

U.S. FUELS ACROSS AMERICA'S HIGHWAYS - MICHIGAN TO MONTANA (M2M)

DOE Award No. DE-EE007996 (GTI Project Number 22119)

Final Technical Report

Project Start: 01/19/2017 Project End: 09/30/2022

Report Issued: December 2022

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Executive Summary

Interstate 94 (I-94) is an east–west Interstate Highway connecting the Great Lakes and northern Great Plains regions of the United States. It traverses the northern tier of the United States between Billings, Montana and Port Huron, Michigan. I-94 is heavily used by freight and passenger vehicles with over 17 billion vehicle miles travelled each year (2012 HPMS Data). The average annual daily traffic (AADT) in major cities along I-94 ranges from 152,000 in Milwaukee, WI, to 291,000 in Chicago, IL. Heavy trucks account for approximately 19% of VMT along this section of I-94, which is classified as a Tier 1 corridor based on freight traffic density among the upper Midwest and Great Lakes states. With a strategically placed network of DC fast chargers, compressed natural gas (CNG) and propane fueling stations, travel along I-94 could be accomplished seamlessly using the respective alternative fuel vehicles (AFVs) that are commercially available today. To establish a Michigan to Montana (M2M) Alternative Fuel Corridor, GTI Energy established a project team comprised of alternative fueling infrastructure/transportation deployment partners and Clean Cities Coalitions from states along I-94. Team members include Greater Lansing Area Clean Cities, South Shore Clean Cities, Chicago Area Clean Cities, Wisconsin Clean Cities, Minnesota Clean Cities, North Dakota Clean Cities, ZEF Energy (ZEF), Ozinga Ready Mix (Ozinga), Veriha Trucking, Contract Transportation Services (CTS), and Energy Hunters.

Since the kick-off of this project, this team has been guiding the creation of a planning and implementation framework to provide outreach, commission additional vehicle charging and fueling stations, deploy alternative fuel vehicles, and provide the education and training necessary to establish a sustainable market for alternative fuel vehicles along I-94. This will hopefully allow the M2M Corridor to continue growing well beyond the end of the project term. Significantly increasing the availability and use of alternative fuels and advanced vehicles in key markets is critical for the long-term growth and sustainability of these technologies.

The objectives of the project were to establish community-based partnerships, accelerate the adoption of AFVs, and develop related fueling infrastructure needed to support those vehicles along I-94. The project focuses on alternative fuels and vehicles including electric drive, CNG, and propane. Tactics implemented while achieving these objectives include:



- Establish a successful and sustainable alternative fuel corridor by deploying 13 electric vehicle (EV) DC fast chargers, 2 publicly accessible CNG fueling stations, 1 propane station, and 40 CNG long-haul trucks along the corridor
- Identify and deploy aforementioned chargers/stations/vehicles to fill gaps along the corridor that will create the consistent demand necessary for sustainability
- Provide outreach, education, and training to critical stakeholders, i.e., fleets, communities, utilities, permitting officials, first responders, and fire marshals
- Create a model built upon case studies and best practices that can be used to establish future alternative fuel corridors across the country
- To the extent practicable, leverage and expand existing Smart Mobility programs along the corridor by implementing new "smart infrastructure" initiatives that increase connectivity

The technical approach in this project was to create the necessary team to guide the creation of an alternative fuel corridor, deploy selected stations and vehicles, and provide education/training to establish a sustainable alternative fuel and advanced vehicle market. This would allow for the M2M Corridor to continue growing well beyond the end of the project term. Critical success factors included significantly growing the availability and use of alternative fuels and advanced vehicles in critical markets.

Project accomplishments and corridor impacts include (details on data collected during the project are included in the *Data Collection Report*):

- 16 public alternative fueling stations deployed 13 DCFC, two CNG, and one propane
 - Project data showed the stations dispensed 421,524 Gasoline Gallon Equivalent (GGE) of fuel during project
- 40 alternative fuel vehicles deployed. Project data showed:
 - 15,924,054 miles driven
 - 2,867,199 GGEs displaced
- Based upon calculations performed with AFLEET and using the usage/mileage data provided by our deployment partners, we calculate the following annual environmental benefits:
 - GHG reductions = 14,079 tons equivalent to removing 2,752 cars from the road (US EPA calculator)
 - \circ NOx reductions = 47,537 lbs
 - \circ Petroleum reductions = 33,398 barrels of oil
- A video was created by MotorWeek as a "virtual" ride and drive event to highlight the M2M Project: <u>https://www.motorweek.org/features/auto_world/national-alternative-fuel-corridor-michigan-to-montana</u>
- A First Responder Training curriculum was developed with project support. 25 trainees attended eight-hour First Responder training class for firefighters held in conjunction with its Green Drives conference held in May 2022. The training developed under M2M is available to other interested parties through the Illinois Fire Service's Vehicle Rescue Their alternative fuel training offerings include:
 - In person classes: <u>Alternative Fuel Vehicle Course Description (illinois.edu)</u>
 - Online: <u>Alternative Fuel Vehicle Online Course Description (illinois.edu)</u>



- The Michigan to Montana I-94 Clean Fuel Corridor project utilized social media for project outreach and launched Facebook and Twitter pages aimed at increasing awareness of the project.
 - www.facebook.com/Michigan2Montana
 - <u>https://twitter.com/M2MCorridor</u>
- A website <u>https://m2m94corridor.com/</u> was also launched and used for outreach in the project.
- Portions of I-94 in Michigan, Indiana, Illinois, Wisconsin, Minnesota, and North Dakota were successfully added to FHWA designated highways for alternative fuels including electric charging, CNG and propane. Applications for additional designations are also pending at FHWA.
- In September 2020, Michigan State University completed the analysis titled: "Findings from Economic Modeling of Transitioning I-94 from Conventional Fuel Use to Alternative Fuel Uses." The paper is available at: https://drive.google.com/file/d/1maZQY3BQEuh2US6RVO6iPli10GAoHEUQ/view?usp =sharing
- Chicago Area Clean Cities commissioned a study titled "*Alternative Fuel Corridor Readiness Study for Northeastern Illinois.*" The report can be accessed at: <u>https://chicagocleancities.org/alternative-fuel-corridors-study/</u>.
- Several hundred events or meetings were conducted by the representatives of the Clean Cities Coalitions participating in the M2M Corridor project. Provided below is a sampling of M2M Project Team sponsored and led workshops and webinars that were conducted during FY 2021:
 - Webinar: Clean Fuels Corridor Project Stretches 1,500 Miles Along I-94; Webinar to Showcase Successes, October 26, 2020: <u>https://chicagocleancities.org/clean-fuels-</u> <u>corridor-project-stretches-1500-miles-along-i-94-webinar-to-showcase-successes/</u>
 - Online seminar: Michigan to Montana Alternative Fuel & EV Corridor Project, November 10, 2020: <u>https://chicagocleancities.org/event/webinar-michigan-to-montana-alternative-fuel-ev-corridor-project/</u>
 - Online seminar: Propane Autogas Answers Webinar, February 10, 2021: <u>https://chicagocleancities.org/event/propane-autogas-answers-webinar/</u>
 - Online seminar: Powering Vehicles with Compressed Natural Gas, April 8, 2021: <u>https://chicagocleancities.org/event/webinar-powering-vehicles-with-compressed-natural-gas/</u>
 - Webinar: Intro to Renewable Fuels Webinar, August 6, 2021: <u>https://chicagocleancities.org/event/intro-to-renewable-fuels-webinar/</u>
- Each of the M2M Clean Cities Directors developed state-level flyers. An example flyer developed for Wisconsin is included in the subsequent pages. The first page of the flyer includes general information about the I-94 corridor and the M2M project. The second page provides a state-level map and summary of alternative fuels infrastructure supporting the I-94 corridor. M2M flyers are available for all states included in the I-94 corridor and were distributed at team member attended and sponsored events.











Background

The US Department of Energy selected GTI Energy, and its project partners, to develop and implement the Michigan to Montana (M2M) Corridor concept along I-94 from Port Huron, MI to Billings, MT. I-94 is the primary connection between the major metropolitan areas in the Upper Midwest. With a strategically placed network of DC fast chargers, compressed natural gas (CNG), and propane stations, travel between any of these cities could be accomplished seamlessly using alternative fuel vehicles. In focusing on I-94, critical success factors include significantly growing the availability and use of alternative fuels and advanced vehicles in markets critical for long-term success of these technologies.

The objective of the project is to establish community-based partnerships and deploy alternative fuel stations (including EVSE, CNG, biofuels, and propane stations) and alternative fuel vehicles along I-94 from Port Huron, MI to Billings, MT. Specifically, the project accomplished the following goals:

- Provide leadership through community-based partnerships to create a successful and sustainable alternative fuel corridor
- Deploy a total of 16 fueling stations including 13 electric vehicle (EV) DC fast chargers, two compressed natural gas (CNG) stations and one propane station along with approximately 40 CNG trucks
- Identify and fill gaps in alternative fuel station locations and identify partners with anchor fleets to deploy vehicles that will create the consistent demand necessary for a sustainable industry
- Provide outreach, education, and training to critical stakeholders (i.e. fleets, communities, utilities, permitting officials, first responders, and fire marshals)
- Create a model for establishing future alternative fuel corridors across the country by identifying key stakeholders and documenting successes and best practices

I-94 is the primary connection between the major metropolitan areas in the Upper Midwest. With a strategically placed network of DC fast chargers, compressed natural gas (CNG), biofuel and propane stations, travel between any of these cities could be accomplished seamlessly on any of the alternative fuels that are commercially available today. I-94 is heavily used by freight and passenger vehicles with over 17 billion vehicle miles travelled each year (2012 HPMS Data). The average annual daily traffic (AADT) in major cities along I-94 ranges from 152,000 in Milwaukee, WI, to 291,000 in Chicago, IL. Heavy trucks account for approximately 19% of VMT along this section of I-94, which is classified as a Tier 1 corridor based on freight traffic density among the upper Midwest and Great Lakes states.

Comparison of the Project Accomplishments with the Project Goals and Objectives

A complete Statement of Project Objectives for Award DE-EE0007996 can be found in Appendix A. For the purpose of comparing project accomplishments with Project goals, we are reporting significant accomplishments on a Budget Year basis relative to the following goals:



- **Budget Period 1**: *Community Partnership and Corridor Planning*: The recipient will establish the structure for the I-94 Alternative Fuel Corridor, pull together the Project Team Members and Community partners, identify the gaps and needs along the route for the fuels, and begin preliminary deployment activities for sites that are initially identified.
- **Budget Period 2**: *Implementation and Coordination*: The recipient will deploy infrastructure sites and vehicles under this project. Additionally, the project will implement several items identified in the Needs Analysis and Corridor Planning subtasks above.
- **Budget Period 3**: *Data Collection and Outreach*: The recipient will collect data from the project deployments, conduct outreach to promote the Corridor, and provide resources that will allow for growth of alternative fueled vehicle use.

Budget Period 1

Community-based partnerships were established with assistance from Directors at the following Clean Cities Offices:

- Greater Lansing Area Clean Cities
- South Shore Clean Cities (now Drive Clean Indiana)
- Chicago Area Clean Cities (now Illinois Alliance for Clean Transportation)
- Wisconsin Clean Cities
- Minnesota Clean Cities Coalition
- North Dakota Clean Cities

Along with the M2M Project Team members listed above, we have worked with a vast number of Community Partners to plan corridor activities. These partners include State Energy Offices, State and Municipal DOTs, utilities, State and Municipal Planning Organizations, State Environmental Offices, and the private sector. Examples of Community Partners that we collaborated with are cited in the table below:

	initially 1 definers
American Electric Power	Gary Public Transit Corporation (GPTC)
Battle Creek Area Transportation Study-	Indiana Department of Environmental
MPO	Management (IDEM)
Best Way Disposal	Indiana Department of Transportation
	(INDOT)
B&B Trucking	Indiana Dunes National Lakeshore
Blue Energy/Corrigan Oil	Indiana Office of Energy Development
Blue Water Transit Authority	Northern Indiana Regional Planning
	Commission (NIRPC)
Clean Fuels Michigan	Port of Indiana (Burns Harbor)
Consumers Energy	Senator Joe Donnelly
DTE Energy	South Shore Convention & Visitors Bureau
Gain CNG	Town of Munster
General Motors	Alpha Baking
Kalamazoo Area Transportation Study-	Cross Roads Chamber of Commerce
MPO	
Lansing Board of Water and Light:	Dunes Learning Center
Meijer	Family Express Corporation

Table 1 – Community Partners



Michigan Association of Pupil	Fronius- Solar Company
Transportation	
Michigan Department of Environmental	IDLEAIR
Quality	
Michigan Department of Transportation	Lakes & Rivers Logistics
Michigan Energy Office/Michigan Agency	Lake County IN Economic Alliance (LCEA)
for Energy	
Michigan Propane Gas Association	Lake Shore Motors
Michigan Public Service Commission	Loves Truck Stop
Michigan State University	NIPSCO
Motor Carrier Advisory Board	NIISSA –Northern Indiana Information
	Sharing & Security Alliance
St. Clair County Transportation Study-	Northwest Indiana Forum
MPO	
Tri-County Regional Planning Commission	
City of East Chicago	SPEEDWAY Petroleum
City of Gary	We-Energies
City of Hammond	Alliant Energy
Town of Highland	Wisconsin Public Service (WPS)
City of Hobart	Madison Gas & Electric
City of Lake Station	WI Office of Energy Innovation (OEI)
City of LaPorte	Wisconsin FHWA
City of Michigan City	WI Department of Transportation
City of Portage	Southeastern WI Regional Planning
	Commission (SWERPC)
Congressman Peter Visclosky	Capital Area Regional Planning Commission
	– Madison
Gary/Chicago International Airport	West Central WI Regional Planning
	Commission – Eau Claire

Partnerships were also established with the following private sector companies for the purpose of deploying alternative fuel stations and vehicles:

- Ozinga Energy- CNG stations and DCFC station
- ZEF Energy- DCFC stations
- Contract Transportation Services- CNG trucks
- Veriha Trucking- CNG trucks
- Energy Hunters- DCFC stations
- Landmark Services Cooperative (now ALCIVIA)-propane fueling station

A Needs Analysis for Alternative Fueling Infrastructure along the I-94 Corridor was performed. The Project Team developed a map (shown below) of the existing infrastructure along the corridor and identified major gaps indicated by the areas circled in red. Results of this analysis were used by our original EV stations deployment partner ZEF Energy to target potential locations for new stations. This partner collaborated with Clean Cities Directors to narrow the search to specific businesses and gain support from key stakeholders such as electric utility companies.





Figure 1 – Infrastructure Gap Analysis

Our team's analysis of the gaps in infrastructure highlighted several areas that we would concentrate upon as the project progressed. At a higher level, these gaps include western Michigan, central Wisconsin, and areas along I-94 west of Minnesota including most of North Dakota and Montana. For the gap in Michigan, the following needs (by fuel type) were identified:

- CNG Gaps 190-mile gap from the CNG station at 3145 Ann Arbor-Saline Rd, Ann Arbor, MI 48103, to MI/IN border. A CNG station is needed in Western Michigan, preferably the Kalamazoo area.
- Propane Gaps 150-mile gap between the propane station located at 1809 E Michigan Ave, Jackson, MI 49202, and the MI/IN border. A station is needed in Western Michigan, preferable in the Benton Harbor region. Additionally, there is a gap from Port Huron, MI, to the propane station at 43920 N Gratiot Ave, Clinton Township, MI 48036 (though at 36.5 miles, the gap is not significant). A public propane station is needed in Port Huron.
- DCFC Gaps There is a 73.8-mile gap from Port Huron to the nearest DC Fast Charger along I-94 (4345 S Telegraph Rd, Dearborn Heights, MI 48125). A DC Fast Charger is needed in Port Huron, and also somewhere between Port Huron and above the location. Additionally, there is a 180-mile gap from DC Fast Charger location at 3975 Jackson Rd, Ann Arbor, MI 48103, to MI/IN border.

In Wisconsin, we identified an approximately 175 mile gap for DCFC, propane, and CNG from Eau Claire to just north of Madison. For the gap west of Minnesota, there were very few alternative fuel stations in North Dakota and Montana. As possible, these gaps were filled in deployment activities later in the project period as described below.

Another specific need identified was a lack of training for first responders along the corridor. When dealing with alternative fuels, the properties of the fuels (e.g. natural gas, propane, ethanol, hydrogen and electric) are different than traditional diesel and gasoline. For



example, with electric vehicles, emergency responders may need to know where to cut power wires to disable high voltage circuits. A plan was developed to hold regional training sessions that would have two major components: a) A series of web-based modules available through the National Fire Protection Association (NFPA)¹, and b) classroom and direct training. The classroom briefing framed the direct activities and orient the participants prior to the direct training. The direct training allowed participants to learn about the kinds of actions that may be required in an emergency event on actual alternative fueled vehicles.

With support from the Clean Cities Coalitions listed above, GTI began working on FHWA Alternative Fuel Designations along I-94. There are several sections of I-94 that were designated in the second round of the FHWA designation process including routes in Michigan and North Dakota. The Michigan DOT committed to install alternative fuel corridor signage along I-94. The project contributed to FHWA designations of sections of Interstate 94 in Michigan, Indiana, Illinois, and Wisconsin for EV Charging and/or CNG fueling.

Budget Period 2

The focus of Budget Period 2 was deployment targeted at gaps identified in the Needs Analysis:

- With support from our grant, our partner Ozinga Energy deployed two public CNG stations and one public DCFC station.
- Fleet owner Contract Transport Services (CTS) deployed 30 new CNG long-haul trucks.
- Veriha Trucking deployed 10 new trucks CNG long-haul trucks.
- ZEF Energy deployed 9 new DCFC stations along the I-94 Corridor.
- Energy Hunters deployed three new DCFC stations along I-94 (two in MN and one in ND).
- Landmark Cooperative (now ALCIVIA) deployed a new propane fueling station in Cottage Grove, WI.
- In total, the project deployed a total of 16 alternative fueling stations and 40 alternative fueled vehicles along the I-94/M2M Corridor.

Budget Period 3

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Our focus in Budget Period 3 was Data Collection and Outreach:

- Our agreements with each of the deployment partners included the submittal of quarterly data that would enable the project team to estimate the emissions reduction benefits associated with the new alternative fuels infrastructure or vehicles deployed along the Corridor. This data was used to prepare a separate deliverable titled Data Collection Report. Based on the data reported, the following statistics were obtained:
 - 16 public alternative fueling stations deployed 13 DCFC, two CNG, and one propane
 - Project data showed the stations dispensed 421,524 Gasoline Gallon Equivalent (GGE) of fuel during project
 - 40 alternative fuel vehicles deployed. Project data showed:
 - 15,924,054 miles driven
 - 2,867,199 GGEs displaced

^{1 &}lt;u>https://catalog.nfpa.org/Alternative-Fuel-Vehicles-Training-Program-for-Emergency-Responders-Online-Training-P15552.aspx?order_src=D762</u>



- Based upon calculations performed with AFLEET and using the usage/mileage data provided by our deployment partners, we calculate the following environmental benefits over the life of the project:
 - GHG reductions = 14,079 tons equivalent to removing 2,752 cars from the road for a year (US EPA calculator)
 - NOx reductions = 47,537 lbs
 - Petroleum reductions = 33,398 barrels of oil
- For our goal of providing outreach, education, and training to critical stakeholders (i.e. fleets, communities, utilities, permitting officials, first responders, and fire marshals), significant accomplishments included:
 - The Clean Cities Directors were the 'front line' for Outreach efforts to critical stakeholders throughout the project life. Prior to the COVID-19 pandemic, most outreach efforts were in person at meetings, conferences, transportation shows and grand openings of new stations. The pandemic resulted in the team switching to virtual outreach via zoom and web-conferencing. Toward the end of the project, in person outreach resumed and this facilitated training of first responders.
 - A website <u>https://m2m94corridor.com/</u> was also launched and used for outreach later in the project. A printout of website search statistics for the month of June 2022 is included in Appendix B. This website will remain accessible into 2023.
 - In December 2021, a deliverable titled "Marketing and Social Media Program Report" was prepared and submitted to our DOE Project Manager. This report attempted to highlight our accomplishments in the following areas, of which, specifics and examples are included within this report:
 - Workshops and Webinars,
 - Other Outreach Activities,
 - Social Media, and
 - Publications
 - CACC planned and supported an eight-hour First Responder training class for firefighters that was held in conjunction with the Green Drives conference held May 2022 in Naperville, IL.
 - GLACC nominated Port Huron to Detroit for Alt. Fuel station designations along with a portion of I-94 for hydrogen fueling.
 - Creating a model for establishing future alternative fuel corridors across the country by identifying key stakeholders and documenting successes and best practices
 - A separate whitepaper on this topic was prepared and submitted to the DOE Project Manager at the end of the project.

Major Activities

The two activities that consumed the largest amount of project time and resources were Deployment and Social Outreach. Each month, a conference call was conducted involving all project team members including GTI Energy technical staff involved with M2M project, Clean Cities Directors from Michigan to North Dakota (along I-94), deployment partners and our DOE Project Manager. Deployment partners reported on progress identifying and siting infrastructure for alternative fueling stations as well as CNG trucks. Each Clean Cities Coalition was provided



with an opportunity to report on social outreach activities conducted since the last conference call or planned for the coming month. After each conference call, a summary of the minutes was prepared by GTI Energy and distributed to all project team members mentioned above. The handouts prepared by our Clean Cities Coalitions for use in social outreach activities is included in Appendix C. The first page in Appendix C is the cover and the subsequent pages are for the individual states included in the M2M Corridor.

The preparation of deliverables was also a major activity. Recipients were required to submit the following reports: Quarterly Reports, Annual Reports (prepared in conjunction with the Vehicle Technology Office), Applications for Continuation of the Project (at the end of each budget period), Milestones reports for each Budget Period and a Final Report.

Some of the deployment partners that were included in the original budget withdrew early on from the project, and this led to the need to prepare several modifications for new partners interested in cost sharing deployment of new CNG trucks, new CNG fueling stations and DC fast charging stations for electric vehicles. Coordinating these modifications with Clean Cities Directors facilitated the process. Nevertheless, these changes required modifications to our grant, and the associated contractual processing activities added time and effort to the project.

One of our major planned Outreach events was a "Road Show" that would highlight several of our newly installed alternative fuel infrastructure/users along I-94. Because of COVID-19 restrictions, a fair amount of planning for this event had to be re-directed to scaled back/ "virtual" road trip that was conducted by representatives from MotorWeek. We can confidently report that thanks to efforts of certain Clean Cities Directors involved, the MotorWeek recording exceeded our expectations. The video can be viewed at :

https://www.motorweek.org/features/auto_world/national-alternative-fuel-corridor-michigan-tomontana

Deployment of Compressed Natural Gas Stations

With support from the M2M grant, Ozinga Energy installed and commissioned two new public CNG fueling stations. The first new station, shown below, is located at Gary, IN and was commissioned in the fourth quarter of 2019.





A second new station was completed in the third quarter of 2020 and is located at New Buffalo, MI, shown below.



These two new stations are intended to help address an alternative fuels infrastructure gap along I-94 that includes Northwest Indiana and Southern Michigan.

Deployment of CNG Trucks

Deployment partner Contract Transport Services (CTS) purchased 30 new CNG trucks with funding support from the M2M project. CTS places a high importance on the environment. They have partnered with the Environmental Protection Agency as a SmartWay affiliate to help reduce greenhouse gas emissions, curb air pollution, and improve fuel efficiency for sustainability. CTS reports that its entire fleet of over 100 trucks run on compressed natural gas (CNG). They also report that their company fueling station is supplied with Renewable Natural Gas (RNG) and that some of the stations that their trucks fuel at along the I-94 Corridor also are supplied with RNG. In 2019, CTS was given the Forward Fleet Award by Wisconsin Clean Cities, as well as honored by Heavy Duty Trucking (HDT) as a Top Green Fleet of 2019.

Deployment partner Veriha Trucking purchased 10 additional CNG trucks with support from the M2M project. Since 2012, its fleet of 28 CNG tractors has been serving dedicated customer accounts in Wisconsin, Michigan, and Illinois. Equipped with a 12-liter engine, these tractors can travel up to 650 miles on a single tank of fuel with the following associated benefits:

- Fueled by cleanest-burning fossil fuel
- Produces fewer vehicle emissions
- Emissions contain less pollutants
- Vehicle components last longer
- Provides similar fuel mileage as gasoline
- Superior engine performance

Veriha's commitment to sustainability resulted in their recognition as an EPA SmartWay® Transportation Partner.



Photos of one of CTS' and one of Veriha's new CNG trucks deployed with support from this award are included below:



A total of 40 new CNG trucks purchased through this grant now belong to "anchor fleets" traveling portions of the I-94 Corridor. These anchor fleets support CNG fueling stations located along the Corridor that displace diesel fuel.

Deployment of DC Fast Charging Stations

With support from our two deployment partners, ZEF Energy, Ozinga Energy and Energy Hunters, who were responsible for installing and commissioning DC Fast Chargers along the I-94 Corridor, our grant supported the deployment of a total of 13 new charging stations. The table below lists the locations of each of these stations:

-	I J	
DCFC St	ations Deployment alo	ng I-94 Corridor
#	Market	Location Name
1	Moorhead, MN	Noodles
2	Fergus Falls, MN	Service Foods
3	Alexandria, MN	Simonson Station Stores
4	St. Cloud, MN	St. Cloud Convention Center
5	Hudson, WI	Hampton Inn and Suites
6	Tomah, WI	Ground Round
7	Eau Claire, WI	Downtown (City property)
8	Dickinson, ND	Simonson Station Store
9	Black River Falls, WI	
10	Sturtevant, WI	Citgo station
11	Ashby, MN	CNEX station
12	Barnesville, MN	CNEX station
13	Jamestown, ND	CNEX station

DCFC stations deployed under award DE-EE0007996

Four of the stations deployed by our partner ZEF Energy are shown below:





EV Fast Charging Stations Installed and Commissioned in FY 2020 (Source-ZEF Energy)

An additional station deployment included a new propane fueling station by ALCIVIA (formerly Landmark Services Cooperative) located in Cottage Grove, WI. A photo of the station installation is shown in the photo below:



Deployment of EV charging stations and alternative fueling stations along I-94 was targeted to close identified gaps along the Corridor. This infrastructure supported applications for pending and issued FHWA Alternative Fuel Corridor designations along I-94 in Michigan, Indiana, Illinois, Wisconsin, Minnesota, and North Dakota.





Signage on I-94 between the Wisconsin-Illinois border and Madison, WI

Through outreach efforts such as participating at workshops, conference exhibits, newsletters and more, the Clean Cities Coalitions involved in the project significantly raised public awareness, among their respective stakeholders, about Alternative Fuel Corridors, in general, and the M2M Corridor, specifically. One of our Clean Cities Coalitions dedicated a person to monitor the effectiveness of outreach on social media platforms Twitter and reported statistics to the team on a monthly basis. An example of the metrics that were tracked and reported upon is provided in the figure below:





Major Findings and Conclusions

For successful deployment of alternative fueling infrastructure and alternative fueled vehicles along a new or expanding Corridor, the critical factors needed include:

- Adequate allocations of time and funding to identify and close on prospective sites and partners,
- Committed deployment partners with sufficient staff and expertise to manage the challenges of new construction projects,
- Budgeting of time and resources for the potentiality of unanticipated delays resulting from changes in market conditions (e.g., economic downturn, supply chain disruptions, labor supply shortages, etc.)

Clean Cities Directors are in the best position to assist with Social Outreach and Marketing of the Alternative Fuel Corridor development project. They are also a critical resource for identifying potential deployment partners throughout the project life cycle, particularly when replacements are quickly needed. Because the Clean Cities Coalitions petitioned the FHWA for new designations of Alternative Fuel Corridor, having them following new infrastructure projects in real time is valuable.

With a project scope that spanned the course of I-94 from Port Huron, MI to Billings, MT, and all the participants involved, there are substantial challenges and potential problems maintaining clear and regular communications among the participants. Our project relied upon monthly conference calls and quarterly written reports. When one of our deployment partners encountered staffing issues during project life cycle, they reduced their involvement in the monthly calls and their quarterly reports lacked sufficient specificity. If we had known more details about the issues, it is possible that the impacts for our partner and the project accomplishments could have been reduced.

While the Team did its best to work around the COVID-19 lockdowns and subsequent implications, it is apparent that the impacts on our deployment of alternative fuel infrastructure and vehicles was significantly impacted. These impacts range from substantial cost growth in equipment and labor to the inability to even purchase major equipment such as new CNG trucks within the available window our award allowed.



Key Outcomes

Without repeating the statistics reported earlier in this report, certainly the successful deployment of new CNG and propane fueling stations, new CNG trucks, and new DC Fast Charging stations for EVs along Interstate 94 is a key outcome of the M2M project.

Outreach efforts by the Clean Cities Directors from MI, IN, IL, WI, MN and ND resulted in a much greater awareness of why the DOE is supporting Alternative Fuel Corridors. With the current administration's increased emphasis on electric vehicles, the M2M project's deployment of EVSE has been particularly timely. Many of the grand openings of new DCFC stations deployed by our project provided participants with their first in-person experience with this critical infrastructure for electric vehicles.

The M2M Corridor successfully launched a dedicated website to promote the project and its goals, provide a clearinghouse for information and tools related to the project as well as details on the partners and their roles. The website increased understanding of alternative fuel corridors, highlighted related events, promoted stations, and increased interest and understanding of alternative fuels, alternative fuel vehicles and electric vehicles. The website will remain available through 2023 as an education and outreach tool to leverage existing U.S. DOE information, programs, and apps.

New alternative fuel stations deployed under the award were promoted via a targeted marketing campaign developed by project partners. Marketing included messaging, advertising, social media pages and a region-wide website. Partners and new station sites also promoted the program through internal communications in partnership with M2M partners to expand the reach to targeted audiences.

Project partners ensured the quality of information met exacting standards by using alternative fuel vehicle market experts to deliver engaging presentations as we grew the I-94 Alternative Fuels Corridor. Project partners utilized DOE tools such as calculators, interactive maps, and data searches to assist fleets, fuel providers and other transportation decision-makers in their efforts to reduce petroleum use.

Other Achievements

Partners in the M2M project collaborated to develop and distribute new educational and marketing materials and graphics for the I-94 Corridor. Media relations outreach led to the MotorWeek video-story (<u>https://www.motorweek.org/features/auto_world% 20/national-alternative-fuel-corridor-michigan-to-montana</u>) which helped draw attention to the program, alternative fuel corridors as a whole, project partners and the new stations. The efforts of the partners were guided by a marketing and communications strategy centered on building the awareness and visibility necessary to promote alternative fuel and electric vehicle use in the seven-state region.

Our marketing strategy included a comprehensive and coordinated approach that defined key messages, identified success stories and spokespeople, built awareness and integrated overall communications between the various partners and stakeholders. The plan, implemented over the



project timeframe, focused on building awareness of alternative fuels through a variety of platforms (website, social media, and media relations) that highlight the potential environmental and economic benefits of expanding the availability and use of AFVs and EVs along I-94. To the extent practicable, given the COVID-19 restrictions, outreach efforts included live events to publicize station openings along with press conferences, press releases and social media posts.

Schedule Status

All of the milestones by Budget Period included in the SOPO (and provided at the beginning of this report) have been satisfied. Deliverables have been submitted to the DOE Project Manager.

Revisions in Technical Approach

Though there were modifications with specific partners and site locations, the project approach remained the same throughout the life of the project.

Any Actual or Anticipated Problems

The most significant problems encountered were the decision by two of our original deployment partners (Kwik Trip and Trillium) to withdraw from the project as well as the impacts of the COVID-19 pandemic. Both of these problems resulted in delays to complete the project as originally scheduled. Nevertheless, the project still accomplished its goals.

Changes of Key Personnel or Changes in Consortium/Teaming

A portion of Kwik Trip's proposed budget for purchases of 30 new CNG trucks was reallocated to Veriha Trucking for purchase of 10 new CNG trucks. Trillium's proposed budget for installation of two new CNG stations was reallocated to Energy Hunters for deployment of three new DC Fast Charging stations.

Product Produced or Technology Transfer Activities Accomplished

 M2M Corridor Website – In early 2022, the M2M Corridor project developed and launched a dedicated website to promote the project and its goals, and to provide a clearinghouse for information and tools related to the project. The M2M website https://m2m94corridor.com/ aims to increase understanding of alternative fuel corridors, highlight related events, promote alternative fuels/stations, and increase interest and understanding of alternative fuels, alternative fuel vehicles and electric vehicles. The website can be used as an education and outreach tool to leverage existing U.S. DOE information, programs, and apps as much as possible. The website will remain active at least through 2023.



APPENDICES

Appendix A- Statement of Project Objectives for Award DE-EE0007996

A. SCOPE OF WORK

The project will be conducted in three budget periods:

- **Budget Period 1**: *Community Partnership and Corridor Planning*: The recipient will establish the structure for the I-94 Alternative Fuel Corridor, pull together the Project Team Members and Community partners, identify the gaps and needs along the route for the fuels, and begin preliminary deployment activities for sites that are initially identified.
- **Budget Period 2**: *Implementation and Coordination*: The recipient will deploy infrastructure sites and vehicles under this project. Additionally, the project will implement several items identified in the Needs Analysis and Corridor Planning subtasks above.
- **Budget Period 3**: *Data Collection and Outreach*: The recipient will collect data from the project deployments, conduct outreach to promote the Corridor, and provide resources that will allow for growth of alternative fueled vehicle use.

B. TASKS TO BE PERFORMED

The following tasks will be conducted:

All Budget Periods

Overall Project Management and Planning

The objectives for the project management portion of the work are to provide project planning, coordination, and reporting as required to successfully achieve the overall objectives of the project.

Task 0.0 – Project Management and Planning

The Recipient will develop and maintain the Project Management Plan (PMP) and manage and report on activities in accordance with the plan. This task includes the writing of reports, presentation slides, invoice control for subcontractors, and expense tracking. Other aspects include technical updates from subcontractors and attendance at review meetings. The Recipient will maintain an up-to-date Project Management Plan designed to achieve the project objectives and cover the entire Project Period. The content and organization of the PMP is identified in the Federal Assistance Reporting Checklist and Instructions. The PMP will be updated and submitted as part of the continuation application prior to the initiation of each budget period as outlined in the deliverables section below.

Task 0.1- Kick-Off meeting



The recipient will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

BUDGET PERIOD 1

Task 1: Community Partnership and Corridor Planning

The Recipient will begin planning for the I-94 Alternative Fuel Corridor by pulling together the Project Team Members and Community partners, identify the gaps and needs along the route for the fuels, and begin preliminary deployment activities for sites initially identified.

Subtask 1.1: Needs Analysis

A critical aspect of this project is the analysis of the current strengths and resources along the corridor as well as an analysis of the greatest needs. Under this task, the recipient will undertake the Needs Analysis in order to identify several key factors such as:

- Critical distances between infrastructure locations for each fuel type
- Gaps in the existing infrastructure
- Vehicle and "anchor fleet" quantities needed to create a sustainable corridor
- Education, training, and outreach needs
- Level of additional funds needed to achieve market growth
- Smart mobility and smart infrastructure needs

Subtask 1.2: Sustainable Corridor Planning

The recipient will create the structure for developing a sustainable I-94 Alternative Fuel Corridor and direct overall corridor planning activities. The recipient will identify needs and implement initial outreach and education along the corridor as well as begin developing a dedicated program website. The recipient will analyze existing funding programs that can be leveraged to support the corridors goals. As needs and gaps are further identified along the corridor, the team will select strategic locations for additional deployment projects. The recipient will develop a Corridor Planning Report on the structure, members, communication/management plan, and metrics for success for the Corridor. This report will highlight key partners and activities that can modeled in future corridor projects. The Strategic Deployment Plan will highlight key station locations and fuels needed.

Subtask 1.3: Initial Deployment Activities

The recipient will initiate activities for various deployment sites, including initial site planning and permitting, long-lead equipment and vehicle orders, and early deployment efforts that are critical to successfully complete the sites in a timely manner.

Milestone	Туре	Description
Project team members and community partners identified	Technical	Project team members and community partners identified.



Corridor Planning Report Complete	Technical	The Corridor Planning Report which details the structure, members, communication/management plan, and metrics for success for the M2M Corridor will be completed.
Strategic Deployment Plan Complete	Technical	The Strategic Deployment Plan which highlights key station locations and fuels will be completed.
Needs Analysis Report Complete	Go/No Go	The Needs Analysis Report which helps to focus future project plans will be completed.

BUDGET PERIOD 2

Task 2: Implementation and Coordination

The Recipient will undertake major deployment efforts for the infrastructure sites and vehicles under this project. Additionally, the Project Team and our Community Partners will implement several items identified in the Needs Analysis and Corridor Planning subtasks.

Subtask 2.1: Deployment

The Recipient will execute deployment activities including the installation, construction, and commissioning for the project's infrastructure sites and vehicles. Throughout site deployment, the Project Team will provide oversight of activities to ensure successful integration of corridor stakeholder needs.

Subtask 2.2: Corridor Coordination

This Recipient will hold workshops and roundtable discussions with stakeholders to support permitting and construction activities. Furthermore, a regionally focused marketing and social media campaign will be developed to promote the region-wide stations, as well as increase interest and understanding of alternative fuel vehicles. The Project Team will investigate operating policies and procedures that can be implemented by key stakeholders along the corridor. The Recipient will also work with state DOTs to identify signage requirements to create a consistent, meaningful Alternative Fuel Corridor branding. Integration of Smart Mobility and Smart Infrastructure efforts, identified during Task 1, will occur as well.

Milestone	Туре	Description
Workshop/Roundtable Events Completed	Technical	All planned workshop and roundtable events will be completed.
Marketing and Social Media Program Report Complete	Technical	The marketing and social media program report will be completed.
Operating Policies and Procedures Report Completed	Technical	A report on the operating policies and procedures that can increase alternative fuel adoption will be completed.



Deployment Report Completed	Go/No Go	The Deployment Report which will detail deployment activities and analyze the progress and additional gaps along the corridor will be completed.
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BUDGET PERIOD 3

Task 3: Data Collection and Outreach

The Recipient will collect data from the project deployments as well as perform outreach (i.e. marketing, education, and training) to promote the Corridor and provide resources that will allow for growth of alternative fueled vehicle use.

Subtask 3.1: Outreach - Marketing, Education, and Training

The Recipient will perform outreach to promote the M2M Corridor and support its stakeholders with outreach and training to include:

- Website Launching the M2M Corridor website
- Smart Mobility Documenting effective Smart Mobility efforts and implementations
- Roadshow Holding an Alternative Fuel Roadshow with a road trip along I-94 corridor
- Training/Education Training/education events, leverage existing US DOE information, programs, and apps when possible
- Grand Openings Hold grand openings at deployments sites
- Model Corridor Create model for future corridor activities
- Marketing Campaign The M2M Corridor and new stations will be promoted via a targeted marketing campaign developed by project partners, which will create key messaging, advertising, social media, and a region-wide website to attract fleets.
- Creating case studies, lessons learned, and best practices

Subtask 3.2: Data Collection and Sharing

The Recipient will collect data from deployments and will record detailed information from stations and vehicles including metrics that will validate emissions and petroleum reductions. Data collection and sharing methodology will be coordinated with US DOE to ensure appropriate information is available. At a minimum, the stations and/or vehicles will record miles traveled, fuel used, and gallons dispensed and will calculate emissions benefits and petroleum reduced.

Milestone	Туре	Description
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Case Studies, Best Practices Materials Completed	Technical	Materials for the case studies and best practices documents will be completed.	
Analysis of Corridor	Technical	Complete the model for establishing future	
Planning Completed	Technical	alternative fuel corridors across the country.	
Initial Data Collection	Tashnisal	The initial data collected from project deployments	
Report Completed	Technical	is available for review.	



APPENDIX B- M2M Website Statistics June 2022

LES | M2M 94 Corridor » Dashboard - 2022-06-01,2022-06-30

he Basics	Summary	Visitors	Actions	Unique	s Time
Visitors Expand				40	+67%
Actions Expand				75	+29%
Average actions				1.9	-21%
Total time			1:4	7:16	+281%
Average time per visit			0	2:41	+125%
Bounce rate				9%	-42%



Visitors

Rec	ent visitors	List Most active
5:11p	🚟 Frontier Communicati	1 🖃
3:18p	📧 Korea Telecom	1 🛃
8:02p	🛎 Icloud Private Relay	/event/june-28-2022-el 🔮
4:44p	Icloud Private Relay	/events/list/page/2/?trib 📑
4:42p	💶 Icloud Private Relay	/event/june-28-2022-el 🕑
2:49p	💶 Comcast Cable	1 🛃
5:51p	🖷 Icloud Private Relay	1 🛃
8:53p	🖷 Icloud Private Relay	/alternative-fuels/ 🖉
3:19p	Netskope	/event/june-28-2022-el 📑
7:41p	Icloud Private Relay	1 🛃
1:22p	💶 Comcast Cable	1 🛃
8:30a	💶 Indiana Office Of Tec	/event/august-9-2022-d 📑
1:14a	💶 Airtel Broadband	/contact/ 🖉
12:12p	🖭 Netskope	1 🖃

Links	Incoming	Domains	Recent	Unique O	utg	oing
facebook.com					2	0%
fuelsfix.com					1	0%
cleancities.energy.gov					1	0%

Searches	Searches	Keywords	Recent	Unique	Rankings
[secure search]				1	9 +73%

Content Pages Entrance Exit Downlos	ads I	Event	s Media
/ Home - M2M - Michigan to Montana I-94 Corridor	2	19	+12%
/event/june-28-2022-electric-vehicle-tailgate-p June 28, 2022 - Electric Vehicle Tailgate Party - M2	2	14	0%
/events/ Upcoming Events - M2M - Michigan to Montana I-9	2	6	0%
/alternative-fuels/ Alternative Fuels - M2M - Michigan to Montana I-94	2	5	+67%
/corridor/ Corridor - M2M - Michigan to Montana I-94 Corridor	2	4	-67%
/event/june-14-2022-medium-heavy-duty-elect June 14, 2022 - Medium- & Heavy-Duty Electric Ve	2	3	0%
/about/ About Us - M2M - Michigan to Montana I-94 Corridor	2	3	-73%
/alternative-fuels/biodiesel/ Biodiesel - M2M - Michigan to Montana I-94 Corridor	2	2	-50%
/event/june-15-2022-ev-charging-workshop/ June 15, 2022 - EV Charging Workshop - M2M - Mic	2	2	0%
/contact/ Contact Us - M2M - Michigan to Montana I-94 Corri	2	2	+100%

Locale	countries	Children	Cangonyes	0.9	11031	
🔤 The United States					34	+55%
Singapore					1	0%
Ireland					1	0%
Hong Kong					1	0%
📧 Republic Of Korea					1	0%
• Canada					1	0%
💶 India					1	0%

Traffic sources

Searches	19	+73%
Ø Direct	15	+114%
Advertising	4	0%
📟 Links	2	-67%









This document is based upon work supported by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under Award Number DE-EE0007996.



ALTERNATIVE FUEL CORRIDORS M

MOVING PEOPLE & GOODS ON CLEAN FUELS

Alternative fuel corridors extend throughout Indiana, and are not limited to I-94. A corridor-ready designation means sufficient refueling access exists along that section of highway for that specific alternative fuel. Corridor-pending means there is some fueling infrastructure but gaps exist. New alternative fuel sites can help fill these infrastructure gaps in Indiana, accelerating the transition to lower-emission vehicles and ensuring that the growing number of drivers have consistent access to fueling and charging options.

CLEAN FUELS, CLEAN JOBS, CLEAN COMMUNITIES

Alternative fuels play an important role in Indiana's economic and environmental success. Alternative fuel corridors improve air quality, especially to communities living closest to highways. Significant opportunities exist to fill remaining gaps in alternative fueling across all highways. In addition to the health-related benefits, and energy security, the installation of new fueling infrastructure supports jobs throughout the state. In 2018, commercial and government fleets that participate in South Shore Clean Cities had an energy impact equal to 18.3 million gasoline-gallon equivalents (GGEs) and reduced greenhouse gas emissions by 122,300 tons.

C



80

Fort Wayne

Muncie

70

ndianapolis

Bloomington

South Bend

Hammond

74

Terre Haute

37 69



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ALTERNATIVE FUEL CORRIDORS IN ILLINOIS

MOVING PEOPLE & GOODS ON CLEAN FUELS

Alternative fuel corridors extend throughout Illinois and are not limited to I-94. A corridor-ready designation means sufficient refueling access exists along that section of highway for that specific alternative fuel. Corridor-pending means there is some fueling infrastructure but gaps exist. New alternative fuel sites can help fill these infrastructure gaps in Illinois, accelerating the transition to lower-emission vehicles and ensuring that the growing number of drivers have consistent access to fueling and charging options.

CLEAN FUELS, CLEAN JOBS, CLEAN COMMUNITIES

Alternative fuels play an important role in Illinois' economic and environmental success. Alternative fuel corridors improve air quality, especially to communities living closest to highways. Significant opportunities exist to fill remaining gaps in alternative fueling across all highways. In addition to the health-related benefits, and energy security, the installation of new fueling infrastructure supports jobs throughout the state. In 2018, commercial and government fleets that participate in the Chicago Area Clean Cities Coalition displaced nearly 16 million gasoline-gallon equivalents (GGEs) of petroleum and reduced greenhouse-gas emissions by 105,000 tons.

LEARN MORE AND GET INVOLVED

Find out more about the M2M I-94 project by contacting your local Clean Cities coalition. In Illinois, please contact:

(312) 744-8096

info@chicagocleancities.org

æ chicagocleancities.org

Corridor Ready Corridor Pending Corridor Pending Pronane Hydrogen Corridor Ready Corridor Ready Corridor Pending Corridor Pending Compressed Natural Gas Corridor Ready Corridor Pending Rockford Chicago Jolie Molin 80 Cankak Peoria Normal Bloomington Danville Champaign Urbana Springfield East St. Louis

Liquid Natural Gas

Corridor Ready

Electricity

Map created using data from the Federal Highway Administration and Ninois Department of Transportation.

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Chicago Area Clean Cities Coalition

CACCCoalition

in

@ChiCleanCities





MOVING PEOPLE & GOODS ON CLEAN FUELS

Alternative fuel corridors extend throughout much of Wisconsin and are not limited to I-94. A corridor-ready designation means sufficient refueling access exists along that section of highway for that specific alternative fuel. Corridor-pending means there is some fueling infrastructure but gaps exist. New alternative fuel sites can help fill these infrastructure gaps in Wisconsin, accelerating the transition to lower-emission vehicles and ensuring that the growing number of drivers have consistent access to fueling and charging options.



Alternative fuels play an important role in Wisconsin's economic and environmental success. Alternative fuel corridors improve air quality, especially to communities living closest to highways. Significant opportunities exist to fill remaining gaps in alternative fueling across all highways. In addition to the health-related benefits, and energy security, the installation of new fueling infrastructure supports jobs throughout the state. In 2018, commercial and government fleets that participate in Wisconsin Clean Cities had an energy impact equal to 36 million gasoline-gallon equivalents (GGEs) and reduced greenhouse gas emissions by 122,000 tons.

LEARN MORE AND GET INVOLVED

Find out more about the M2M I-94 project by contacting your local Clean Cities coalition. In Wisconsin, please contact:



WisconsinCC WICleanCities









IFS

MOVING PEOPLE & GOODS ON CLEAN FUELS

Alternative fuel corridors extend throughout much of Minnesota, and are not limited to I-94. A corridor-ready designation means sufficient refueling access exists along that section of highway for that specific alternative fuel. Corridor-pending means there is some fueling infrastructure, but gaps exist. New alternative fuel sites can help fill these infrastructure gaps in Minnesota, accelerating the transition to lower-emission vehicles and ensuring that the growing number of drivers have consistent access to fueling and charging options.

CLEAN FUELS, CLEAN JOBS, CLEAN COMMUNITIES

Alternative fuels play an important role in Minnesota's economic and environmental success. Alternative fuel corridors improve air quality, especially to communities living closest to highways. Significant opportunities exist to fill remaining gaps in alternative fueling across all highways. In addition to the health-related benefits, and energy security, the installation of new fueling infrastructure supports jobs throughout the state. In 2019, commercial and government fleets partnering with Twin Cities Clean Cities Coalition had an energy impact equal to 60 million gasoline gallon equivalents (GGEs) and reduced greenhouse gas emissions by 235,000 tons.

LEARN MORE AND GET INVOLVED

Find out more about the M2M I-94 project by contacting your local Clean Cities coalition. In Minnesota, please contact:

(651) 223-9568

cleanairchoice@lungum.com

Clean Air Choice Team CleanAirChoice2

R www.cleanairchoice.org

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