawaka, Indiana and Joliet, Illinois would require two new DCFC stations to convert to EV-Ready. Many combinations of two exits could convert this gap, but a new station at the Knute Rockne/Wilbur Shaw travel plazas at mile marker 56 and another at one of exits 6, 9, 10, 12, or 15 in Indiana would convert the gap to EV-Ready and there are more amenities at these exits than many others in this gap. These recommended exits are listed in Table 3.8, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.8. Recommended Exits for New DCFC Stations between Existing DCFC Stations in Mishawaka, Indiana, near Exits 77 and 83 and Exit 130 in Joliet, Illinois, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new station recommended at the following exit				
56	Knute Rockne /Wilbur Shaw travel plazas	7	27,548	0.14
One new station recommended, at one of the following exits, in addition to the previous exit				
6	I-80 and Burr St. in Gary	18	191,251	0.65
9	I-80 and Grant St. in Gary	23	182,739	0.68
10	I-80 and IN-53 in Gary	16	155,881	0.54
12	I-80 and I-65 in Gary	8	157,138	0.47
15	I-80 and I- 94, US 6, SR 51 in Lake Station	24	102,676	0.49

3.1.5 Recommended Exits for EV Stations in Illinois

The gap contained in Illinois is between the DCFC station in Geneseo near exit 19 and the station in Joliet, near exit 130. The two other gaps partially in Illinois are 1) a gap between exit 130 in Joliet and the station in Mishawaka, Indiana near exits 77 and 83, as discussed above, and 2) the gap between the exit 130 in Joliet and the station in Williamsburg, Iowa near exit 220, as discussed below.

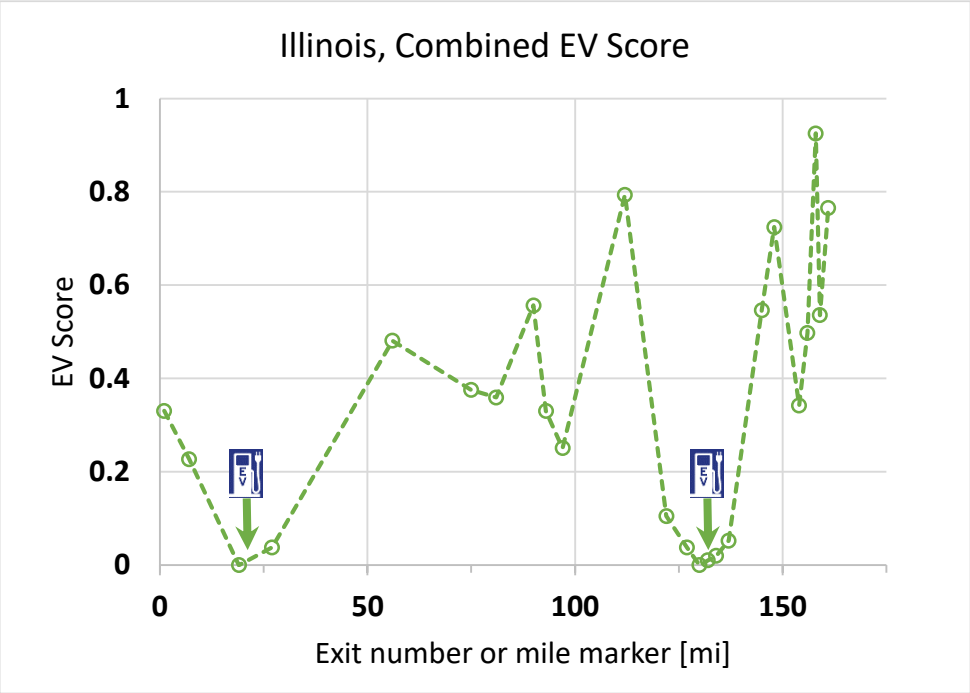

Figure 3.4. EV suitability score by exit mile marker in Illinois. Existing Round 6 DCFC stations in Joliet near exit 130 (Joliet) and near exit 19 (Geneseo) are indicated by green arrows and EV signs.

The gap between Geneseo and Joliet needs two new DCFC stations to be converted to EV-Ready. These could be located at exit 56 in Princeton and at exit 90 in Ottawa, which both have about 30 amenities within 1 mi. These recommended exits are listed in Table 3.9, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.9. Recommended Exits for Two New DCFC Stations in Illinois between Existing DCFCs near Exit 130 in Joliet and near Exit 19 in Geneseo, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
56	I-80 and IL-26 in Princeton	30	21,900	0.48
90	I-80 and IL-23 in Ottawa	28	33,653	0.54

3.1.6 Recommended Exits for EV Stations in Iowa

Two gaps within Iowa are 1) a gap between the station near exit 3 in Council Bluffs and the planned station near exit 93 in Stuart, and 2) a gap between the DCFC station near exit 118 in Waukee and the station near exit 220 in Williamsburg. A third gap mostly within Iowa is between exit 220 in Williamsburg and exit 19 in Geneseo, Illinois. Once the station in Stuart is

commissioned, the segment between exits 93 and 118 will be EV-Ready. DCFC station locations are shown in Figure 3.5.

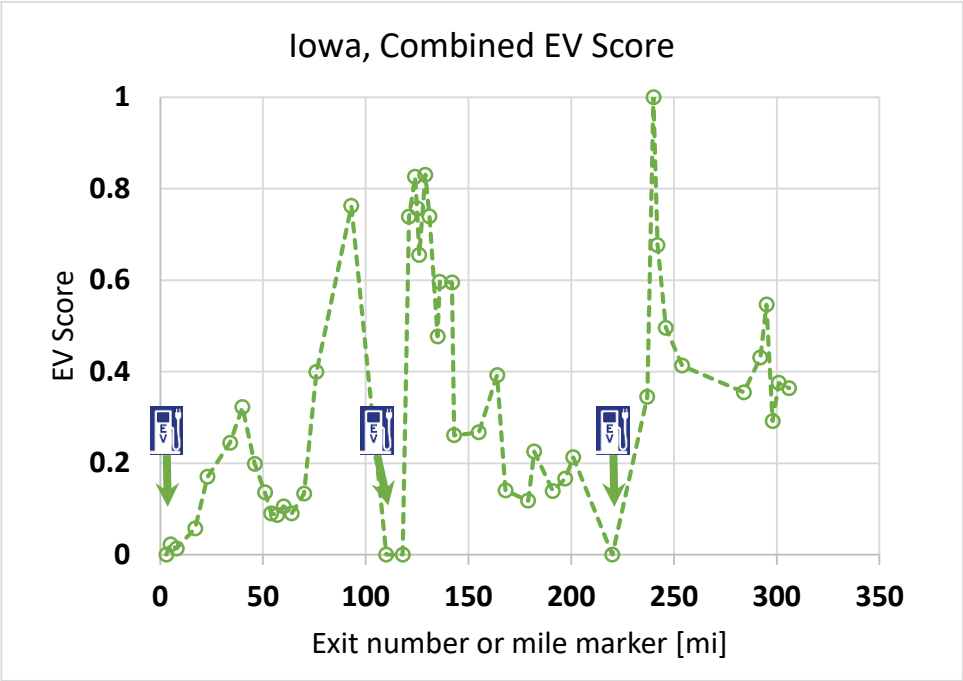

Figure 3.5. EV suitability score by exit mile marker in Iowa. The existing Round 6 DCFC stations near exit 3 (Council Bluffs), near exit 118 (Waukee), and exit 220 (Williamsburg), and the planned station near exit 93 (Stuart), are indicated by green arrows and EV signs.

The gap between exits 3 and 118 can be converted to EV-Ready by the addition of a station at either exit 46 near Walnut or exit 51 near Marne plus an upgrade of the planned Station at exit 93 in Stuart. Although neither of exits 46 or 51 has many amenities, none of the exits in this gap has more than 10, except for exit 40 in Avoca, but this exit is more than 50 mi from the planned station in Stuart. These recommended exits are listed in Table 3.10, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.10. Recommended Exits for Two New DCFC Stations in Iowa between Existing DCFCs near Exit 3 in Council Bluffs and near Exit 118 in Waukee, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new station recommended, at either of the following two exits				
46	I-80 and Antique City Dr near Walnut	4	23,000	0.20
51	I-80 and M56 near Marne	0	22,700	0.14
One new station recommended, in addition to one of the previous two exits				
93	I-80 and Division St. in Stuart	15	22,200	0.76

The gap between exits 118 and 220 will require two new DCFC stations to convert to EV-Ready. One new station at exit 182 in Grinnell and another at either exit 164 or 168 near Newton would convert this gap to EV-Ready. These exits each have over 30 amenities. These recommended exits are listed in Table 3.11, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.11. Recommended Exits for Two New DCFC Stations in Iowa between Existing DCFC Stations near Exit 118 in Waukee and near Exit 220 in Williamsburg, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
One new station recommended, at either of the following two exits				
164	I-80 and US-6 in Newton	20	29,700	0.39
168	I-80 and Iowa Speedway Dr in Newton	8	24,900	0.14
One new station recommended, in addition to one of the previous two exits				
182	I-80 and IA-146 in Grinnell	9	25,200	0.23

The gap between exit 220 in Williamsburg and exit 19 in Geneseo, Illinois would need two new DCFC stations to convert to EV-Ready. One option would be to locate new stations near exit 240 in Coralville and exit 284 in Walcott. Another option would be to locate the stations near exit 242 in Iowa City and exit 292 in Davenport. These recommended exits are listed in Table 3.12, with the number of amenities within 1 mi, total AADT, and the EV suitability score.

Table 3.12. Recommended Exits for Two New DCFC Stations between Existing DCFC Stations near Exit 220 in Williamsburg, Iowa and near Exit 19 in Geneseo, Illinois, with Number of Amenities within 1 mi, AADT, and EV Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	EV Suitability Score
Two new stations recommended, one at each of the following two exits				
240	I-80 and US-6 in Coralville	79	54,100	1.00
284	I-80 and Plainview Rd in Walcott	12	30,200	0.36
Two new stations recommended, one at each of the following two exits, as an alternative to the previous two exits				
242	I-80 and 1st Avenue in Iowa City	31	52,000	0.68
292	I-80 and IA-130 in Davenport	19	33,600	0.43

3.1.7 Comparison of Recommended Exits for EV Stations with State NEVI Plans

As mentioned in Section 1.7, the six states on the I-80 Mid-America Clean Fuels Corridor have submitted EV deployment plans in accordance with NEVI Formula Program guidance. The state plans submitted by Iowa and Indiana identified preliminary locations for new or upgraded DCFCs by exit. The plan submitted by Illinois also identified general, preliminary locations.

New Jersey's National Electric Vehicle Infrastructure Deployment Plan did not identify locations along I-80 for DCFC stations, however I-80 in New Jersey can be considered to be EV-Ready.

The Pennsylvania State Plan for Electric Vehicle Infrastructure Deployment did not identify locations along I-80 for DCFC stations.

The Ohio Department of Transportation did not identify any locations along I-80 for NEVI DCFC stations in the Ohio Electric Vehicle Infrastructure Deployment Plan. Much of I-80 in Ohio is the Ohio Turnpike, and there are restrictions on the use of federal funds on non-federal-aid highways such as tollways.

The Indiana Electric Vehicle Infrastructure Deployment Plan listed exits 15, 56, 90, 101, and 126 as preliminary candidates for DCFC stations, with exits 1, 6, 10, 22, 72, and 144 as alternates. As described in Section 3.2.4, the following exits are recommended:

- One of exits 121 or 126, in combination with exit 13 in Ohio
- One of exits 6, 9, 10, 12, 15, and exit 56

Some of the information that the Indiana Department of Transportation used in prioritizing exits differed from that used in the present study, such as estimated number of trips and dwell times at interchanges along Indiana's AFCs, and electric service to areas near exits.

The Illinois Electric Vehicle Infrastructure Deployment Plan identified three preliminary, general locations for new DCFC stations along I-80. These were in Bureau, La Salle, and Cook Counties, which are consistent with the exits recommended in Section 3.2.5.

Iowa's Electric Vehicle Infrastructure Deployment Plan identified a gap in the I-80 corridor that included exits 50, 64, 70, and another gap that included exits 179, 182, and 191. This study identified three gaps (one extending into Illinois) and recommended new DCFC stations at one of exits 46 or 52 and an upgrade to a planned station at exit 93 to fill one gap, new stations are one of exits 164 or 186 and at exit 182 to fill the second gap, and two new stations, at either exits 240 and 284 or at exits 242 and 292 to fill the third gap.

3.2 RECOMMENDED EXITS FOR CNG STATIONS

Based on the analysis described above, exits along the corridor are prioritized for siting new CNG stations to convert the CNG-Pending Segments to CNG-Ready as described for each state, below. These recommendations are preliminary, and specific sites for new stations should be assessed based on additional information, including property ownership, local zoning and land use regulations, existing utility services and estimate costs of any service upgrades, if needed, as well as input from surrounding residents and community authorities having jurisdiction.

3.2.1 Recommended Exits for CNG Stations in New Jersey

If the CNG station at Wayne Township Landfill in Lock Haven, Pennsylvania, can qualify as an AFC Round 6 station with an exception for distance from the corridor (the station is just over 11 mi from I-80), and if the Clean Energy CNG station in Bronx, New York, can serve as a station on the I-80 Mid-America Clean Fuels Corridor, then all of New Jersey can be considered to be CNG-Ready. If the station in Haven, Pennsylvania, cannot be considered an AFC Round 6 CNG station, then I-80 in New Jersey is CNG-Pending, but exits in New Jersey are not ranked high for CNG stations, since locations in Pennsylvania would convert more miles to CNG-Pending. The suitability score for CNG stations is plotted against distance (measured from the Pennsylvania border) in Figure 3.6. As discussed below, exits in Pennsylvania offer more advantageous locations for a new CNG station.

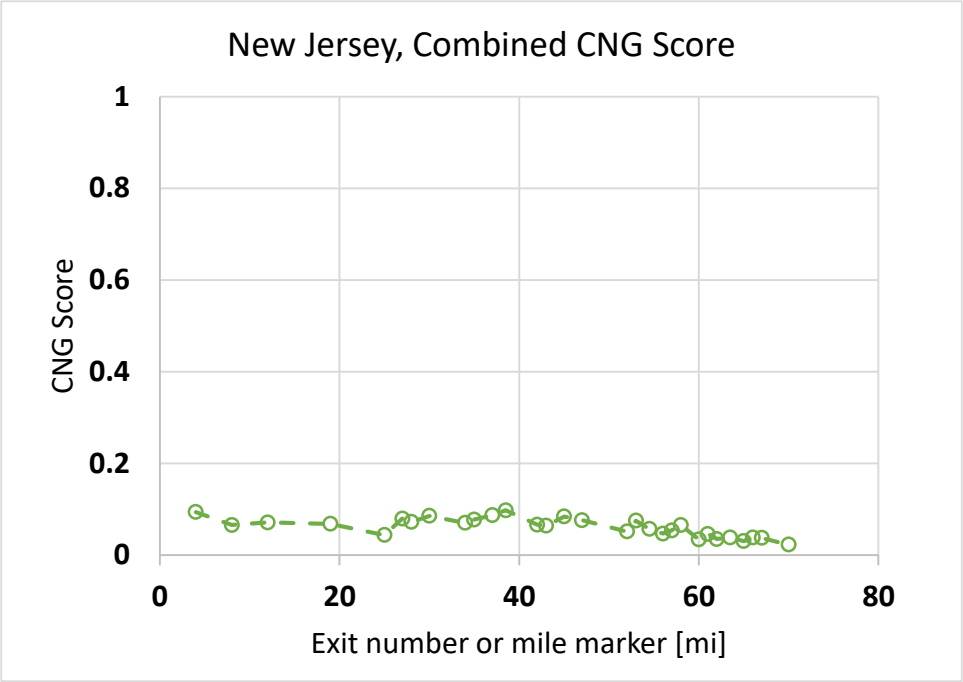

Figure 3.6. CNG suitability score by exit mile marker in New Jersey.

3.2.2 Recommended Exits for CNG Stations in Pennsylvania

I-80 in western Pennsylvania is CNG-Ready, as far as exit 101 near DuBois If the CNG station in Lock Haven, Pennsylvania cannot qualify as an AFC Round 6 station due to its distance from the corridor (slightly over 11 mi), then exits 241 and 242 are well suited since they are just less than 150 mi from stations in DuBois, Pennsylvania (near exit 101) and the Clean Energy CNG station in Bronx, New York. The CNG suitability is plotted against distance (measured from the Pennsylvania/Ohio border) in Figure 3.7.

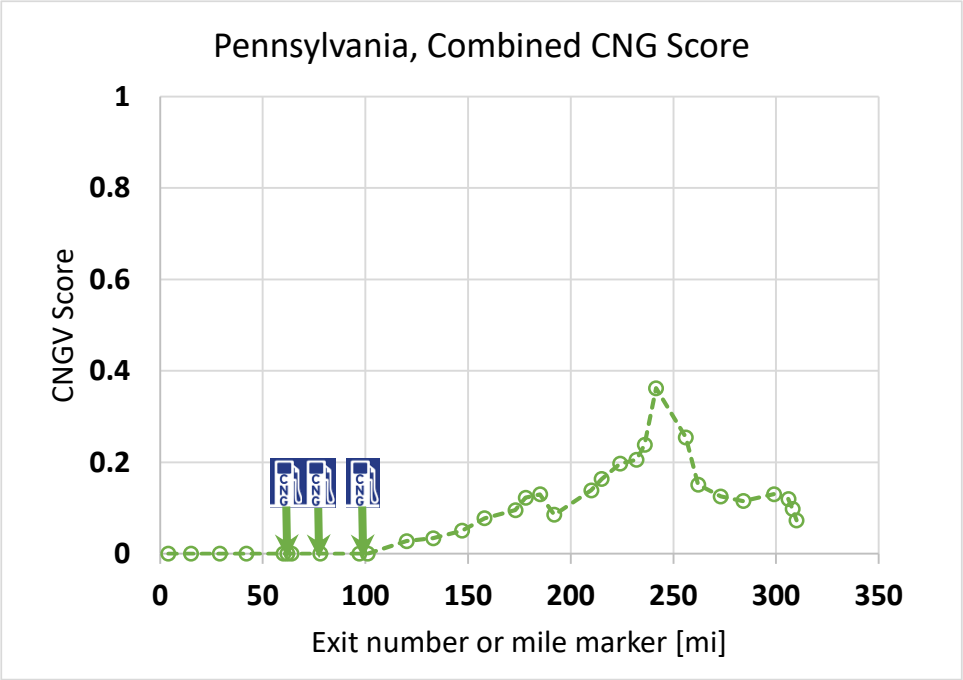

Figure 3.7. CNG suitability score by exit mile marker in Pennsylvania. Existing AFC Round 6 CNG stations at exits 60 (Shippenville), 62/64 (Clinton, and 97/101 (DuBois), are indicated by green arrows and CNG signs.

Although there are fewer amenities near exits 241 and 242 than other parts of this gap (in particular, many exits in New Jersey have more amenities and high AADT), these exits are the only two at which one new CNG station would convert this gap to CNG-Ready. These two exits are listed in Table 3.13, with the number of amenities within 5 mi, AADT of trucks and buses, and the CNG suitability score. Note that a new CNG station is needed at only one of the exits to convert the gap to CNG-Ready. Locating new CNG stations at other exits in this gap would require two new stations to convert this section to CNG-Ready.

Table 3.13. Recommended Exits for a New CNG Station in Pennsylvania, with Number of Amenities within 5 mi, AADT, and CNG Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	Suitability Score
241/242	I-80 and PA-339 in Berwick/Nescopeck	24	9,998	0.36

3.2.3 Recommended Exits for CNG Stations in Ohio

I-80 in Ohio, east of the Clean Energy CNG station near the Cleveland Hopkins Int'l Airport near exit 161 near Brook Park, Ohio, is CNG-Ready. Exits in western Ohio are scored high for potential CNG station locations as shown in Figure3.8. A new CNG station located in Ohio between exits 13 and 59 (inclusive) or at the Tiffin River/Indian Meadow service plazas

would convert the gap between the CNG station in South Bend near exit 72 in Indiana and the CNG station near exit 161.

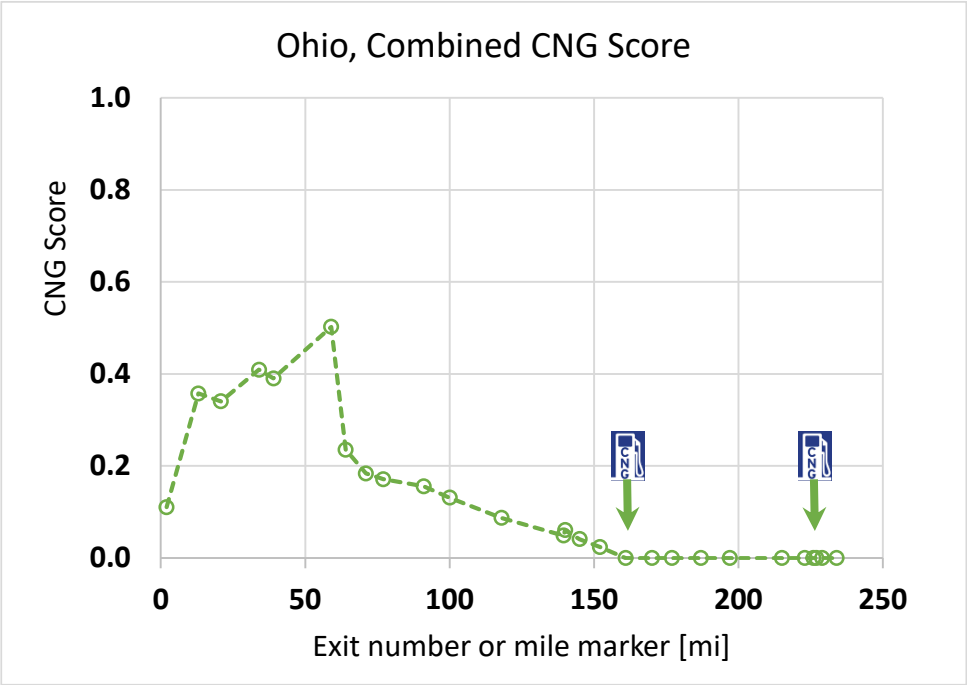

Figure 3.8. CNG suitability score by exit mile marker in Ohio. Existing AFC Round 6 CNG stations at exits 161 (Brook Park, Strongsville) and 226 (Youngstown), are indicated by green arrows and CNG signs.

These recommended exits are listed in Table 3.14, with the number of amenities within 5 mi, AADT of trucks and buses, and the CNG suitability score. Note that a new CNG station is needed at only one of the exits to convert the gap to CNG-Ready.

Table 3.14. Recommended Exits for a New CNG Station in Ohio, with Number of Amenities within 5 mi, AADT, and CNG Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	CNG Suitability Score
13	I-80 and US-20 Alt, OH-15 near Holiday City	15	9,436	0.36
20.8	Tiffin River and Indian Meadow service plazas, in West Unity	10	9,436	0.34
34	I-80 and OH-108 near Wauseon, Ohio	25	9,994	0.41
39	I-80 and OH-109 near Delta, Ohio	15	10,453	0.39
59	I-80 and I-475, US-20, Maumee, Ohio	44	10,881	0.50

3.2.4 Recommended Exits for CNG Stations in Indiana

Four CNG stations in Indiana are shown in Figure 3.9. Although I-80 is CNG-Pending east of the IGS CNG Services – Speedway station in South Bend near exit 72, exits in eastern Indiana were scored low for CNG stations, since the gap between the Speedway station in South Bend and the CNG station at the Cleveland Hopkins Int'l Airport near exit 161 can be converted to CNG-Ready by a single station if it is located in Ohio between exits 13 and 59, as noted above. Locating a new CNG station in eastern Indiana would require a second new CNG station in western Ohio to convert this gap to CNG-Ready. Therefore, no exit in Indiana is recommended for a new CNG station.

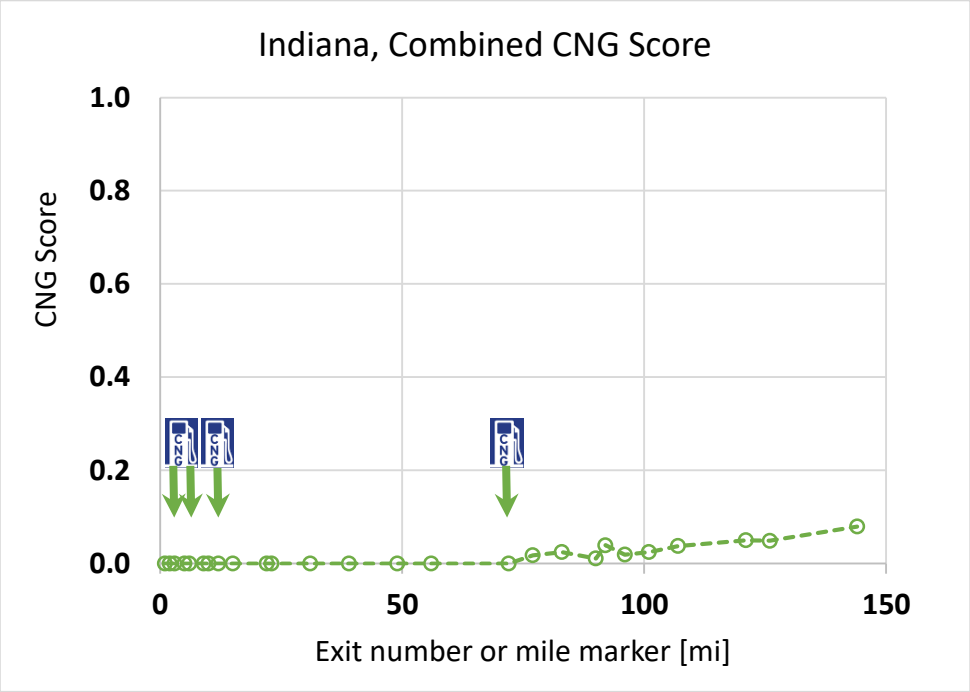

Figure 3.9. CNG suitability score by exit mile marker in Indiana. Existing Round 6 CNG stations at exits 5, 6, 12, and 72 are indicated by green arrows and CNG signs.

3.2.5 Recommended Exits for CNG Stations in Illinois

All of I-80 in Illinois is CNG-Ready, therefore no new CNG stations are recommended.

3.2.6 Recommended Exits for CNG Stations in Iowa

The gap in Iowa stretches 219 mi from the CNG station near exit 136 in Des Moines to the station near exit 295A in Davenport, as shown in Figure 3.10. Adding a station at any of the exits from exit 155 through exit 284 (inclusive) would convert this gap to CNG-Ready. With over 90 amenities and truck and bus AADT over 13,000 per day, exit 240 in Coralville has the

highest CNG suitability score. Exits 242 and 246 in Iowa City have similar AADT values, but fewer amenities, as shown in Table 3.15. A new CNG station is needed at only one of these exits to convert this gap to CNG-Ready.

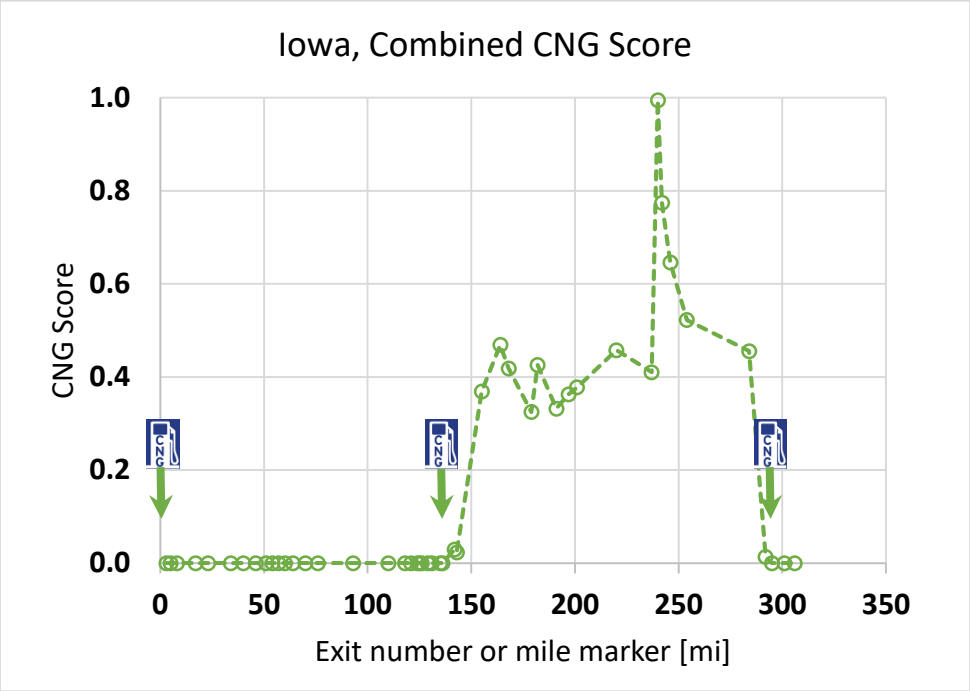

Figure 3.10. CNG suitability score by exit mile marker in Iowa. Existing Round 6 CNG stations at exits 1 (near Council Bluffs), 136 (in Des Moines), and 295 (In Davenport) are indicated by green arrows and CNG signs.

Table 3.15. Recommended Exits for a New CNG Station in Indiana, with Number of Amenities within 5 mi, AADT, and CNG Suitability Score

Exit Number or Mile Marker	Interchange	Number of Amenities	AADT (vehicles/day)	Suitability Score
240	I-80 and US-6 in Coralville	91	13,965	0.99
242	I-80 and 1st Ave in Iowa City	51	13,819	0.77
246	I-80 and IA-1 in Iowa City	29	13,846	0.65

3.3 DISADVANTAGED COMMUNITIES NEAR EXITS

3.3.1 Disadvantaged Communities near Exits in New Jersey

Disadvantaged communities identified in the Joint Office interim guidance (ANL, 2022) interim guidance that are within 2 mi and 5 mi of I-80 exits in New Jersey and one exit in New York State are listed in Table 3.16. Note that some exits with very few amenities are not listed.

Table 3.16. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in New Jersey

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
4A/4B/4C/4E	US 46, NJ-94 in Knowlton Township, New Jersey	Y	0	0%	N	1	14%
8	Knowlton Tourist Welcome Center in Columbia, New Jersey	Y	1	50%	N	1	20%
12	CR-521 in Hope, New Jersey	Y	1	33%	N	1	17%
19	CR-517 in Allamuchy Township, New Jersey	Y	0	0%	N	2	15%
25	US-206 in Budd Lake, New Jersey	Y	0	0%	N	1	4%
27A/27B	US-206, NJ-183 in Roxbury Township, New Jersey	Y	0	0%	N	0	0%
28	US-46, NJ-10 in Roxbury Township, New Jersey	Y	0	0%	N	1	3%
30	Howard Blvd in Mount Arlington, New Jersey	Y	0	0%	N	1	3%
34	NJ-15 in Wharton, New Jersey	Y	1	10%	N	1	3%
35	CR-661 in Rockaway Township, New Jersey	Y	1	9%	N	1	3%
37	NJ-513 in Hibernia, New Jersey	Y	0	0%	N	1	3%
38/39	US-46, NJ-53 in Denville, New Jersey	Y	0	0%	N	1	3%
42A/42B/42C	US-202 in Parsippany, New Jersey	Y	0	0%	N	0	0%
43A/43B	I-287 in Parsipanny, New Jersey	Y	0	0%	N	0	0%
45	Beverwyck Rd in Parsippany-Troy Hills, New Jersey	Y	0	0%	N	0	0%
47A/47B	I-280, US-46 in Parsippany-Troy Hills, New Jersey	Y	0	0%	N	0	0%
52	US-46, Bridges Rd in Fairfield, New Jersey	Y	1	9%	N	7	11%
53	US-46, NJ-23 in Wayne, New Jersey	Y	1	8%	N	15	21%
54/55A/55B	Minnisink Rd, Union Blvd in Totowa, New Jersey	Y	2	13%	N	30	31%
56/56A/56B	Squirrelwood Rd in Woodland Park, New Jersey	Y	17	47%	N	48	40%
57/57A/57B	Main St. in Paterson, New Jersey	Y	25	53%	N	54	40%
58A/58B	Madison Ave in Paterson, New Jersey	Y	29	57%	N	57	42%
60	NJ-20, McLean Blvd in Paterson, New Jersey	Y	26	58%	N	65	43%
61	River Dr in Elmwood Park, New Jersey	Y	26	63%	N	65	43%

Table 3.16. (Cont.)

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
62A/62B	Garden State Parkway, Saddle River Rd in Saddle Brook, New Jersey	Y	14	48%	N	70	45%
63/64	NJ-17 in Hackensack, New Jersey	Y	17	53%	N	68	47%
65	Wesley St, North St. in Teterboro, S. Hackensack, New Jersey	Y	19	56%	N	70	48%
66	Vreeland Ave, Kennedy St. in Hackensack, New Jersey	Y	18	62%	N	79	51%
67	2nd St. in Ridgefield Park, New Jersey	Y	15	54%	N	82	52%
70A/70B	I-95 NJ Turnpike in Teaneck, New Jersey	Y	17	47%	N	149	65%
73	I-95. NJ Turnpike, Hudson Terrace in Fort Lee, New Jersey	Y	36	64%	N	324	79%
4A/4B	I-95 in Bronx, NY	Y	173	96%	N	449	86%

3.3.2 Disadvantaged Communities near Exits in Pennsylvania

Disadvantaged communities identified in the Joint Office interim guidance (ANL, 2022) interim guidance that are within 2 mi and 5 mi of I-80 exits in Pennsylvania are listed in Table 3.17 Note that some exits with very few amenities are not listed.

Table 3.17. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in Pennsylvania

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
4A/4B	PA-760, I-376 in West Middlesex, Pennsylvania	N	1	25%	Y	5	26%
15	US-19, PA-158 near Mercer, Pennsylvania	N	0	0%	Y	1	17%
29	PA-8, Barkeyville, Pennsylvania	N	0	0%	Y	0	0%
42	PA-38, Emlenton, Pennsylvania	N	0	0%	Y	0	0%
60	PA-66 near Shippenville, Pennsylvania	Y	0	0%	Y	0	0%
62	PA-68, Clarion, Pennsylvania	Y	0	0%	Y	0	0%
64	PA-66 near Clinton, Pennsylvania	Y	0	0%	Y	0	0%
78	PA-26, Brookville, Pennsylvania	Y	0	0%	Y	0	0%
97	US-219 near DuBois, Pennsylvania	Y	0	0%	Y	0	0%

Table 3.17. (Cont.)

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
101	PA-255 near DuBois, Pennsylvania	Y	0	0%	Y	0	0%
120	PA-879 in Clearfield, Pennsylvania	N	0	0%	N	0	0%
133	PA-53 in Kylertown, Pennsylvania	N	1	50%	N	1	33%
147	PA-144 in Snow Shoe, Pennsylvania	N	0	0%	N	0	0%
158	PA-150 in Milesburg, Pennsylvania	N	0	0%	N	0	0%
173	PA-64 in Mill Hall, Pennsylvania	N	0	0%	N	2	33%
178	US-220 N near Lock Haven, Pennsylvania	N	0	0%	N	3	50%
185	PA-477 in Loganton, Pennsylvania	N	1	33%	N	1	25%
192	PA-880 near Eastville, Pennsylvania	N	1	33%	N	1	20%
210	US-15 near New Columbia, Pennsylvania	N	1	25%	N	1	13%
215	PA-254, Milton, Pennsylvania	N	0	0%	N	1	11%
224	PA-54 in Danville, Pennsylvania	N	0	0%	N	0	0%
232	PA-42, PA-44 in Bloomsburg, Pennsylvania	N	0	0%	N	0	0%
236	PA-487 in Bloomsburg, Pennsylvania	N	0	0%	N	0	0%
241/242	PA-339 in Berwick/Nescopeck, Pennsylvania	N	0	0%	N	1	9%
256	PA-93, Conyngham, Pennsylvania	N	0	0%	N	0	0%
262	PA-309, Drums, Hazelton, Pennsylvania	N	0	0%	N	1	9%
273	PA-940, PA-437 in White Haven, Pennsylvania	N	0	0%	N	1	20%
284	PA 115 in Blakeslee, Pennsylvania	N	0	0%	N	0	0%
299	PA-715, Tannersville, Pennsylvania	N	1	33%	N	2	22%
302	PA-33 in Bartonsville	N	2	29%	N	4	33%
305, 307	PA-191, PA-611, US-209, Pennsylvania	N	3	38%	N	5	33%
308	Prospect St., Stroudsburg, PA, Pennsylvania	Y	3	43%	N	4	27%
310	PA-611, Delaware Water Gap, Pennsylvania	Y	2	25%	N	4	31%

3.3.3 Disadvantaged Communities near Exits in Ohio

Disadvantaged communities identified in the Joint Office interim guidance (ANL, 2022) that are within 2 mi and 5 mi of I-80 exits in Ohio are listed in Table 3.18. Note that some exits with very few amenities are not listed.

Table 3.18. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in Ohio

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
2	US-20 Alt, OH-15 in Holiday City, Ohio	N	0	0%	N	0	0%
13	US-20 Alt, OH-15 near Holiday City, Ohio	N	0	0%	N	0	0%
20.8	Tiffin River and Indian Meadow Service Plazas, in West Unity, Ohio	N	0	0%	N	0	0%
34	OH-108 near Wauseon, OH, Ohio	N	0	0%	N	0	0%
39	OH-109 near Delta, OH, Ohio	N	0	0%	N	0	0%
59	I-475, US-20, Maumee, OH, Ohio	N	1	9%	N	9	21%
64	I-75 in Perrysburg, Ohio	N	0	0%	N	15	36%
71	I-280, OH-420 in Perrysburg, Ohio	N	0	0%	N	0	0%
77	Wyandot & Blue Heron Service Plazas, Ohio	N	0	0%	N	0	0%
91	OH-53 near Fremont, Ohio	N	0	0%	N	0	0%
100	Commodore Perry & Erie Island Service Plazas, Ohio	N	0	0%	N	0	0%
118	US-250, Milan, OH, Ohio	N	0	0%	N	1	13%
139.5	Vermillion Valley and Middle Ridge Service Plazas, Ohio	N	0	0%	N	5	20%
140	OH-5, Amherst, Ohio	N	1	14%	N	13	38%
145	OH-57 near Elyria, Ohio	N	6	50%	N	14	33%
152	OH-10 in North Ridgeville, Ohio	N	0	0%	N	1	3%
161	I-71, US-42 in Strongsvillle, Ohio	N	0	0%	Y	3	5%
170.1	Towpath & Great Lakes Service Plazas, in Broadview Heights, Ohio	N	0	0%	Y	0	0%
177	I-77 in Richfield, Ohio	N	0	0%	Y	0	0%
187	OH-14 in Streetsboro, Ohio	N	0	0%	Y	0	0%
197	Brady's Leap & Portage Travel Plazas, Ohio	N	0	0%	Y	0	0%
215	Hallock Young Rd in Lordstown, Ohio	N	0	0%	Y	5	42%
223	OH-46, near Niles and Youngstown, Ohio	N	2	33%	Y	13	41%
226	Salt Springs Road, near Youngstown, Ohio	N	6	67%	Y	23	51%
227	US-422, Girard, Ohio	N	6	55%	Y	26	55%
229	OH-193, Youngstown, Ohio	N	5	56%	Y	25	57%
234	US-62, Youngstown, Ohio	N	2	33%	Y	11	46%

3.3.4 Disadvantaged Communities near Exits in Indiana

Disadvantaged communities identified in the Joint Office interim guidance (ANL, 2022) interim guidance that are within 2 mi and 5 mi of I-80 exits in Indiana are listed in Table 3.19. Note that some exits with very few amenities are not listed.

Table 3.19. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in Indiana

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
1	US-41 in Munster, Indiana	N	14	64%	Y	47	66%
2	Indianapolis Blvd in Hammond, Indiana	N	10	53%	Y	44	68%
3	Kennedy Ave in Hammond, Indiana	N	12	60%	Y	46	68%
5	US-12, IN-912 in Hammond, Indiana	N	8	53%	Y	52	71%
6	Burr St. in Gary, Indiana	N	11	69%	Y	48	73%
9	Grant St. in Gary, Indiana	N	21	91%	Y	39	74%
10	IN-53 in Gary, Indiana	N	22	88%	Y	38	72%
12	I-65 in Gary, Indiana	N	10	77%	Y	35	76%
15	I- 94, US 6, SR 51 in Lake Station, Indiana	N	7	78%	Y	18	56%
22	George Ade (E) and John T. McCutcheon (W) Travel Plazas in Portage, Indiana	N	6	67%	Y	11	39%
23	Willowcreek Rd in Portage, Indiana	N	2	33%	Y	8	32%
31	IN-49 in Chesterton, Indiana	N	0	0%	Y	1	6%
39	US-421 near Westville, Indiana	N	0	0%	Y	0	0%
49	IN-39 near La Porte, Indiana	N	0	0%	Y	2	15%
56	Knute Rockne (E) and Wilbur Shaw (W) Travel Plazas, Indiana	N	1	50%	Y	1	14%
72	US-31 in South Bend, Indiana	N	1	33%	Y	11	44%
77	US-31, IN-933 in South Bend, Indiana	N	1	10%	N	19	33%
83	IN-331 in Granger, Indiana	N	0	0%	N	2	6%
90	George N. Craig (E) and Henry Schricker (W) Travel Plazas, Indiana	N	1	17%	N	8	33%
92	IN-19 in Elkhart, Indiana	N	1	17%	N	8	33%
96	County-17 in Elkhart, Indiana	N	0	0%	N	2	14%
101	IN-15 near Bristol, Indiana	N	1	25%	N	2	29%
107	US-131, IN-13 near Middlebury, Indiana	N	1	25%	N	2	25%
121	IN-9 in Howe, Indiana	N	2	40%	N	4	44%
126	Gene Stratton Porter (E) and Ernie Pyle (W) Travel Plazas, Indiana	N	2	100%	N	3	50%
144	I-69 near Fremont, Indiana	N	0	0%	N	1	11%

3.3.5 Disadvantaged Communities near Exits in Illinois

Disadvantaged communities identified in the Joint Office interim guidance (ANL, 2022) interim guidance that are within 2 mi and 5 mi of I-80 exits in Illinois are listed in Table 3.20. Note that some exits with very few amenities are not listed.

Table 3.20. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in Illinois

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV Ready-segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
1	IL-84 near Rapids City, Illinois	N	0	0%	Y	1	10%
7	Cleveland Rd in Colona, Illinois	N	0	0%	Y	3	23%
19	IL-62 in Geneseo, Illinois	N	0	0%	Y	0	0%
27	State St. in Atkinson, Illinois	N	0	0%	Y	0	0%
56	IL-26 in Princeton, Illinois	N	0	0%	Y	0	0%
75	IL-251 near Peru, Illinois	N	0	0%	Y	1	7%
81	IL-178 near North Utica, Illinois	N	0	0%	Y	0	0%
90	IL-23 in Ottawa, Illinois	N	1	20%	Y	1	11%
93	IL-71 in Ottawa, Illinois	N	0	0%	Y	1	9%
97	E 24th Rd near Marseilles, Illinois	N	0	0%	Y	0	0%
112	IL-47 in Morris, Illinois	N	0	0%	Y	0	0%
122	Ridge Rd in Minooka, Illinois	N	0	0%	Y	0	0%
127	Houbolt Rd in Joliet, Illinois	N	3	38%	Y	14	32%
130A/130B	IL-7 in Joliet, Illinois	N	9	45%	Y	20	38%
132A/132B	US-52 in Joliet, Illinois	N	13	68%	Y	21	40%
134	Briggs St. in Joliet, Illinois	N	9	60%	Y	20	43%
137	US-30 in New Lenox, Illinois	N	3	27%	Y	14	39%
145	US-45 in Mokena, Illinois	N	0	0%	Y	6	15%
148A/148B	IL-43 in Tinley Park, Illinois	N	2	17%	Y	8	19%
154	Kedzie Ave in Hazel Crest, Illinois	N	10	59%	Y	36	54%
4	Dixie Hwy in Hazel Crest, Illinois	N	10	53%	Y	41	59%
2A/2B	IL-1 in East Hazel Crest, Illinois	N	9	56%	Y	48	68%
159	Chicago Southland Lincoln Oasis, Illinois	N	9	53%	Y	51	69%
161	US-6 in Lansing, Illinois	N	8	53%	Y	50	69%

3.3.6 Disadvantaged Communities near Exits in Iowa

Disadvantaged communities identified by census tract in the Joint Office interim guidance (ANL, 2022) interim guidance that are within 2 mi and 5 mi of I-80 exits in Iowa are listed in Table 3.21. Note that some exits with very few amenities are not listed.

Table 3.21. Number and Percentage of Disadvantaged Communities (DACs) in Census Tracts (CTs) within 2 or 5 mi of I-80 Mid-America Clean Fuels Corridor Exits in Iowa

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
1	24th St. in Council Bluffs, Iowa	N	11	79%	Y	49	62%
3	S Expressway in Council Bluffs, Iowa	N	6	55%	Y	31	63%
5	Madison Ave in Council Bluffs, Iowa	N	4	36%	Y	15	50%
8	US-6 near Council Bluffs, Iowa	N	0	0%	Y	8	38%
17	Magnolia Rd near Underwood, Iowa	N	0	0%	Y	0	0%
23	IA-24 near Neola, Iowa	N	0	0%	Y	0	0%
34	East St. in Shelby, Iowa	N	0	0%	Y	0	0%
40	US-59 in Avoca, Iowa	N	0	0%	Y	1	25%
46	Antique City Dr near Walnut, Iowa	N	0	0%	Y	0	0%
51	M56 near Marne, Iowa	N	0	0%	Y	0	0%
54	IA-173 near Atlantic, Iowa	N	0	0%	Y	0	0%
57	620th St. near Atlantic, Iowa	N	0	0%	Y	0	0%
60	US-71, Iowa	N	0	0%	Y	0	0%
64	690th Street, Iowa	N	0	0%	Y	0	0%
70	IA-148, County Rd F58 near Anita, Iowa	N	0	0%	Y	0	0%
76	White Pole Rd in Adair, Iowa	N	0	0%	Y	0	0%
93	Division St. in Stuart, Iowa	N	0	0%	Y	0	0%
110	US-169, US-6 in De Soto, Iowa	N	0	0%	Y	0	0%
118	Grand Prairie Parkway in Waukee, Iowa	N	0	0%	Y	0	0%
121	Jordan Creek Pkwy in West Des Moines, Iowa	N	0	0%	Y	1	3%
124	University Ave in West Des Moines, Iowa	N	0	0%	Y	2	5%
125	US-6 in Clive, Iowa	N	0	0%	Y	2	5%
126	Douglas Ave in Urbandale, Iowa	N	0	0%	Y	2	5%
129	86th St. in Urbandale, Iowa	N	0	0%	Y	3	8%
131	IA-28 in Urbandale, Iowa	N	1	7%	Y	11	23%
135	IA-415 in Des Moines, Iowa	N	4	57%	Y	18	33%
136	US-69 in Des Moines, Iowa	N	4	57%	Y	18	40%
142	US-6W, U.S.65 N in Altoona, Iowa	N	0	0%	N	4	20%
143	1st Ave, NE 72nd St. in Altoona, Iowa	N	0	0%	N	1	8%
155	IA-117 in Colfax, Iowa	N	0	0%	N	0	0%

Table 3.21. (Cont.)

I-80 Mile Marker or Exit Number	Location (interchange, city, state)	On EV-Ready segment?	Number of DACs within 2 mi	Percent of CTs within 2 mi that are DACs	On CNG-Ready segment?	Number of DACs within 5 mi	Percent of CTs within 5 mi that are DACs
164	US-6 in Newton, Iowa	N	3	60%	N	4	50%
168	Iowa Speedway Dr in Newton, Iowa	N	2	50%	N	4	57%
179	Hwy T38, Iowa	N	1	33%	N	2	40%
182	IA-146 in Grinnell, Iowa	N	1	50%	N	2	40%
191	US-63 near Malcom, Iowa	N	0	0%	N	0	0%
197	V18 Rd near Brooklyn, Iowa	N	0	0%	N	0	0%
201	IA-21 in Brooklyn, Iowa	N	0	0%	N	0	0%
220	IA-149 in Williamsburg, Iowa	N	0	0%	N	0	0%
237	Ireland Ave in Tiffin, Iowa	N	1	25%	N	3	43%
240	US-6 in Coralville, Iowa	N	3	43%	N	4	22%
242	1st Avenue in, Iowa City, Iowa	N	2	18%	N	4	17%
246	IA-1 in, Iowa City, Iowa	N	0	0%	N	4	18%
254	Downey St. in West Branch, Iowa	N	0	0%	N	0	0%
284	Plainview Rd in Walcott, Iowa	N	0	0%	N	0	0%
292	IA-130 in Davenport, Iowa	N	0	0%	N	4	14%
295A	US-61 Business in Davenport, Iowa	N	0	0%	Y	6	16%
301	Middle Road in Bettendorf, Iowa	N	0	0%	Y	5	15%
306	US-67 in Le Claire, Iowa	N	0	0%	Y	1	6%

3.4 STAKEHOLDER OUTREACH

3.4.1 Materials for Broad Outreach

The team conducted public outreach activities to engage stakeholders. Posters, buttons, and other materials were developed to be used in publicizing the I-80 Mid-America Corridor and distributed to team members. A logo for the I-80 Mid-America Clean Fuels Corridor was designed for use in outreach materials and communication. The logo is shown in Figure 3.11.

Figure 3.11. The I-80 Mid-America Clean Fuels Corridor logo.

The pin-on button developed for those staffing convenings or other events, to wear to encourage questions and engagement on the I-80 Mid-America Corridor, is shown in Figure 3.12. The poster developed is shown in Figure 3.13, with placeholders for up to four stakeholder logos.

Figure 3.12. The pin-on button developed for the I-80 Mid-America Corridor events.

Figure 3.13. The I-80 Mid-America Clean Fuels Corridor poster.

3.4.2 Convenings

In several states Clean Cities Coalitions held convenings to inform regional and local authorities, planners, businesses, and the general public about the Mid-America Corridor, to gather input on preferences or concerns about CNG and DCFC infrastructure planning and deployment, and to identify and publicize funding opportunities and other programs to support deployment.

Convenings held are listed in Table 3.22.

Table 3.22. I-80 Mid-America Clean Fuels Corridor Convenings Held

Location	Date	Lead Organization	Number of Attendees (approx.)
Virtual (via Zoom)	December 7, 2021	Eastern Pennsylvania Alliance for Clean Transportation and Pittsburgh Region Clean Cities	20
Virtual (via Zoom)	December 14, 2021	Eastern Pennsylvania Alliance for Clean Transportation and Pittsburgh Region Clean Cities	25
Virtual (via Zoom)	Dec 8, 2021	Clean Fuels Ohio	30
Virtual (via Zoom)	May 25, 2021	Clean Fuels Ohio	45
Western Illinois University, Moline Illinois (with option to attend virtually via Zoom)	August 16, 2022	Iowa Clean Cities Coalition and Chicago Area Clean Cities Coalition (now the Illinois Alliance for Clean Transportation)	98
Joliet Junior College (with option to attend virtually via Zoom)	November 9, 2022	Chicago Area Clean Cities Coalition (now the Illinois Alliance for Clean Transportation)	69

In the two convenings held by the Pennsylvania Clean Cities Coalitions, participants, including municipal planning organizations (MPOs), municipalities, landowners and others, some participants from rural communities wanted to know about funding for installation of DCFCs. It was noted that some I-80 exits have no electric power or businesses within one mile.

Clean Fuels Ohio held convenings on December 8, 2021, and on May 25, 2022. It reached out to many stakeholders in Ohio and the Midwest, through targeted as well as general outreach via the coalition's contacts. For targeted outreach, they specifically engaged with their fleet members along the corridor, all MPOs and councils of government whose jurisdiction includes I-80, and all of the utilities in Ohio. Additionally, the coalition conducted broad outreach, promoting the event through email, social media, and articles in their monthly newsletter. Several fleets, businesses, and utilities contacted Clean Fuels Ohio about participating in future stakeholder convenings and inquired about funding opportunities for developing CNG and EV infrastructure.

The Iowa Clean Cities Coalition and the Chicago Area Clean Cities Coalition (now the statewide Illinois Alliance for Clean Transportation, or IACT) held a joint convening on August 16, 2022, on the Moline campus of Western Illinois University. Potential speakers and participants were identified and contacted by the coalitions, the Bi-State (Illinois and Iowa) Regional Commission, the Iowa and Illinois Departments of Transportation, and Argonne staff members. Participants included the Mayor of Moline, administrators and officials of the Bi-State Commission and nearby jurisdictions, MPOs, EV charging companies, non-profit organizations, electric utilities, and energy companies (including Trillium, part of Love's Travel Stops & Country Stores, which serve truck drivers and motorists at more than 600 locations in 42 states). Several participants were keenly interested in funding opportunities under NEVI. Concerns were expressed about Iowa's tax on electricity used for vehicles and the payback time for investments in alternative fueling and charging infrastructure.

The Chicago Area Clean Cities Coalition (now known as IACT) held a convening on November 9, 2022, at Joliet Junior College in Joliet, Illinois. The coalition and other partners, including the Illinois DOT, the organization Green Ways 2Go, Argonne, and Trillium/Love's developed the agenda and engaged the speakers. The latter included the Sustainability Coordinator from Joliet Junior College, a County Board member from Will County, and representatives from Illinois DOT, Nicor (the regional natural gas utility), Ozinga (a regional fleet using CNG trucks), Electrify America, Trillium, and Lion electric. The convening was a hybrid (in-person and on-line) event. Over 35 people attended the convening in-person, and more than 30 more attended virtually. Attendees included representatives of regional towns and municipalities, the local press, MPOs, Will County, Joliet Junior College, the University of Illinois, consultants, nonprofit organizations, and associated businesses such as EV charging network companies and renewable energy suppliers. The agenda included a description of the Mid-America Corridor project, funding opportunities and related programs; overviews of EVs and EV charging, CNGVs and CNG fueling stations, and utility territories; and recommendations for additional resources and links where attendees could obtain further information on charging and potential new DCFC locations. Representatives from an electric charging network (Electrify America), two CNG fleet managers, and an electric vehicle manufacturer (Lion Electric) presented their experiences and knowledge of EVs and CNGVs. Participants asked about NEVI and other funding sources, coordination between NEVI and other programs, development of codes and standards relevant to EV charging, and ways to participate in NEVI and other programs.

3.4.3 Additional Outreach Activities

In addition to formal convenings, several Clean Cities Coalitions reached out to various stakeholders. Eastern Pennsylvania Alliance for Clean Transportation and Pittsburgh Region Clean Cities met with representatives from Sheetz convenience stores, Trillium/Love's, and Sunoco to discuss various EV- and CNG-related issues including potential locations for DCFCs and CNG stations. These two coalitions also met with representatives from the Center for Rural Pennsylvania and the Pennsylvania Rural Electric Association to inform rural utilities about the corridors and gather their input.

From October to November 2021, Clean Fuels Ohio researched potential fleet adopters, municipalities, and other stakeholders to inform partners about the project. It coordinated with the MPOs and councils of governments with jurisdiction over segments of I-80 to obtain their input and reach out to their relevant stakeholders. Clean Fuels Ohio also developed a one-page informational handout about the project and how to get involved, which they shared with their members in the vicinity of I-80 as well as with potential infrastructure adopters and users along I-80.

In October 2021, Clean Fuels Ohio began working with Intertrust Technologies to utilize their CleanGrid product, a platform-powered toolkit applicable to data-driven, distributed energy resources (DER) integration planning, renewable energy O&M, retail energy marketplace development, and more. Clean Fuels Ohio is using the technology to effectively plan for future EVSE charging and CNG fueling stations, utilizing a variety of social, economic, and alternative fuel usage data sets. For the convening webinar, Clean Fuels Ohio and Intertrust highlighted their work on collating data sets from a variety of sources to inform mapping of future DCFC stations on the corridor.

Iowa Clean Cities met with West Liberty Food, which expressed interest in transitioning to alternative fuels and in attending the August 16, 2022, convening. The coalition also met with representatives from Trillium/Love's, who expressed interest in developing EV charging stations at Love's locations in Iowa. Iowa Clean Cities also spoke about the MidAmerica Corridor project at the Iowa Association of Energy Efficiency meeting on November 9, 2022, and at the County Conservation Director Association Annual Meeting on August 25, 2021.

In addition to the above, coalitions have engaged in a variety of outreach activities, both as part of their normal activities as resources for alternative fuel information and best practices, and in their dealings with EV and CNG entrepreneurs and potential charging/fueling site hosts.

3.5 RECOMMENDATIONS FOR SIGNAGE

The FHWA recommended in a 2017 report (FHWA, 2017) that dedicated, standardized signage be used on AFCs to indicate the availability of these fuels and specifically called out the national Manual on Uniform Traffic Control Devices (MUTCD) as the recommended resource. The National Electric Vehicle Infrastructure Standards and Requirements specifies that DCFC stations constructed using NEVI funds are required to conform to the MUTCD. The Bipartisan Infrastructure Law directs U.S. DOT to update the MUTCD to no later than May 15, 2023.

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4 RECOMMENDATIONS AND CONCLUSIONS

4.1 SUMMARY OF RECOMMENDED EXITS FOR NEW DCFC AND CNG STATIONS

Exits along the I-80 Mid-America Clean Fuels Corridor have been prioritized for deployment of additional CNG and DCFC stations on the basis of distance from the nearest stations that meet Round 6 AFC criteria, traffic volume, and approximate numbers of the following amenities within 5 mi for CNG or within 1 mi for EV:

- Numbers of fueling stations (CNG and EV)
- Numbers of restaurants (CNG and EV)
- Numbers of convenience stores and pharmacies (CNG and EV)
- Numbers of motels/hotels (CNG and EV)
- Existence of big box stores and supermarkets (EV)
- Number of major attractions/destinations with 1 mi, such as amusement parks or large shopping centers (EV)
- Numbers of truck repair shops or dealers (CNG), and
- Existence of truck parking (CNG)

A suitability score was assigned to exits to guide prioritization, based on a combination of the data listed above, as described in Section 2.3.

4.2 RECOMMENDED EXITS FOR NEW DCFC STATIONS

Exits recommended for new DCFC stations are listed by state in Section 3.1, along with numbers of amenities, truck and bus traffic volumes, and a DCFC suitability score based on amenities, traffic volumes and distances to neighboring DCFC stations that meet Round 6 criteria. Exits recommended for new DCFC stations are listed in Table 4.1. More detail and supporting information are provided by state in Section 3.1.

Table 4.1. Recommended Exits for New DCFC Stations between Existing DCFC Stations

State	Exit Number or Mile Marker	Interchange
One new DCFC station recommended at one of the following two exits		
Pennsylvania	15	I-80 and US-19, PA-158 near Mercer
	19	I-80 and PA-8, Barkeyville
Two new stations recommended, one at each of the following two exits		
Pennsylvania	147	I-80 and PA-144 in Snow Shoe
	192	I-80 and PA-880 near Eastville
Three new stations recommended, as alternative to the previous two exits		
Pennsylvania	133 (or 147)	I-80 and PA-53 in Kylertown
	173	I-80 and PA-64 in Mill Hall
	215	I-80 and PA-254 near Milton
One new DCFC station recommended at one of the following exits		
Pennsylvania	262	I-80 and PA-309, Drums, Hazelton
	273	I-80 and PA-940, PA-437 in White Haven
	284	I-80 and PA 115 in Blakeslee
One new DCFC station recommended at one of the following exits		
Ohio	34	I-80 and OH-108 near Wauseon
	39	I-80 and OH-109 near Delta
	59	I-80 and I-475, US-20, Maumee
	64	I-80 and I-75 in Perrysburg
Three new stations recommended, one at each of the following three exits		
Ohio	118	I-80 and US-250, Milan
	145	I-80 and OH-57 near Elyria
	177	I-80 and I-77 in Richfield
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits		
Ohio	118	I-80 and US-250, Milan
	152	I-80 and OH-10 in North Ridgeville
	177	I-80 and I-77 in Richfield
Three new stations recommended, one at each of the following three exits, as alternative to the previous three exits		
Ohio	118	I-80 and US-250, Milan
	152	I-80 and OH-10 in North Ridgeville
	187	I-80 and OH-14 in Streetsboro
Four new stations recommended, one at each of the following four exits, as alternative to the previous three exits		
Ohio	100	Commodore Perry and Erie Island service plazas
	139.5	Vermillion Valley and Middle Ridge travel plazas
	170.1	Towpath & Great Lakes service plazas
	187	Brady's Leap & Portage service plazas
One new station recommended, at either of the following two exits		
Indiana	121	I-80 and IN-9 in Howe
	126	Gene Stratton Porter and Ernie Pyle travel plazas

Table 4.1. (Cont.)

State	Exit Number or Mile Marker	Interchange
One new station recommended, in addition to one of the previous two exits		
Ohio	13	I-80 and US-20 Alt, OH-15 near Holiday City, Ohio
One new station recommended at the following exit		
Indiana	56	Knute Rockne /Wilbur Shaw travel plazas
One new station recommended, at one of the following exits, in addition to the previous exit		
Indiana	6	I-80 and Burr St. in Gary
	9	I-80 and Grant St. in Gary
	10	I-80 and IN-53 in Gary
	12	I-80 and I-65 in Gary
	15	I-80 and I- 94, US 6, SR 51 in Lake Station
Two new stations recommended, one at each of the following two exits		
Illinois	56	I-80 and IL-26 in Princeton
	90	I-80 and IL-23 in Ottawa
One new station recommended, at either of the following two exits		
Iowa	46	I-80 and Antique City Dr near Walnut
	51	I-80 and M56 near Marne
One new station recommended, in addition to one of the previous two exits		
Iowa	93	I-80 and Division St. in Stuart

No exits in New Jersey were recommended for DCFC stations, since all of I-80 in New Jersey is within 50 mi of a Round 6 qualifying DCFC station (one in Denville and one in Fort Lee).

4.3 SUMMARY OF RECOMMENDED EXITS FOR NEW CNG STATIONS

Exits recommended for new CNG stations are listed by state in Section 3.2, along with numbers of amenities, volume of traffic of trucks and buses, and a CNG suitability score based on the amenities, traffic, and distances to neighboring CNG stations that meet Round 6 criteria. Exits recommended for new CNG stations are listed in Table 4.2. More detail and supporting information are provided by state in Section 3.2.

Table 4.2. Recommended Exits for New CNG Stations

State	Exit Number or Mile Marker	Interchange
One new CNG station recommended at one of the following two exits		
Pennsylvania	241/242	I-80 and PA-339 in Berwick/Nescopeck
One new CNG station recommended at one of the following 5 exits		
Ohio	13	I-80 and US-20 Alt, OH-15 near Holiday City
	20.8	Tiffin River and Indian Meadow service plazas, in West Unity
	34	I-80 and OH-108 near Wauseon
	39	I-80 and OH-109 near Delta
	59	I-80 and I-475, US-20, Maumee
One new CNG station recommended at one of the following three exits		
Iowa	240	I-80 and US-6 in Coralville
	242	I-80 and 1st Ave in Iowa City
	246	I-80 and IA-1 in Iowa City

No exits were recommended for new CNG stations in New Jersey, since a station at one of the exits recommended in Pennsylvania would convert that segment as well as the entire New Jersey segment to CNG-Ready. Similarly, no exits within Indiana were recommended for CNG stations, since a station in western Ohio would convert that gap. No exits in Illinois were recommended for CNG stations since I-80 in Illinois is already CNG-Ready.

4.4 FURTHER RECOMMENDED ACTIONS

The prioritization of exits described in the previous section and in Sections 3.1 and 3.2 will be helpful in narrowing down general locations for new CNG fueling and EV charging stations. Additional actions will be required before selecting specific locations and to secure the interest of investors, public funding, and public support for the deployment of the CNG fueling and EV charging infrastructure needed to convert the Mid-America Clean Fuels Corridor to NG-Ready and EV-Ready.

It will also be necessary to continue to engage with state, regional, and local government agencies, utilities, CNG retailers, EV charging network companies, and other stakeholders and interested parties who participated in convenings or other outreach efforts. State, regional, and local governments should make special efforts to understand the needs of disadvantaged communities and encourage members of these communities to participate in the planning and deployment of CNG fueling and EV charging infrastructure, including procurement awards, job training, and employment opportunities. The I-80 Mid-America Clean Fuels Corridor team of Clean Cities coalitions and industry should continue to collaborate, including applying for funding opportunities that are available to regional applicants. One recent effort included reconvening the team to submit a joint application to close the gap for CNG stations along I-80 as part of the first round of NEVI Charging and Fueling Infrastructure funding. Capitalizing on multiple years of meeting monthly could lead to other synergistic opportunities in the future.

Government agencies, utilities, and non-governmental organizations should collect and share additional data on site-specific utility service (capacity, outage frequency and duration statistics, make-ready needs), land use and ownership, authorities having jurisdiction, local codes and standards. These will be needed to assess the suitability of potential sites for CNG or DCFC infrastructure.

Estimates of future demand for CNG fueling by current and future fleets and for EV charging at DCFC stations would be helpful, but predicting future demand will be difficult. While state and federal targets for EV sales or vehicle stock can guide infrastructure planning at a very general level, they lack the granularity needed for the selection or prioritization of individual sites for charging infrastructure.

Entities planning future CNG and DCFC infrastructure will need more detailed analysis, based on more detailed and comprehensive data as well as input from landowners, utilities, drivers, residents, community organizations and non-profit organizations to identify the most suitable hosts for CNG and DCFC infrastructure.

Data, planning tools, and other resources available include:

- Electric Vehicle Infrastructure – Projection Tool (EVI-Pro), https://www.nrel.gov/transportation/evi-pro.html

- UC Davis GIS EV Planning Toolbox for MPOs, University of California at Davis, Electric Vehicle Research Center, https://phev.ucdavis.edu/project/uc-davis-gis-ev-planning-toolbox-for-mpos/

- Evaluation & Development of Regional Infrastructure for Vehicle Electrification (E-DRIVE) tool, ERM SustainAbility Institute, https://www.sustainability.com/thinking/e-drive/

- Geospatial Energy Mapper (GEM), Argonne National Laboratory, https://gem.anl.gov

- EV Charging Financial Analysis Tool, Atlas Public Policy, https://atlaspolicy.com/ev-charging-financial-analysis-tool/

A number of other tools and resources for EV infrastructure planning are available at the U.S. DOT website: https://www.transportation.gov/rural/ev/toolkit/ev-infrastructure-planning/planning-types#corridor-level-planning.

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APPENDIX A:

SELECTED INCENTIVES AND REGULATIONS ESTABLISHED BY I-80 CORRIDOR STATES RELEVANT TO CNGVS AND EVS AND THEIR FUELING AND CHARGING INFRASTRUCTURE

Tables A.1-A.6 summarize regulations in each of the six states along the corridor that are relevant to EVs, CNGVs, and infrastructure for EV charging and CNG fueling.

Table A.1. New Jersey State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
Natural Gas Vehicle (NGV) Weight Exemption	NGV weight exemption equal to the difference between NGV and comparable diesel vehicle	New Jersey Statutes 39:3-84.1, http://www.njleg.state.nj.us/
EV Charging Station Grants	Grants for public Level 1 and Level 2 EV charging station installation	New Jersey Department of Environmental Protection (NJDEP) provides grants through It Pay$ to Plug In, https://dep.nj.gov/drivegreen/it-pays-to-plug-in/
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($104 million) and NEVI Competitive Program	New Jersey Department of Environmental Protection (NJDEP), https://dep.nj.gov/drivegreen/infrastructure-investment-and-jobs-act/#1661437404277-e523e046-0b5b
Zero Emission Vehicle (ZEV) Tax Exemption	ZEVs sold, rented, or leased in New Jersey are exempt from state sales tax and use fees.	New Jersey Statutes 54:32B-8.55, http://www.njleg.state.nj.us/
EV and EV Charging Station Rebate	$25/mi of all-electric range, up to $4,000, depending on purchase price	New Jersey Board of Public Utilities' (NJBPU), https://njcleanenergy.com/residential/programs/electric-vehicle-incentive-programs https://chargeup.njcleanenergy.com/ New Jersey Statutes 48:25-1 through 48:25-8, http://www.njleg.state.nj.us/
Medium- and Heavy-Duty ZEV Requirement	Requirements for ZEV production and sales specified in the California Advanced Clean Trucks rule establishing required percentages of zero-emission trucks to be sold and reporting requirements for some fleets	California Advanced Clean Trucks Program, https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks New Jersey Administrative Code, http://www.state.nj.us/oal/rules/accessp/ New Jersey Department of Environmental Protection Advanced Clean Trucks Program and Fleet Reporting Requirements, https://www.nj.gov/dep/rules/adoptions/adopt_20211220a.pdf
Medium- and Heavy-Duty Vehicle Electrification Grants	Grants covering the incremental cost of replacing diesel vehicles with EVs, including associated charging infrastructure	New Jersey Department of Environmental Protection Regional Greenhouse Gas Initiative Funding for Transportation Electrification, https://nj.gov/dep/stopthesoot/sts-retrofits.htm
EV Toll Discount	10% discount on off-peak New Jersey Turnpike and Garden State Parkway toll rates for drivers of qualifying EVs	E-ZPass Discount Programs, https://www.ezpassnj.com/en/about/plans.shtml

Table A.2. Pennsylvania State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
Alternative Fuel Vehicle (AFV) Rebate	Rebates for purchase or lease of new or qualifying CNGV or EV for eligible residents	Pennsylvania Department of Environmental Protection, https://www.dep.pa.gov/Citizens/GrantsLoansRebates/Alternative-Fuels-Incentive-Grant/Pages/Alternative-Fuel-Vehicles.aspx
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($171.5 million) and NEVI Competitive Program	Pennsylvania Department of Transportation: https://www.penndot.pa.gov/ProjectAndPrograms/Planning/EVs/Pages/NEVI.aspx
NGV and EV Weight Exemption	Weight exemption equal to the difference between NGV or EV and comparable diesel vehicle	Title 25 Pennsylvania Statutes, https://www.legis.state.pa.us/cfdocs/legis/LI/Public/index.cfm
Alternative Fuel Infrastructure and Energy Production Grant Program	Grants and loans to eligible applicants for the utilization, development, and construction of CNG and liquefied natural gas (LNG) fueling stations	Alternative and Clean Energy (ACE) Program, https://dced.pa.gov/programs/alternative-clean-energy-program-ace/
Medium- and Heavy-Duty (MHD) Zero Emission Vehicle (ZEV) Grant	Rebates for the replacement of Class 4-8 local freight trucks with EVs or fuel-cell vehicles	Pennsylvania Department of Environmental Protection, Driving Pennsylvania Forward program, http://www.depgis.state.pa.us/DrivingPAForward/

Table A.3. Ohio State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($140 million) and NEVI Competitive Program	DriveOhio National Electric Vehicle Infrastructure Formula Program, https://drive.ohio.gov/programs/electric/nevi/nevi
Medium- and Heavy-Duty Emissions Reduction Grants	Grants for the replacement or repower of eligible vehicles and equipment	Ohio Environmental Protection Agency VW Mitigation Grants Program, https://epa.ohio.gov/divisions-and-offices/environmental-education/grant-programs/vw-mitigation-grants
Alternative Fuel Signage	Alternative fuel retailers may place logos on signs on the Ohio Turnpike indicating that they sell alternative fuels, including NG, electricity, and some others.	Ohio Revised Code 125.831 and 5537.30, https://codes.ohio.gov/ohio-revised-code
Natural Gas Measurement	Compressed natural gas (CNG) transportation must be measured in gasoline gallon equivalents (GGE). One GGE of CNG is equal to 139.31 cubic feet or 6.38 pounds.	Ohio Revised Code 5735.011, https://codes.ohio.gov/ohio-revised-code

Table A.3. (Cont.)

Incentive or Regulation	Summary	Reference
Alternative Fuel Vehicle Acquisition and Fuel Use Requirements	All newly acquired state agency vehicles, except law enforcement vehicles, must be capable of using an alternative fuel and must use such fuel if it is reasonably priced and available.	Ohio Revised Code 125.831-125.836), https://codes.ohio.gov/ohio-revised-code
Registration fee	EV owners must pay a $200 fee annually in addition to other registration fees.	Ohio Revised Code 4501.01 and 4503.10, https://codes.ohio.gov/ohio-revised-code
Motor Fuel Tax on CNG	$0.40 per gal equivalent (6.38 lb) $0.47 per gal equivalent, after July 1, 2023	Ohio Revised Code 5735.05, https://codes.ohio.gov/ohio-revised-code/section-5735.05

Table A.4. Indiana State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($140 million) and NEVI Competitive Program	Indiana DOT Electric Vehicle Charging Infrastructure Network, https://www.in.gov/indot/current-programs/innovative-programs/electric-vehicle-charging-infrastructure-network/
Medium- and Heavy-Duty Grant Program	Grants for the replacement or repower of eligible vehicles and equipment	Indiana Department of Environmental Management VW Mitigation Grants Program, https://www.in.gov/idem/airquality/volkswagen-mitigation-trust/
Alternative Fuel Vehicle (AFV) Inspection and Maintenance Exemption	Dedicated AFVs are exempt from inspection and maintenance requirements if they operate exclusively on NG, propane, ethanol, hydrogen, or methanol	326 Indiana Administrative Code 13-1.1, http://iac.iga.in.gov/iac/
NGV Weight Exemption	CNGVs may exceed road and bridge weight limits by up to 2,000 lb	Indiana Code 9-20-4-1, http://www.in.gov/legislative/ic/code/
CNG Tax Credit	A carrier operating a commercial CNG vehicle on any Indiana highway may claim a credit equal to 12% of the road taxes imposed on its CNG consumption.	Indiana Code 6-6-4.1-1 and 6-6-12, http://www.in.gov/legislative/ic/code/
Special Fuel Tax Exemption	NG used to power an internal combustion engine or motor is exempt from state gross retail tax.	Indiana Code 6-2.5-5-51 and 6-6-2.5-22, http://www.in.gov/legislative/ic/code/
Motor Carrier Fuel Tax	$0.55 per gasoline gallon equivalent (125,000 BTU) of special fuel or alternative fuel, for fuel consumed by heavy-duty vehicles	Indiana Department of Revenue, https://www.in.gov/dor/motor-carrier-services/fuel-tax/

Table A.5. Illinois State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($140 million) and NEVI Competitive Program	Illinois Department of Transportation Drive Electric Illinois, https://idot.illinois.gov/home/drive-electric-illinois
EV Charging Station Rebate	Rebate awards of up to 80% of the eligible costs of installation and maintenance of Level 2 and DCFC stations	Illinois Environmental Protection Agency Climate and Equitable Jobs Act, https://www2.illinois.gov/epa/topics/ceja/Pages/default.aspx
Transportation Electrification Infrastructure Projects	Grants of $70 million for EV charging infrastructure and other projects prioritizing medium- and heavy-duty vehicle charging, and electrification of public transit, fleets, and school buses.	Illinois Environmental Protection Agency and Public Act 101-0029, https://www.ilga.gov/legislation/publicacts/default.asp
Fleet User Fee Exemption	Fleets having 10 or more vehicles in designated areas of the state must pay an annual fee of $20 per vehicle, which is deposited in the state Electric Vehicle Rebate Fund. Owners of EVs are exempt from this fee.	Illinois Compiled Statutes 120/35, http://www.ilga.gov/legislation/ilcs/ilcs.asp
Alternative Fuels Tax and Reporting	CNG used as motor fuel is taxed at a rate of $0.423 per GGE, where 1 GGE = 5.66lb of CNG	35 Illinois Compiled Statutes 505/1.8 and 505/2, http://www.ilga.gov/legislation/ilcs/ilcs.asp https://www2.illinois.gov/rev/research/taxrates/Pages/motorfuel.aspx
EV Charging Station Installation Requirements	Illinois Commerce Commission certification requirements for vendors that install EV charging stations	Illinois Commerce Commission Installer Certification: https://www.icc.illinois.gov/Electricity/authorities/EVChargingStationInstallerCert.aspx

Table A.6. Iowa State Incentives and Regulations Relating to CNGVs and EVs (DOE 2022c)

Incentive or Regulation	Summary	Reference
Natural Gas Vehicle (NGV) Weight Exemption	NGV weight exemption equal to the difference between NGV and comparable diesel vehicle fuel tank and fuel system	Iowa Code 321.463, https://www.legis.iowa.gov/
Alternative Fuel Vehicle (AFV) Grants	Competitive grants for projects that support the purchase of AFVs by eligible businesses and other organizations	IEDA Iowa Energy Center Grant Program, https://www.iowaeda.com/iowa-energy-office/grants/ Iowa Administrative Code 261.404), https://www.legis.iowa.gov/law/administrativeRules
Alternative Fuel Tax	CNG is subject to a tax of $0.31 per GGE, where 1 GGE = 5.66lb of CNG	Iowa Codes 452A.2, 452A.3, and 452A.86, https://www.legis.iowa.gov/index.aspx
National Electric Vehicle Infrastructure (NEVI) Program	NEVI Formula Program ($140 million) and NEVI Competitive Program	Iowa DOT Electric Vehicle Infrastructure Deployment, https://iowadot.gov/iowaevplan
EV Charging Infrastructure Funding	Funding from the Volkswagen Environmental Mitigation Fund for public Level 2 and DCFC) stations	Iowa Department of Transportation Volkswagen Clean Air Act Partial Settlements, https://iowadot.gov/VWSettlement/default.aspx

APPENDIX B:

NUMBERS OF AMENITIES WITHIN 1 MI (EV) AND 5 MI (CNG) OF EXITS, AADT VALUES, AND EV AND CNG SUITABILITY SCORES FOR I-80 CORRIDOR EXITS

Tables B.1-B.6 show the numbers of amenities, counted up to a maximum number, depending on the type of amenity, the total annual average traffic volume, given by the annual average traffic volume (AADT), and an EV suitability score, calculated as described in Section 2.3. The EV Suitability score was calculated based on numbers of amenities, AADT and proximity to the nearest DCFC station on the corridor that meets Round 6 AFC criteria. An EV suitability score of zero was assigned to exits within EV-Ready segments and at exits where a DCFC station meeting Round 6 criteria was located.

Tables B.7-B.12 show the numbers of amenities, counted up to a maximum number, depending on the type of amenity, AADT of trucks and buses, and a CNG suitability score, calculated as described in Section 2.3. The CNG Suitability score was calculated based on numbers of amenities, AADT and proximity to the nearest CNG station on the corridor that meets Round 6 AFC criteria. A CNG suitability score of zero was assigned to exits within CNG-Ready segments and at exits where a CNG station meeting Round 6 criteria was located.

Table B.1. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in New Jersey

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
4A/4B/4C/4E	US 46, NJ-94 in Knowlton Township	4	7	0	0	1	0	51,508	0
8	Knowlton Tourist Welcome Center in Columbia	1	3	0	0	0	0	51,508	0
12	CR-521 in Hope	1	3	0	0	0	0	59,054	0
19	CR-517 in Allamuchy Township	1	4	1	0	1	0	64,750	0
25	US-206 in Budd Lake	0	3	2	0	1	0	67,817	0
27A/27B	US-206, NJ-183 in Roxbury Township	5	19	1	2	1	0	89,405	0
28	US-46, NJ-10 in Roxbury Township	3	5	1	0	0	0	90,885	0
30	Howard Blvd in Mount Arlington	2	8	2	0	0	0	113,139	0
34	NJ-15 in Wharton	3	14	0	1	1	0	113,139	0
35	CR-661 in Rockaway Township	0	24	2	5	1	0	154,534	0
37	NJ-513 in Hibernia	4	14	2	0	2	0	164,273	0
38/39	US-46, NJ-53 in Denville	5	24	0	1	4	0	164,273	0
42A/42B/42C	US-202 in Parsippany	2	1	2	0	1	0	152,691	0
43A/43B	I-287 in Parsipanny	3	9	3	1	2	0	155,452	0
45	Beverwyck Rd in Parsippany-Troy Hills	2	14	4	2	3	0	185,259	0
47A/47B	I-280, US-46 in Parsippany-Troy Hills	2	27	0	5	2	0	181,473	0
52	US-46, Bridges Rd in Fairfield	4	21	2	1	2	0	110,362	0
53	US-46, NJ-23 in Wayne	3	19	7	3	3	0	132,972	0

Table B.1. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
54/55A/55B	Minnisink Rd, Union Blvd in Totowa	4	24	2	3	2	0	132,972	0
56/56A/56B	Squirrelwood Rd in Woodland Park	6	17	0	0	4	0	131,076	0
57/57A/57B	Main St in Paterson	5	44	0	2	4	0	136,117	0
58A/58B	Madison Ave in Paterson	5	69	0	4	4	0	136,117	0
60	NJ-20, McLean Blvd in Paterson	6	14	0	5	2	0	123,974	0
61	River Dr in Elmwood Park	5	17	1	1	1	0	133,911	0
62A/62B	Garden State Parkway, Saddle River Rd in Saddle Brook	6	17	2	2	4	0	110,294	0
63/64	NJ-17 in Hackensack	6	34	3	3	3	0	146,461	0
65	Wesley St, North St in Teterboro, S. Hackensack	3	14	1	1	4	0	142,208	0
66	Vreeland Ave, Kennedy St in Hackensack	6	24	2	2	3	0	142,208	0
67	2nd St in Ridgefield Park	4	19	0	1	4	0	162,207	0
70A/70B	I-95 NJ Turnpike in Teaneck	2	16	3	1	2	0	257,361	0
73	I-95. NJ Turnpike, Hudson Terrace in Fort Lee	6	38	4	0	4	0	283,398	0

Table B.2. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in Pennsylvania

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
4A/4B	PA-760, I-376 in West Middlesex	2	7	8	1	1	0	29,945	0.106
15	US-19, PA-158 near Mercer	1	2	1	1	1	0	28,473	0.378
29	PA-8, Barkeyville	5	4	2	1	0	0	30,464	0.457
42	PA-38, Emlenton	3	2	0	0	2	0	22,079	0.086
60	PA-66 near Shippenville	1	0	0	0	1	0	27,640	0
62	PA-68, Clarion	2	17	8	2	0	0	27,640	0
64	PA-66 near Clarion	1	6	2	0	1	0	23,695	0
78	PA-26, Brookville	6	13	2	0	4	0	26,875	0
97	US-219 near DuBois	2	4	2	0	2	0	26,358	0
101	PA-255 near DuBois	1	3	4	0	0	0	24,489	0
120	PA-879 in Clearfield	4	11	6	1	1	0	28,958	0.229
133	PA-53 in Kylertown	2	2	2	1	1	0	20,696	0.188
147	PA-144 in Snow Shoe	4	2	0	1	0	0	23,580	0.254
158	PA-150 in Milesburg	2	2	2	0	0	0	27,384	0.272
173	PA-64 in Mill Hall	4	6	3	0	0	0	22,419	0.307
178	US-220 N near Lock Haven	0	0	0	0	0	0	23,261	0.178
185	PA-477 in Loganton	1	2	0	0	2	0	23,261	0.230
192	PA-880 near Eastville	2	1	0	0	0	0	21,331	0.292
210	US-15 near New Columbia	1	1	2	0	0	0	28,384	0.145
215	PA-254, Milton	1	9	0	0	1	0	31,711	0.162
224	PA-54 in Danville	2	5	5	0	0	0	43,511	0.119
232	PA-42, PA-44 in Bloomsburg	4	12	3	4	1	0	43,511	0.050
236	PA-487 in Bloomsburg	1	4	2	0	1	0	37,103	0.000
241/242	PA-339 in Berwick/Nescopeck	3	6	3	0	0	0	32,775	0.032
256	PA-93, Conyngham	2	2	1	0	1	0	37,369	0.101
262	PA-309, Drums, Hazelton	4	8	2	0	1	0	24,554	0.412

Table B.2. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
273	PA-940, PA-437 in White Haven	2	7	0	0	2	0	23,926	0.345
284	PA 115 in Blakeslee	3	1	1	0	0	0	23,856	0.251
299	PA-715, Tannersville	6	17	2	0	3	1	47,667	0.100
302	PA-33 in Bartonsville	2	17	4	3	3	0	68,982	0.079
305, 307	PA-191, PA-611, US-209	6	15	5	1	4	1	47,559	0.023
308	Prospect St., Stroudsburg, PA	3	21	2	2	3	0	23,856	0
310	PA-611, Delaware Water Gap	2	8	4	0	0	1	50,300	0

Table B.3. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in Ohio

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
2	US-20 Alt, OH-15 in Holiday City	1	2	0	0	0	0	21,109	0.164
13	US-20 Alt, OH-15 near Holiday City	2	2	4	0	1	0	21,880	0.081
20.8	Tiffin River and Indian Meadow Service Plazas, in West Unity	2	6	0	0	2	0	21,880	0
34	OH-108 near Wauseon, OH	1	1	6	0	0	1	23,225	0.204
39	OH-109 near Delta, OH	5	1	6	0	0	0	24,333	0.238
59	I-475, US-20, Maumee, OH	3	39	8	2	0	0	30,109	0.652
64	I-75 in Perrysburg	0	0	4	0	0	0	73,512	0.410
71	I-280, OH-420 in Perrysburg	5	7	3	0	2	0	34,954	0.036
77	Wyandot & Blue Heron Service Plazas	2	2	0	0	2	0	44,256	0

Table B.3. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
91	OH-53 near Fremont	1	1	3	0	0	0	43,321	0.079
100	Commodore Perry & Erie Island Service Plazas	2	9	0	0	2	0	42,156	0.174
118	US-250, Milan, OH	2	2	8	0	2	0	40,322	0.312
139.5	Vermillion Valley and Middle Ridge Service Plazas	2	10	0	0	2	0	42,217	0.388
140	OH-5, Amherst	4	5	0	0	2	0	45,759	0.368
145	OH-57 near Elyria	3	8	8	1	1	0	53,478	0.532
152	OH-10 in North Ridgeville	3	9	2	0	2	0	40,679	0.405
161	I-71, US-42 in Strongsvillle	6	5	2	0	2	0	99,061	0.688
170.1	Towpath & Great Lakes Service Plazas, in Broadview Heights	2	6	0	0	2	0	43,815	0.346
177	I-77 in Richfield	1	4	5	0	0	0	47,174	0.358
187	OH-14 in Streetsboro	2	11	4	2	1	0	42,041	0.363
197	Brady's Leap & Portage Travel Plazas	2	8	0	0	2	0	37,993	0.200
215	Hallock Young Rd in Lordstown	1	1	0	0	0	0	34,932	0.045
223	OH-46, near Niles and Youngstown	6	21	8	4	1	0	56,912	0.048
226	Salt Springs Road, near Youngstown	6	7	0	0	1	0	43,144	0
227	US-422, Girard	4	14	0	0	0	0	44,340	0.009
229	OH-193, Youngstown	6	34	8	3	2	0	35,254	0.037
234	US-62, Youngstown	5	18	2	0	1	0	35,254	0.070

Table B.4. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in Indiana

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
1	US-41 in Munster	5	29	0	3	4	1	201,286	0.912
2	Indianapolis Blvd in Hammond	5	12	1	3	0	0	180,829	0.655
3	Kennedy Ave in Hammond	4	24	5	1	4	2	174,626	0.826
5	US-12, IN-912 in Hammond	2	4	2	1	1	0	170,207	0.521
6	Burr St in Gary	5	12	0	0	1	0	191,251	0.652
9	Grant St in Gary	6	9	0	4	4	0	182,739	0.679
10	IN-53 in Gary	5	8	1	0	1	1	155,881	0.544
12	I-65 in Gary	4	3	0	1	0	0	157,138	0.469
15	I- 94, US 6, SR 51 in Lake Station	6	14	0	2	1	1	102,676	0.490
22	George Ade (E) and John T. McCutcheon (W) Travel Plazas in Portage	1	0	0	0	1	0	37,646	0.075
23	Willowcreek Rd in Portage	1	13	2	2	1	0	37,646	0.187
31	IN-49 in Chesterton	1	6	1	0	1	0	35,037	0.117
39	US-421 near Westville	0	0	1	0	0	1	28,074	0.089
49	IN-39 near La Porte	0	0	2	0	0	0	27,548	0.088
56	Knute Rockne (E) and Wilbur Shaw (W) Travel Plazas	2	4	0	0	1	0	27,548	0.137
72	US-31 in South Bend	2	4	1	0	1	0	27,548	0.028
77	US-31, IN-933 in South Bend	2	16	8	0	0	1	29,512	0.036
83	IN-331 in Granger	3	3	0	0	2	0	27,836	0.030

Table B.4. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
90	George N. Craig (E) and Hervy Schricker (W) Travel Plazas	1	0	0	0	1	0	28,570	0.113
92	IN-19 in Elkhart	4	29	8	4	3	0	28,570	0.261
96	County-17 in Elkhart	0	0	0	0	0	0	27,012	0.164
101	IN-15 near Bristol	0	0	0	0	0	0	26,000	0.208
107	US-131, IN-13 near Middlebury	1	0	0	0	0	0	25,137	0.264
121	IN-9 in Howe	1	1	5	0	0	0	22,122	0.410
126	Gene Stratton Porter (E) and Ernie Pyle (W) Travel Plazas	1	4	0	0	1	0	22,122	0.450
144	I-69 near Fremont	1	1	4	0	0	0	22,122	0.330

Table B.5. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in Illinois

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
1	IL-84 near Rapids City	2	5	0	0	1	0	31,600	0.343
7	Cleveland Rd in Colona	1	1	0	0	0	0	22,287	0.219
19	IL-62 in Geneseo	2	9	1	2	3	0	20,200	0
27	State St in Atkinson	1	5	0	3	0	0	18,800	0.037
56	IL-26 in Princeton	6	16	4	0	4	0	21,900	0.477
75	IL-251 near Peru	3	16	6	5	1	1	28,971	0.366
81	IL-178 near North Utica	3	4	0	1	1	1	32,893	0.343
90	IL-23 in Ottawa	2	15	6	4	1	0	33,653	0.540
93	IL-71 in Ottawa	2	4	0	0	1	0	33,600	0.316
97	E 24th Rd near Marseilles	0	0	0	0	0	0	32,900	0.237
112	IL-47 in Morris	6	27	6	4	4	0	42,300	0.804
122	Ridge Rd in Minooka	5	21	2	1	3	0	60,500	0.111
127	Houbolt Rd in Joliet	2	14	5	0	1	0	61,900	0.036
130A/130B	IL-7 in Joliet	6	15	5	3	3	0	69,500	0
132A/132B	US-52 in Joliet	3	7	0	0	0	0	85,400	0.011
134	Briggs St in Joliet	5	4	0	0	2	0	71,168	0.020
137	US-30 in New Lenox	2	14	0	1	3	0	105,800	0.056
145	US-45 in Mokena	4	17	4	0	2	0	117,700	0.557
148A/148B	IL-43 in Tinley Park	2	24	8	2	2	1	144,400	0.741
154	Kedzie Ave in Hazel Crest	3	7	0	1	3	0	86,900	0.353
4	Dixie Hwy in Hazel Crest	3	5	0	0	2	0	185,538	0.559
2A/2B	IL-1 in East Hazel Crest	6	24	8	5	4	1	187,999	0.938
159	Chicago Southland Lincoln Oasis	1	5	0	0	1	0	187,999	0.536
161	US-6 in Lansing	3	34	8	4	1	1	122,500	0.804

Table B.6. Numbers of Amenities Within 1 mi of Exits, AADT, and EV Suitability Scores for Exits on the Corridor in Iowa

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
1	24th St in Council Bluffs	6	8	7	1	2	1	72,900	0.025
3	S Expressway in Council Bluffs	5	19	4	3	2	0	83,300	0
5	Madison Ave in Council Bluffs	2	17	2	2	2	1	43,000	0.023
8	US-6 near Council Bluffs	0	0	0	0	0	0	25,800	0.013
17	Magnolia Rd near Underwood	2	4	0	0	1	0	21,600	0.057
23	IA-24 near Neola	2	1	0	0	0	0	20,800	0.170
34	East St in Shelby	3	4	0	0	0	0	23,100	0.245
40	US-59 in Avoca	3	5	4	1	0	0	20,900	0.322
46	Antique City Dr near Walnut	2	0	2	0	0	0	23,000	0.199
51	M56 near Marne	0	0	0	0	0	0	22,700	0.136
54	IA-173 near Atlantic	0	0	0	0	0	0	22,500	0.090
57	620th St near Atlantic	0	0	0	0	0	0	21,700	0.087
60	US-71	1	0	1	0	0	0	21,400	0.106
64	690th Street	0	0	0	0	0	0	22,600	0.090
70	IA-148, County Rd F58 near Anita	0	0	0	0	0	0	22,200	0.133
76	White Pole Rd in Adair	2	3	2	1	0	0	22,100	0.399
93	Division St in Stuart	2	5	3	2	3	0	22,200	0.762
110	US-169, US-6 in De Soto	2	1	2	1	2	0	29,600	0
118	Grand Prairie Parkway in Waukee	3	2	1	0	1	0	42,300	0
121	Jordan Creek Pkwy in West Des Moines	3	14	8	1	3	0	84,200	0.739
124	University Ave in West Des Moines	4	19	8	2	4	0	79,200	0.826
125	US-6 in Clive	2	9	4	1	2	1	121,400	0.757
126	Douglas Ave in Urbandale	4	2	2	5	4	0	103,200	0.655

Table B.6. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 1 mi of exit off-ramp						AADT	EV Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Attractions		
129	86th St in Urbandale	3	21	7	1	4	0	83,500	0.830
131	IA-28 in Urbandale	3	18	7	1	3	0	74,500	0.739
135	IA-415 in Des Moines	3	3	0	0	3	0	86,300	0.477
136	US-69 in Des Moines	5	3	7	1	3	1	79,200	0.596
142	US-6W, U.S.65 N in Altoona	4	17	7	1	0	2	42,800	0.595
143	1st Ave, NE 72nd St in Altoona	3	0	2	0	3	0	37,100	0.261
155	IA-117 in Colfax	3	4	2	1	1	0	28,800	0.267
164	US-6 in Newton	2	11	5	0	2	0	29,700	0.393
168	Iowa Speedway Dr in Newton	3	2	2	0	1	0	24,900	0.140
179	Hwy T38	0	0	0	0	0	0	28,600	0.118
182	IA-146 in Grinnell	2	0	5	0	2	0	25,200	0.225
191	US-63 near Malcom	1	1	0	0	0	0	27,200	0.139
197	V18 Rd near Brooklyn	1	2	0	0	1	0	27,200	0.166
201	IA-21 in Brooklyn	2	2	1	0	2	0	28,700	0.213
220	IA-149 in Williamsburg	2	5	4	1	1	1	28,800	0
237	Ireland Ave in Tiffin	2	2	0	0	2	0	33,200	0.345
240	US-6 in Coralville	2	59	8	5	3	2	54,100	1.000
242	1st Avenue in Iowa City	2	19	8	1	1	0	52,000	0.677
246	IA-1 in Iowa City	4	4	2	0	0	0	46,800	0.496
254	Downey St in West Branch	3	7	1	0	2	0	35,800	0.413
284	Plainview Rd in Walcott	3	7	2	0	0	0	30,200	0.355
292	IA-130 in Davenport	4	7	2	2	4	0	33,600	0.431
295A	US-61 Business in Davenport	2	4	8	1	1	0	48,200	0.547
298	I-74 in Davenport	0	0	0	0	0	0	31,600	0.292
301	Middle Road in Bettendorf	1	7	1	0	1	0	33,800	0.376
306	US-67 in Le Claire	1	4	3	0	0	0	33,900	0.364

Table B.7. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in New Jersey

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
4A/4B/4C/4E	US 46, NJ-94 in Knowlton Township	6	17	1	0	2	4	8,156	0.094
8	Knowlton Tourist Welcome Center in Columbia	1	3	0	0	0	1	8,942	0.065
12	CR-521 in Hope	2	4	0	0	0	0	8,942	0.071
19	CR-517 in Allamuchy Township	1	9	1	0	1	0	10,251	0.068
25	US-206 in Budd Lake	6	12	3	1	3	0	10,198	0.043
27A/27B	US-206, NJ-183 in Roxbury Township	6	49	7	2	2	0	5,344	0.080
28	US-46, NJ-10 in Roxbury Township	5	39	1	4	4	0	7,662	0.072
30	Howard Blvd in Mount Arlington	6	49	3	4	2	1	7,789	0.085
34	NJ-15 in Wharton	6	34	2	5	4	0	9,696	0.070
35	CR-661 in Rockaway Township	6	24	2	5	4	0	9,696	0.077
37	NJ-513 in Hibernia	6	39	3	0	4	1	13,243	0.087
38/39	US-46, NJ-53 in Denville	6	64	4	2	4	0	14,078	0.098
42A/42B/42C	US-202 in Parsippany	6	29	6	3	1	0	14,078	0.066
43A/43B	I-287 in Parsipanny	6	24	3	5	3	0	13,085	0.064
45	Beverwyck Rd in Parsippany-Troy Hills	6	49	5	5	4	0	13,322	0.084
47A/47B	I-280, US-46 in Parsippany-Troy Hills	6	44	8	5	4	0	16,692	0.076
52	US-46, Bridges Rd in Fairfield	6	54	4	3	4	0	16,351	0.051
53	US-46, NJ-23 in Wayne	6	109	7	5	3	0	9,789	0.075

Table B.7 (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
54/55A/55B	Minnisink Rd, Union Blvd in Totowa	6	69	3	5	4	0	11,795	0.057
56/56A/56B	Squirrelwood Rd in Woodland Park	6	49	0	0	4	0	11,795	0.047
57/57A/57B	Main St in Paterson	6	74	1	3	4	0	11,626	0.054
58A/58B	Madison Ave in Paterson	6	119	0	5	4	0	12,074	0.065
60	NJ-20, McLean Blvd in Paterson	6	34	0	5	4	0	12,074	0.034
61	River Dr in Elmwood Park	6	79	2	1	4	0	10,997	0.046
62A/62B	Garden State Parkway, Saddle River Rd in Saddle Brook	6	59	2	3	4	0	11,878	0.035
63/64	NJ-17 in Hackensack	6	64	3	5	4	0	9,783	
65	Wesley St, North St in Teterboro, S. Hackensack	6	44	6	4	4	0	12,991	
66	Vreeland Ave, Kennedy St in Hackensack	6	94	3	3	4	0	12,614	
67	2nd St in Ridgefield Park	6	89	3	5	4	0	12,614	
70A/70B	I-95 NJ Turnpike in Teaneck	6	44	4	5	4	0	14,388	
73	I-95. NJ Turnpike, Hudson Terrace in Fort Lee	6	38	4	0	4	0	14,388	

Table B.8. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in Pennsylvania

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
4A/4B	PA-760, I-376 in West Middlesex	6	34	8	5	4	0	12,394	0
15	US-19, PA-158 near Mercer	3	10	2	0	3	0	12,799	0
29	PA-8, Barkeyville	5	4	2	1	1	4	13,034	0
42	PA-38, Emlenton	4	4	2	1	3	4	10,826	0
60	PA-66 near Shippenville	2	2	1	1	1	0	11,455	0
62	PA-68, Clarion	6	29	8	3	4	1	10,477	0
64	PA-66 near Clarion	3	6	2	0	1	0	13,514	0
78	PA-26, Brookville	6	29	3	2	4	3	11,027	0
97	US-219 near DuBois	6	34	6	3	4	3	14,562	0
101	PA-255 near DuBois	3	29	7	0	0	0	13,710	0
120	PA-879 in Clearfield	5	27	8	3	3	2	10,425	0.028
133	PA-53 in Kylertown	2	5	2	1	1	2	9,935	0.034
147	PA-144 in Snow Shoe	4	4	1	1	0	2	10,369	0.050
158	PA-150 in Milesburg	5	9	4	0	1	2	12,225	0.078
173	PA-64 in Mill Hall	4	9	3	1	0	1	12,256	0.095
178	US-220 N near Lock Haven	1	3	0	0	3	0	16,144	0.123
185	PA-477 in Loganton	1	3	0	1	1	0	15,927	0.130
192	PA-880 near Eastville	2	1	0	0	0	0	9,648	0.085
210	US-15 near New Columbia	1	11	2	2	0	0	11,969	0.139
215	PA-254, Milton	1	11	0	1	3	4	12,702	0.163
224	PA-54 in Danville	6	24	6	1	3	0	12,510	0.197
232	PA-42, PA-44 in Bloomsburg	5	21	5	4	1	2	12,745	0.206
236	PA-487 in Bloomsburg	4	34	3	2	4	0	12,979	0.238
241/242	PA-339 in Berwick/Nescopeck	5	17	4	1	1	1	9,998	0.362
256	PA-93, Conyngham	2	6	4	1	2	2	18,578	0.254
262	PA-309, Drums, Hazelton	5	12	3	0	1	0	10,029	0.151
273	PA-940, PA-437 in White Haven	2	14	3	0	2	0	8,857	0.125

Table B.8. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
284	PA 115 in Blakeslee	4	16	6	0	4	0	8,156	0.115
299	PA-715, Tannersville	6	39	6	1	3	0	8,336	0.130
302	PA-33 in Bartonsville	4	23	4	5	4	0	13,232	0.146
305, 307	PA-191, PA-611, US-209	6	27	5	1	4	0	9,875	0.120
308	Prospect St., Stroudsburg, PA	4	24	2	2	4	0	8,156	0.098
310	PA-611, Delaware Water Gap	2	8	8	0	0	1	8,156	0.073

Table B.9. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in Ohio

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
2	US-20 Alt, OH-15 in Holiday City	1	2	0	0	0	1	9,120	0.110
13	US-20 Alt, OH-15 near Holiday City	2	11	4	2	2	0	9,436	0.357
20.8	Tiffin River and Indian Meadow Service Plazas, in West Unity	2	6	0	0	2	0	9,436	0.340
34	OH-108 near Wauseon, OH	6	15	6	1	4	0	9,994	0.409
39	OH-109 near Delta, OH	5	6	6	1	2	2	10,453	0.390
59	I-475, US-20, Maumee, OH	3	39	8	2	1	1	10,881	0.502
64	I-75 in Perrysburg	2	25	8	6	1	0	15,383	0.235
71	I-280, OH-420 in Perrysburg	6	9	4	0	2	6	12,963	0.184
77	Wyandot & Blue Heron Service Plazas	2	2	0	0	2	2	14,479	0.171
91	OH-53 near Fremont	3	17	5	3	0	1	14,463	0.156
100	Commodore Perry & Erie Island Service Plazas	2	9	0	0	2	2	14,463	0.131

Table B.9. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
118	US-250, Milan, OH	2	2	8	1	3	0	14,158	0.087
139.5	Vermillion Valley and Middle Ridge Service Plazas	2	10	0	0	2	2	14,253	0.049
140	OH-5, Amherst	4	49	2	5	4	0	14,354	0.061
145	OH-57 near Elyria	6	24	8	5	4	0	13,995	0.041
152	OH-10 in North Ridgeville	5	19	2	1	4	0	13,960	0.024
161	I-71, US-42 in Strongsvillle	6	34	3	6	2	0	12,192	0
170.1	Towpath & Great Lakes Service Plazas, in Broadview Heights	2	6	0	0	2	2	11,805	0
177	I-77 in Richfield	2	4	5	0	1	1	11,805	0
187	OH-14 in Streetsboro	5	44	8	5	1	0	12,247	0
197	Brady's Leap & Portage Travel Plazas	2	8	0	0	2	2	11,644	0
215	Hallock Young Rd in Lordstown	0	5	0	0	0	0	10,891	0
223	OH-46, near Niles and Youngstown	6	39	8	4	1	1	8,640	0
226	Salt Springs Road, near Youngstown	6	17	3	3	1	1	9,621	0
227	US-422, Girard	5	34	5	3	1	0	9,887	0
229	OH-193, Youngstown	6	44	8	3	3	0	9,195	0
234	US-62, Youngstown	5	18	2	0	4	4	13,266	0

Table B.10. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in Indiana

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
1	US-41 in Munster	6	119	3	5	4	1	44,676	0
2	Indianapolis Blvd in Hammond	6	28	1	5	2	1	46,667	0
3	Kennedy Ave in Hammond	5	39	5	4	4	1	48,177	0
5	US-12, IN-912 in Hammond	2	17	4	2	4	5	45,171	0
6	Burr St in Gary	6	12	0	4	4	2	44,770	0
9	Grant St in Gary	6	19	0	4	4	4	47,756	0
10	IN-53 in Gary	6	17	1	2	3	0	41,789	0
12	I-65 in Gary	6	14	2	5	4	2	47,443	0
15	I- 94, US 6, SR 51 in Lake Station	6	24	1	3	4	4	30,025	0
22	George Ade (E) and John T. McCutcheon (W) Travel Plazas in Portage	1	0	0	0	1	1	4,899	0
23	Willowcreek Rd in Portage	6	34	8	5	4	1	4,899	0
31	IN-49 in Chesterton	4	14	1	4	1	0	7,137	0
39	US-421 near Westville	1	1	1	1	0	1	7,137	0
49	IN-39 near La Porte	4	15	5	0	0	1	7,003	0
56	Knute Rockne (E) and Wilbur Shaw (W) Travel Plazas	2	4	0	0	1	1	7,003	0
72	US-31 in South Bend	6	17	5	4	1	1	7,070	0
77	US-31, IN-933 in South Bend	6	139	8	5	3	0	3,840	0.017
83	IN-331 in Granger	6	94	8	5	4	0	3,622	0.024
90	George N. Craig (E) and Hervy Schricker (W) Travel Plazas	1	0	0	0	1	1	3,718	0.010
92	IN-19 in Elkhart	6	84	8	5	4	0	3,718	0.039
96	County-17 in Elkhart	4	15	0	1	0	0	3,516	0.019
101	IN-15 near Bristol	2	7	0	1	0	0	6,390	0.030
107	US-131, IN-13 near Middlebury	1	7	1	1	1	1	6,390	0.036
121	IN-9 in Howe	6	24	6	5	3	1	5,623	0.061
126	Gene Stratton Porter (E) and Ernie Pyle (W) Travel Plazas	1	4	0	0	1	1	5,623	0.046
144	I-69 near Fremont	3	16	6	3	1	2	8,101	0.100

Table B.11. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in Illinois

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
1	IL-84 near Rapids City	4	14	3	0	2	0	12,700	0
7	Cleveland Rd in Colona	3	15	1	4	2	2	9,400	0
19	IL-62 in Geneseo	5	27	3	3	4	1	8,900	0
27	State St in Atkinson	2	6	0	0	0	3	8,650	0
56	IL-26 in Princeton	6	29	4	0	4	2	9,650	0
75	IL-251 near Peru	4	22	6	6	2	4	10,040	0
81	IL-178 near North Utica	3	14	0	1	2	1	12,956	0
90	IL-23 in Ottawa	6	59	8	6	4	2	11,285	0
93	IL-71 in Ottawa	2	8	0	0	1	2	11,950	0
97	E 24th Rd near Marseilles	2	8	0	2	2	0	11,550	0
112	IL-47 in Morris	6	59	6	5	4	2	13,300	0
122	Ridge Rd in Minooka	5	39	2	2	3	3	15,300	0
127	Houbolt Rd in Joliet	2	10	5	0	1	2	14,950	0
130A/130B	IL-7 in Joliet	6	15	5	3	3	3	15,050	0
132A/132B	US-52 in Joliet	5	19	0	4	3	5	17,550	0
134	Briggs St in Joliet	5	8	0	1	2	0	17,449	0
137	US-30 in New Lenox	4	39	0	5	4	0	17,700	0
145	US-45 in Mokena	6	79	4	5	4	1	12,000	0
148A/148B	IL-43 in Tinley Park	5	59	8	5	4	0	15,200	0
154	Kedzie Ave in Hazel Crest	6	39	3	5	4	0	16,850	0
4	Dixie Hwy in Hazel Crest	6	39	1	4	4	0	37,600	0
2A/2B	IL-1 in East Hazel Crest	6	44	8	5	4	1	38,200	0
159	Chicago Southland Lincoln Oasis	1	5	0	0	1	1	38,200	0
161	US-6 in Lansing	5	79	8	5	3	2	41,800	0

Table B.12. Numbers of Amenities Within 5 mi of Exits, AADT, and CNG Suitability Scores for Exits on the Corridor in Iowa

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
1	24th St in Council Bluffs	6	29	8	2	3	5	12,008	0
3	S Expressway in Council Bluffs	5	34	4	3	3	3	14,350	0
5	Madison Ave in Council Bluffs	4	47	3	2	2	1	8,372	0
8	US-6 near Council Bluffs	1	1	0	1	0	0	7,747	0
17	Magnolia Rd near Underwood	2	2	0	0	1	2	7,345	0
23	IA-24 near Neola	2	1	0	0	0	0	7,265	0
34	East St in Shelby	3	4	0	0	0	2	7,653	0
40	US-59 in Avoca	3	6	4	2	0	1	7,612	0
46	Antique City Dr near Walnut	2	1	2	0	0	0	8,165	0
51	M56 near Marne	1	0	1	0	0	0	8,098	0
54	IA-173 near Atlantic	0	0	0	0	0	0	8,072	0
57	620th St near Atlantic	0	0	0	0	0	0	7,985	0
60	US-71	0	2	1	0	0	0	7,940	0
64	690th Street	0	0	0	0	0	0	8,171	0
70	IA-148, County Rd F58 near Anita	1	0	0	0	1	0	8,130	0
76	White Pole Rd in Adair	2	3	2	1	0	0	8,180	0
93	Division St in Stuart	2	5	3	2	3	1	8,015	0
110	US-169, US-6 in De Soto	2	1	2	1	2	0	8,222	0

Table B.12. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
118	Grand Prairie Parkway in Waukee	3	9	1	0	3	1	8,191	0
121	Jordan Creek Pkwy in West Des Moines	3	54	8	1	4	0	9,742	0
124	University Ave in West Des Moines	4	69	8	6	4	0	10,681	0
125	US-6 in Clive	4	24	4	6	4	1	16,062	0
126	Douglas Ave in Urbandale	5	20	2	5	4	1	15,375	0
129	86th St in Urbandale	5	34	7	5	4	0	15,480	0
131	IA-28 in Urbandale	6	69	7	6	3	0	14,871	0
135	IA-415 in Des Moines	4	17	0	2	4	2	15,078	0
136	US-69 in Des Moines	6	29	7	6	4	4	14,243	0
142	US-6W, U.S.65 N in Altoona	4	49	8	6	4	4	9,775	0.029
143	1st Ave, NE 72nd St in Altoona	5	14	3	1	4	0	9,625	0.023
155	IA-117 in Colfax	3	4	2	1	1	0	9,084	0.363
164	US-6 in Newton	4	17	6	2	4	0	9,411	0.468
168	Iowa Speedway Dr in Newton	5	11	2	2	4	2	8,324	0.413
179	Hwy T38	0	0	0	0	0	0	9,083	0.319
182	IA-146 in Grinnell	3	13	6	4	3	1	8,838	0.420
191	US-63 near Malcom	1	1	0	0	0	0	8,978	0.326
197	V18 Rd near Brooklyn	2	3	0	2	1	2	8,920	0.357
201	IA-21 in Brooklyn	2	2	1	0	2	3	9,292	0.376

Table B.12. (Cont.)

Exit No./ Mile Marker	Interchange or Facility	Numbers of amenities within 5 mi of exit off-ramp						Truck and Bus AADT	CNG Suitability Score
		Fueling Stations	Restaurants	Motels	Big Box Stores & Supermarkets	Convenience Stores & Pharmacies	Truck Parking/ Services		
220	IA-149 in Williamsburg	4	13	4	3	2	2	9,568	0.451
237	Ireland Ave in Tiffin	3	4	0	1	3	0	9,937	0.404
240	US-6 in Coralville	3	84	8	6	4	0	13,965	0.990
242	1st Avenue in Iowa City	4	44	8	5	3	0	13,819	0.765
246	IA-1 in Iowa City	5	21	2	5	3	0	13,846	0.645
254	Downey St in West Branch	3	7	1	0	2	1	12,613	0.514
284	Plainview Rd in Walcott	4	7	2	1	1	4	10,278	0.449
292	IA-130 in Davenport	6	19	2	5	4	7	9,471	0.013
295A	US-61 Business in Davenport	5	39	8	6	2	1	10,735	0
298	I-74 in Davenport	4	14	8	5	4	1	8,986	0
301	Middle Road in Bettendorf	5	24	6	6	3	0	8,912	0
306	US-67 in Le Claire	4	29	3	1	1	0	8,870	0

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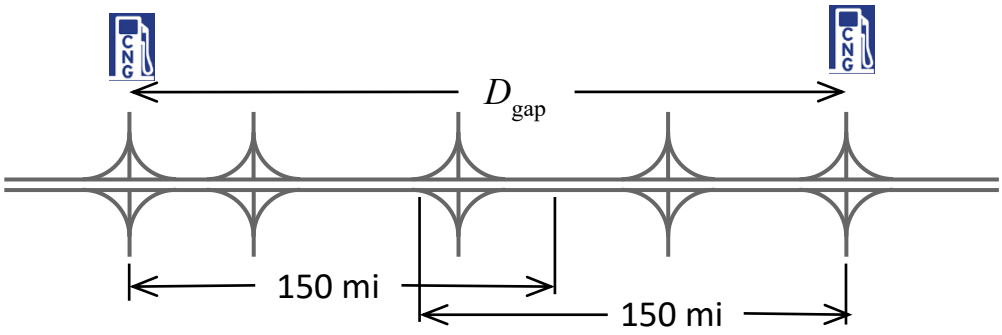
APPENDIX C:

FORMULAS FOR PRIORITIZING POTENTIAL LOCATIONS FOR NEW EV AND CNG STATIONS

Consider a gap in a CNG-Pending segment between two CNG stations separated by driving distance D_{gap}^{CNG}, where D_{gap}^{CNG} is less than 300 mi. A new CNG station located, say, at a distance *x* from an existing station and more that 150 mi from the other station would convert only *x* miles to CNG-Ready, whereas a station located not more than 150 mi from either station would convert the entire gap of length D_{gap}^{CNG} to CNG-Ready.



More generally, locating a new CNG station in a gap of length D_{gap}^{CNG} at a distance D_E from the nearest station to the east and D_W from the nearest station to the west where D_{gap}^{CNG} is less than 300 mi will convert D_{conv}^{CNG} miles to CNG-Ready where D_{conv}^{CNG} is given by:

$$D_{conv}^{CNG} = \begin{cases} min(D_E, D_W), & max(D_E, D_W) > 150\ mi \\ D_E + D_W = D_{gap}^{CNG}, & max(D_E, D_W) < 150\ mi \end{cases} \quad (1)$$

The normalized proximity score, Pr^{CNG}, is given by:

$$Pr^{CNG} = \frac{D_{conv}^{CNG}}{\max\left(D_{conv}^{CNG}\right)} \quad (2)$$

Where $\max(D_{conv}^{CNG})$ is the maximum distance that would be converted to CNG-Ready by a new station located within a given gap.

An analogous approach was used to assign proximity scores to exits to gaps in EV-Pending segments of the corridor. For exits within gaps between 50 and 100 mi, based on the distance converted to EV-Ready, where D_{conv}^{EV} is given by:

$$D_{conv}^{EV} = \begin{cases} min(D_E, D_W), & max(D_E, D_W) > 50\ mi \\ D_E + D_W = D_{conv}^{EV}, & max(D_E, D_W) < 50\ mi \end{cases}, \quad 50 < D_{conv}^{EV} < 100\ mi \quad (3)$$

Where distances D_E, D_W, and D_{gap}^{EV} are defined analogously to the same distance in the CNG-Pending segments. For longer gaps, i.e., $100 < D_{gap}^{EV} < 150\ mi$

$$D_{conv}^{EV} = \begin{cases} min(D_E, D_W), & min(D_E, D_W) < 50\ mi\ and\ max(D_E, D_W) > 100\ mi \\ \frac{D_E, D_W}{2} & min(D_E, D_W) < 50\ mi\ and\ max(D_E, D_W) < 100\ mi \\ \frac{D_E, D_W}{3} & min(D_E, D_W) > 50\ mi\ and\ max(D_E, D_W) > 50\ mi \end{cases} \quad (4)$$

Analogously to the CNG proximity score, a normalized EV proximity score, Pr^{EV}, ranging from zero to 1.0 for each gap was assigned to each exit, given by:

$$Pr^{EV} = \frac{D_{conv}^{EV}}{\max\ (D_{conv}^{EV})} \quad (5)$$

Where max (D_{conv}^{EV}) is the maximum distance that would be converted to CNG-Ready by a new station located within a given gap.

APPENDIX D:

SUMMARY OF CONVENINGS HELD BY CLEAN CITIES COALITIONS

Clean Cities Coalitions held convenings in their respective states. Iowa and Illinois held one joint convening. Summaries of the convenings are tabulated by state.

Convenings held by the Eastern Pennsylvania Alliance for Clean Transportation and Pittsburg Region Clean Cities and one additional meeting with utilities are summarized in Table D.1.

Table D.1. Pennsylvania Convenings

	Convening 1	Convening 2 (if held)	Additional outreach activities, if any
Date, location, and venue	Dec. 7, 2021 Zoom Meeting	Dec. 15, 2021 Zoom Meeting	Mar. 28, 2022 Zoom Meeting
Speakers' names	Tony Bandiero Rick Price Emily Watts Natasha Fackler Josh Dziubeck	Tony Bandiero Rick Price Emily Watts Natasha Fackler Josh Dziubek	Tony Bandiero Rick Price Emily Watts Natasha Fackler
Groups/individuals targeted for/invited to the event	MPO's Municipalities Land Owners	MPO's Municipalities Land Owners	Utilities
Methods used to reach out to target groups/ individuals (e.g., email, notices in trade press)	Email	Email	Email
Lessons learned/outcomes (through convening or other means) for EVSE. Examples include barriers to identifying or recruiting potential site hosts and potential site hosts' concerns, priorities, and constraints.	• Some rural communities wondering who was going to pay for the installation of DCFC's • Follow up with MPO that has potential additional site hosts	• Some exits off I-80 have no power or businesses within 1 mile	• All the utilities were engaged and involved, most concerned about how NEVI funding to be dispersed
Lessons learned/outcomes (through convening or other means) for CNG. Examples include barriers to identifying or recruiting potential site hosts; potential site hosts' concerns, priorities, and constraints; and feedback from CNG fleets operating near the corridor.	We had direct calls with Kyle Bowman of Trillium, who has a Love's site in Mifflinville PA. This location would be one that makes I-80 complete for CNG.	N/A	N/A
Follow-up conducted on potential site hosts and/or fleets	• Followed up with Amy Kessler at North Central RPO, gave us a list of potential DCFC sites hosts. • Talk with potential site host		

Convenings held by Clean Fuels Ohio are summarized in Table D.2.

Table D.2. Ohio Convenings

	Convening 1	Convening 2
Date, location, and venue	Dec 8, 2021 Virtual	May 25, 2022 Virtual
Speakers' names and affiliations	Clean Fuels Ohio: Andrew Conley, Brandon Jones, Jenna Ellingson Intertrust: Rob Adamson, Sung Chun, Ilya Khamushkin Argonne: Marianne Mintz	Clean Fuels Ohio: Brandon Jones, Jenna Ellingson Argonne: Marcy Rood
Groups/individuals targeted for/invited to the event	EV and CNG stakeholders in Ohio	EV and CNG stakeholders in Ohio
Methods used to reach out to target groups/ individuals (e.g., email, notices in trade press)	Email, Newsletter article, social media posts, visuals/posters, surveys	Email, Newsletter article, social media posts, visuals/posters, surveys
Lessons learned/outcomes (through convening or other means) for EVSE. Examples include barriers to identifying or recruiting potential site hosts and potential site hosts' concerns, priorities, and constraints.	• Intertrust's CleanGrid technology is a platform-powered toolkit to develop applications for data-driven DER integration planning, renewable energy O&M, retail energy marketplaces, and more. Clean Fuels Ohio is using the technology to effectively plan for future EVSE charging and CNG fueling stations, accounting for a variety of social, economic, and alternative fuel usage data sets. • EV Fleet Analysis and Charging Planning Services, CNG Fleet Analysis and Fueling Infrastructure Planning Services • Eligible applicants for state/local and federal funding opportunities • Ways that Clean Fuels Ohio (and Clean Cities coalitions) can help connect potential site hosts with EV charging infrastructure providers/companies • Defined number of EV charging stations that are expected to be installed from the NEVI Formula Program in Ohio	• EV Fleet Analysis and Charging Planning Services • Eligible applicants for state/local and federal funding opportunities • Ways that Clean Fuels Ohio (and Clean Cities coalitions) can help connect potential site hosts with EV charging infrastructure providers/companies • Defined number of EV charging stations that are expected to be installed from the NEVI Formula Program in Ohio

Table D.2. (Cont.)

	Convening 1	Convening 2
Lessons learned/outcomes (through convening or other means) for CNG. Examples include barriers to identifying or recruiting potential site hosts; potential site hosts' concerns, priorities, and constraints; and feedback from CNG fleets operating near the corridor.	• CNG Fleet Analysis and Fueling Infrastructure Planning Services • Eligible applicants for state/local and federal funding opportunities • Ways that Clean Fuels Ohio (and Clean Cities coalitions) can help connect potential site hosts with CNG fueling infrastructure providers/companies • Implications of renewable natural gas (RNG) station deployment	• CNG Fleet Analysis and Fueling Infrastructure Planning Services • Eligible applicants for state/local and federal funding opportunities • Ways that Clean Fuels Ohio (and Clean Cities coalitions) can help connect potential site hosts with CNG fueling infrastructure providers/companies • Implications of renewable natural gas (RNG) station deployment
Follow-up conducted on potential site hosts and/or fleets	• Pitt Ohio: Highlighted work done on the I-80 corridor project, provided resources on EV charging and natural gas vehicle and fueling planning/development, informed about state and federal funding opportunities for EV charging and natural gas fueling infrastructure, evaluated City's vehicle transition and fleet sustainability plan • City of Bellevue, OH: Highlighted work done on the I-80 corridor project, provided resources on EV charging and natural gas vehicle and fueling planning/development, informed about state and federal funding opportunities for EV charging and natural gas fueling infrastructure, evaluated City's vehicle transition and fleet sustainability plan • Cole's Energy: Highlighted work done on the I-80 corridor project, provided resources on propane, EV charging, and natural gas vehicle and fueling planning/development, informed about state and federal funding opportunities for propane, EV charging and natural gas fueling infrastructure, evaluated fleet's vehicle transition and fleet sustainability plan as well as propane vehicle success	• Greenspot: Is there a defined number of sites for DCFC that have already been verified? Meaning how many locations and how many chargers are expected to be installed? • Are we looking at wireless chargers for the project? • Cuyahoga County: Do public and private commercial properties apply? Will Ohio Clean Fuels help connect potential site hosts with providers?

The convening held by Iowa Clean Cities and the Illinois Alliance for Clean Transportation is summarized in Table D.3.

Table D.3. Illinois and Iowa Convening

Date, location, and venue	August 16, 2022, at Western Illinois University Quad Cities Online and in-person
Speakers' names and affiliations (if not on agenda)	• Abbie Christopherson, Iowa Clean Cities Coalition • Sangeetha Rayapati, Moline Mayor • Tom Stephens, Argonne • Marianne Mintz, Argonne • Tim Milburn, Green Ways 2Go • Gena McCullough, Bi-State Regional Commission • Craig Markley, Iowa Dept of Transportation • Chris Schmidt, Illinois Dept of Transportation • Hared Bruce: Illinois & Iowa – MidAmerican Energy • Jennifer Hirsch, Metrolink • Michael Doi, City of Moline • Sarah Gardner, Iowa City
Groups/individuals targeted for/invited to the event	Fuel providers Potential site hosts (e.g., convenience stores, fueling stations, hotels, travel destinations) Municipalities, metropolitan planning organizations and councils of government Energy, transportation, and sustainability officials Utilities Fleets using, or open to using, alternative fuels Community members
Methods used to reach out to target groups/ individuals (e.g., email, notices in trade press)	Email, public online sign up with Eventbrite.
Lessons learned/outcomes (through convening or other means) for EVSE Examples include barriers to identifying or recruiting potential site hosts and potential site hosts' concerns, priorities, and constraints.	Iowa's tax on electricity used for fuel is controversial. Payback time period. **People are waiting for NEVI funding.**
Lessons learned/outcomes (through convening or other means) for CNG Examples include barriers to identifying or recruiting potential site hosts; potential site hosts' concerns, priorities, and constraints; and feedback from CNG fleets operating near the corridor.	The amount of space needed for a fueling station is a concern for private fleets that do not have access to a public station.

Follow-up conducted on potential site hosts and/or fleets	• Spoke with Trillium/Love's at the event and followed up to hear about their plans in Iowa and they would like to do more of both. I sent my spreadsheet with incentives. Next steps would be getting more information about NEVI funding. They really want to make EV charging a whole experience with safety considerations, trash bins, etc depending on funding. • Spoke with West Liberty Foods and they are interested in alternative fuel options.

The convening held by the Illinois Alliance for Clean Transportation, formerly Chicago Clean Cities, is summarized in Table D.4.

Table D.4. Illinois Convening

Date, location, and venue	November 9, 2022, Joliet, Illinois, Joliet Junior College Online and in-person
Speakers' names and affiliations	• Samantha Bingham, CACC Coordinator • Tom Stephens, Argonne • Elizabeth Irvin, Deputy Director of Sustainability, Office of Planning and Programming, IDOT • Chris Schmidt, Air Quality Manager, IDOT • Maria Anna Rafac, Sustainability Coordinator, Joliet Junior College • Denise Winfrey, Board Member, Will County Board, President National Association of Counties • Tim Milburn, CACC Steering Committee • Christopher Sala Sr. Industrial & Commercial Account Executive, Nicor Gas • Ryan Jacobs, Account Executive, Ozinga Energy • Andrew Poliakoff, Federal Affairs Lead, Electrify America • Dick Dublinski, Director of Public Works, City of Naperville • Marc Rowe, General Sales Manager, Trillium Energy • Brian Robb, Global Affairs, Lion Electric
Groups/individuals targeted for/invited to the event	Fuel providers Potential site hosts (e.g., convenience stores, fueling stations, hotels, travel destinations) Municipalities, metropolitan planning organizations and councils of government Energy, transportation, and sustainability officials Utilities Fleets using, or open to using, alternative fuels Community members
Methods used to reach out to target groups/ individuals (e.g., email, notices in trade press)	Email, public online sign up with Eventbrite.

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