G/FLRPC SPRING 2022 LOCAL GOV'T WORKSHOP

Panel Discussion: Fleet Electrification and Supporting EV Charging Station Infrastructure for the Genesee-Finger Lakes Region

Presenters: Matt Hegarty and Lauren Nice, Village of Fairport; Rick Hauser, Village of Perry; Jim Bittker, Value Stack Energy; Joe Bovenzi AICP, Genesee Transportation Council; Jenny Loewenstein, Barton & Loguidice; Haylee Ferington, EDF Renewables.

GENESEE/FINGER LAKES
Regional Planning Council

HYBRID/EV FLEET 2003 TO PRESENT

FAIRPORT MUNICIPAL COMMISSION

OVERVIEW

- Presenters:
  - Matthew J Hegarty: Superintendent of Electric
  - Lauren Nice: Electric Systems Project Manager

A LITTLE HISTORY ABOUT FAIRPORT ELECTRIC

- Started in 1903
- Now Serving a little over 18,000 customers, 110MW load
- A 28 million dollar budget
- 1of 43 New York State Electric Municipals
- 1 of 2025 Public Power Companies in the United States
- Owned by the Village of Fairport but funded 100% through electric rate base
- One of the most reliable electric utilities in the country
- One of the lowest cost electric utilities in the country
- Less than 45 employees total: (27 Operations, 8 customer service/accounting, 10 part time dispatchers)

FAIRPORT ELECTRIC HYBRID/EV FLEET

- Over 50 vehicles ranging from small cars(Chevy Bolt) to Large Trucks(65 foot bucket truck) with a fleet replacement value of 4.5 million dollars
- 10 road vehicles under 10,000 GVW
- 16 road vehicles over 37,000 GVW

FAIRPORT ELECTRIC HYBRID/EV FLEET

- First Hybrid vehicles were a pair of 2003 Toyota Prius' utilized by the electric meter department to read meters, change meters, and other service related calls.

- Purchased a hybrid bucket truck in 2009 which was an International Eaton transmission hybrid which did provide some propulsion and some PTO capabilities from the battery bank. We will call this a "Generation 1 Hybrid"

- Trucks and cars are kept for typically ten years and have minimal miles, typically around 100K as system is only 26 square miles. Trucks do have very high PTO hours after 10 years typically over 8000 hours equating to roughly 275,000 miles of use.

FAIRPORT ELECTRIC HYBRID/EV FLEET

- "Generation 1 Hybrid" A vehicle that may perform the task but not as well as a non hybrid vehicle or has serious limitations or a payback that exceeds expected life of vehicle.

- "Generation 2 Hybrid" A vehicle that may perform the task as well and has some advantages over a non hybrid vehicle. Vehicle does not have serious limitations AND payback is less than expected life of vehicle.

- "Generation 3 Hybrid" The future, a vehicle that performs the task better and more efficiently than a non hybrid vehicle. Vehicle does not have any limitations AND there is advantages financially and operationally of purchasing this technology.

FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicles - 64(2018), 66(2018), 72(2019), 70(2019)-Chevy Volt.

These have been very good cars for us as an electric utility as we get mileage from the battery(40-60 miles depending on season) along with giving us the capability to operate 24/7 during storms or long distances as we travel for mutual aid or other work-related locations: Montreal, Ohio etc. Would categorize this as a "Generation 2 Hybrid"

Utilized by Substation Technicians, Meter Foreman, Fleet Services

FAIRPORT ELECTRIC HYBRID/EV FLEET

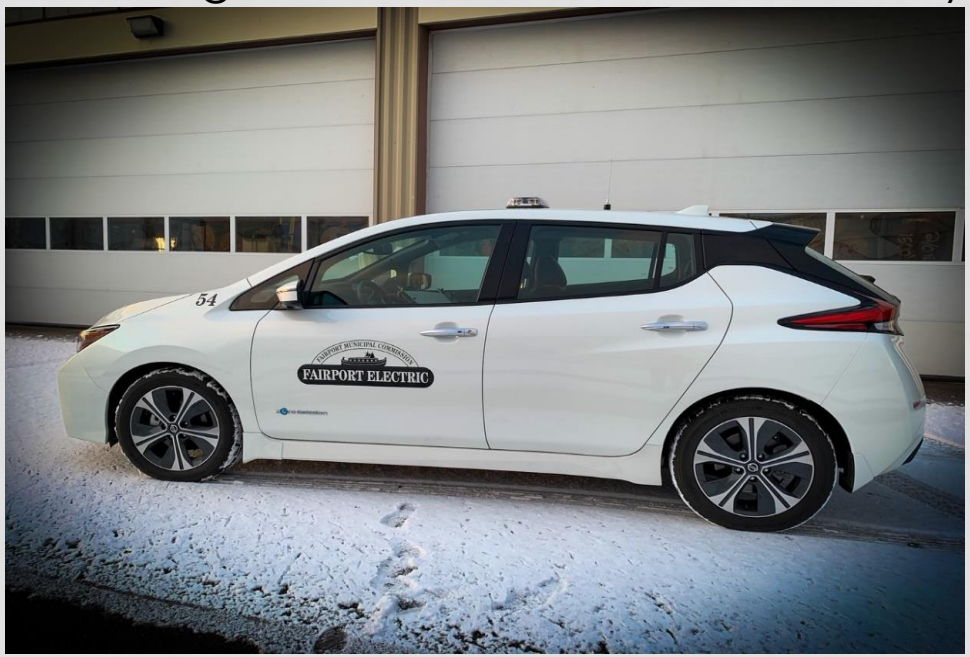
Vehicle 72 (2019) Mitsubishi Outlander.

This is an AWD vehicle which gets us only about 20 miles per battery charge but does have AWD capability and the ability to operate 24/7 during storms or long distances as we travel for mutual aid or other work-related locations. Would categorize this as a "Generation 1 Hybrid"
Utilized by Substation Technicians, Fleet Services

FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicle 54 (2019) Nissan Leaf

This was our first true EV and has a range of 150 miles per battery charge depending on season. It does not give us the ability to operate 24/7 during storms or long distances as we travel for mutual aid or other work-related locations but as the infrastructure is built across the state, options will be better. Utilized by the Electric Systems Project Manager and Fleet Services. Would categorize this as a "Generation 2 Hybrid"



FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicle 53 (2020) Chevrolet Bolt

This is our second true EV and gives us a range of about 230 miles per battery charge depending on season. It does not give us the ability to operate 24/7 during storms or long distances as we travel for mutual aid or other work-related locations but as the infrastructure is built across the state, options will be better. Dedicated to the electric meter department. Would categorize this as a "Generation 2 Hybrid"

FAIRPORT ELECTRIC HYBRID/EV FLEET

- ***Vehicle 52 (2020) Ford F250 XL Plug-in Hybrid***
- XL Fleet Electrification-the world's first PHEV Super Duty Pickup.
- 50% MPG Improvement, 33% CO2 reduction
- Has helped us to drive cleaner and greener while saving on fuel costs.
- Used by our line foreman, used all day long on a daily basis.

F250 XL PLUG-IN HYBRID

FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicles - 58(2019), 67(2014), 74(2016), 68(2020), 61(2021) Freightliner with ALTEC JEMS System

These are a plug-in hybrid which I will label as "Generation 2 Hybrid" that provides a lithium ion battery for all PTO functions and cab comfort system. This eliminates idling during the workday on our bucket trucks. Crews are able to perform all hydraulic functions and keep cab heated or air conditioned from the plug-in battery. The battery is not utilized for propulsion in any way.

If battery is depleted during working operations, truck restarts and charges battery for a period of time and then shuts off again

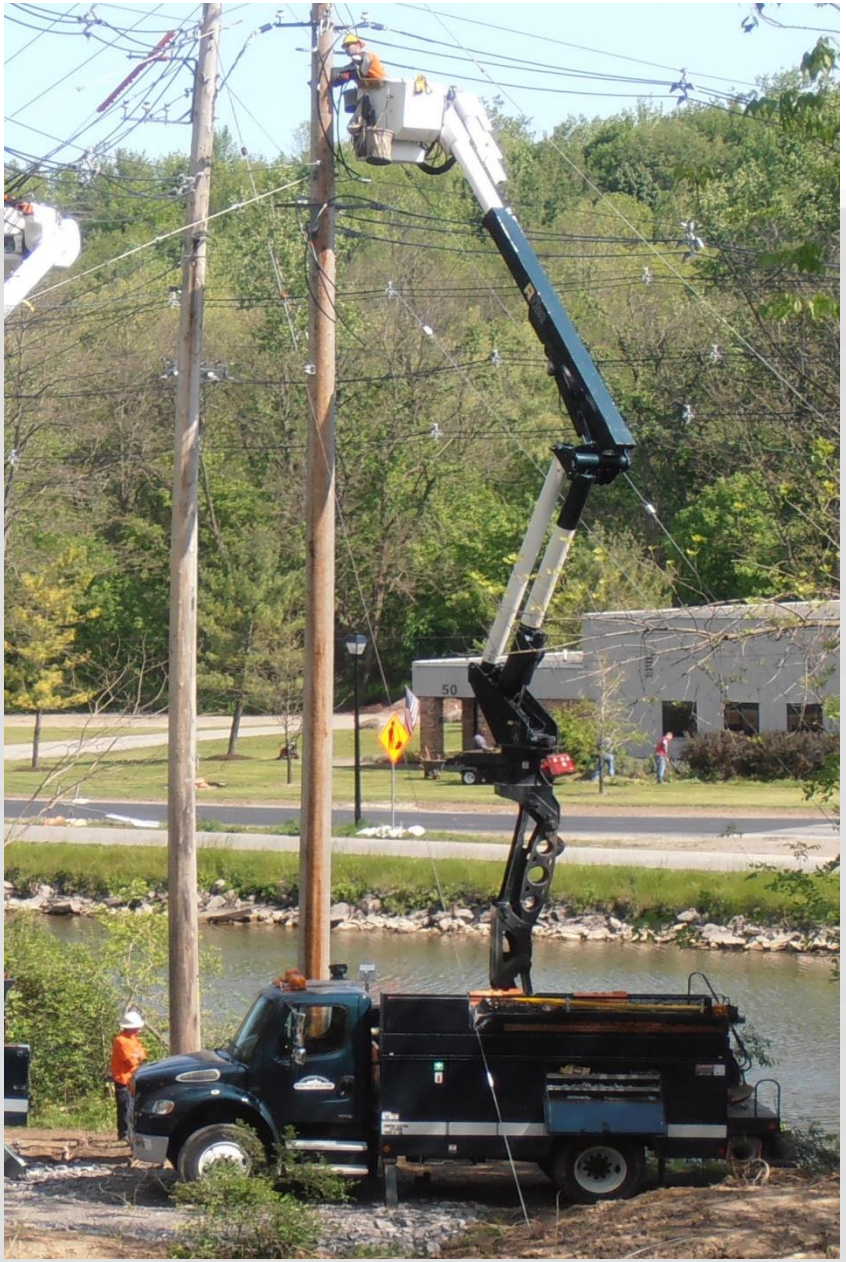
FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicles - 58(2019), 67(2014), 74(2016), 68(2020, 61(2021) Freightliner with ALTEC JEMS System

- Cut our fuel consumption by more than half
- Cut our engine hours by almost half (42% reduction)
- Reduced our diesel engine PTO hours by 77%
- Increased service intervals
- Increased cost, but a payback of less than 3 years if used "correctly"

FAIRPORT ELECTRIC HYBRID/EV FLEET

Truck 74: 60' Material Handler



TRUCK 58(2019)-FREIGHTLINER BUCKET TRUCK

FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicle 55(2017) Freightliner with ALTEC JEMS System

- This is also a plug-in hybrid which I will label as "Generation 2 Hybrid" that provides a lithium ion battery for some PTO functions and cab comfort system. This eliminates some of the idling during the workday on our digger derricks. The battery is not utilized for propulsion in any way.
- Digger Derrick Functions are very high flow and pressure and engine must be utilized for digging and lifting operations
- Cut fuel consumption by almost a quarter of comparable units
- Cut our engine hours
- Increased service intervals
- Increased cost, but a payback of less than 5 years if used "correctly"

FAIRPORT ELECTRIC HYBRID/EV FLEET

Vehicle 55(2017) Freightliner with ALTEC JEMS System

FAIRPORT ELECTRIC HYBRID/EV FLEET

What went well:

- We are now able to read all 18,000 electric meters monthly without utilizing any gasoline.
- Took correct pairing of employees with equipment for a buy in of the technology
- Crews can communicate over heights without engine running which led to safer and quieter working conditions.

FAIRPORT ELECTRIC HYBRID/EV FLEET

What went well:

- Fleet Costs went down in operational costs
- As technology is improving more employees are buying into the improvements and understanding the limitations
- Resale value of the few cars we have recently removed from service did better than expected

FAIRPORT ELECTRIC HYBRID/EV FLEET

Where we could have improved:

- Wrong pairing of employees with equipment for a buy in of the technology led to rumors, bad feedback to mechanics, disgruntled with the technology
- Fleet repair costs went UP as parts became more expensive and new highly specialized employees were needed or outsourced to complete repairs
- AWD vehicle choice is very limited currently but maybe we are on the cusp of change???

FAIRPORT ELECTRIC HYBRID/EV FLEET

Where we could have improved:

- Manufacturers could be more truthful in vehicles, have not built for cold weather climates, less range, corrosion issues etc.
- Very long lead time for vehicles, 14 months for a police hybrid with no end date……
- Very limited choices in AWD
- Very limited choices in Department of Public Works equipment

FAIRPORT ELECTRIC HYBRID/EV FLEET

The Future:

- Purchase of another plug-in EV bucket truck
- Purchase of two(2) F150 Hybrid Pickup Trucks, ordered June 2021 and still waiting…….
- Purchased third hybrid Police vehicle but supply chain issues are holding up delivery and transformation to 100% EV as it becomes available. Police rated is a problem.
- Purchase full EV pickup truck June 2022 or when available.
- Purchase and use of EV zero turn mowers, trimmers, leaf blowers by DPW forces.

FAIRPORT ELECTRIC HYBRID/EV FLEET

Exciting News:

- Completed installation of 29 publicly accessible level 2 chargers
- Partnered with New York Power Authority (NYPA), Electric Power Research Institute (EPRI), The Independent Energy Efficiency Program (IEEP) The New York State Energy Research and Development Authority (NYSERDA) to create New York State's first "EV Model Community"

FAIRPORT ELECTRIC HYBRID/EV FLEET

Exciting News:

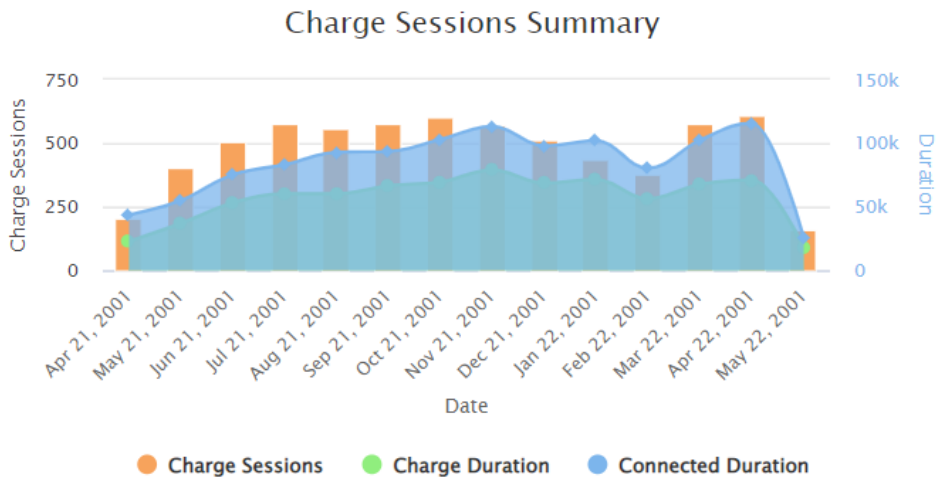
- Completed the networking of previously installed 29 publicly accessible level 2 chargers that allows EPRI to monitor usage, trends, technology
- Completing the installation of 50 residential level 2 chargers in homes, multi family dwellings, fleet facility including networking to allow EPRI to monitor usage, trends, technology.
- Installation in the Village of Fairport of 2 DC Fast chargers.

DC FAST CHARGERS

SUSTAINABILITY-PUBLIC CHARGING

April 2021-May 2022

*All dates and times are reported in the UTC time zone.



Total Charge Sessions	6,675
Average Charge Time	120.05
Average Connected Time	177.31

QUESTIONS?

- Thank you
  - Matthew J Hegarty: Superintendent of Electric
  - mjh@fairportny.com 585 421-3104
  - Lauren Nice: Electric Systems Project Manager
  - lkn@fairportny.com 585 421-3103

VILLAGE OF PERRY

Rick Hauser is the Mayor of the Village of Perry and founder and partner of In.Site.Architecture

rick@insitearch.com

Value Stack Energy™

- **Jim Bittker** is a Co-Founder of Value Stack Energy™ and a leading energy efficiency and clean energy solutions consultant.

- Jim.bittker@gmail.com

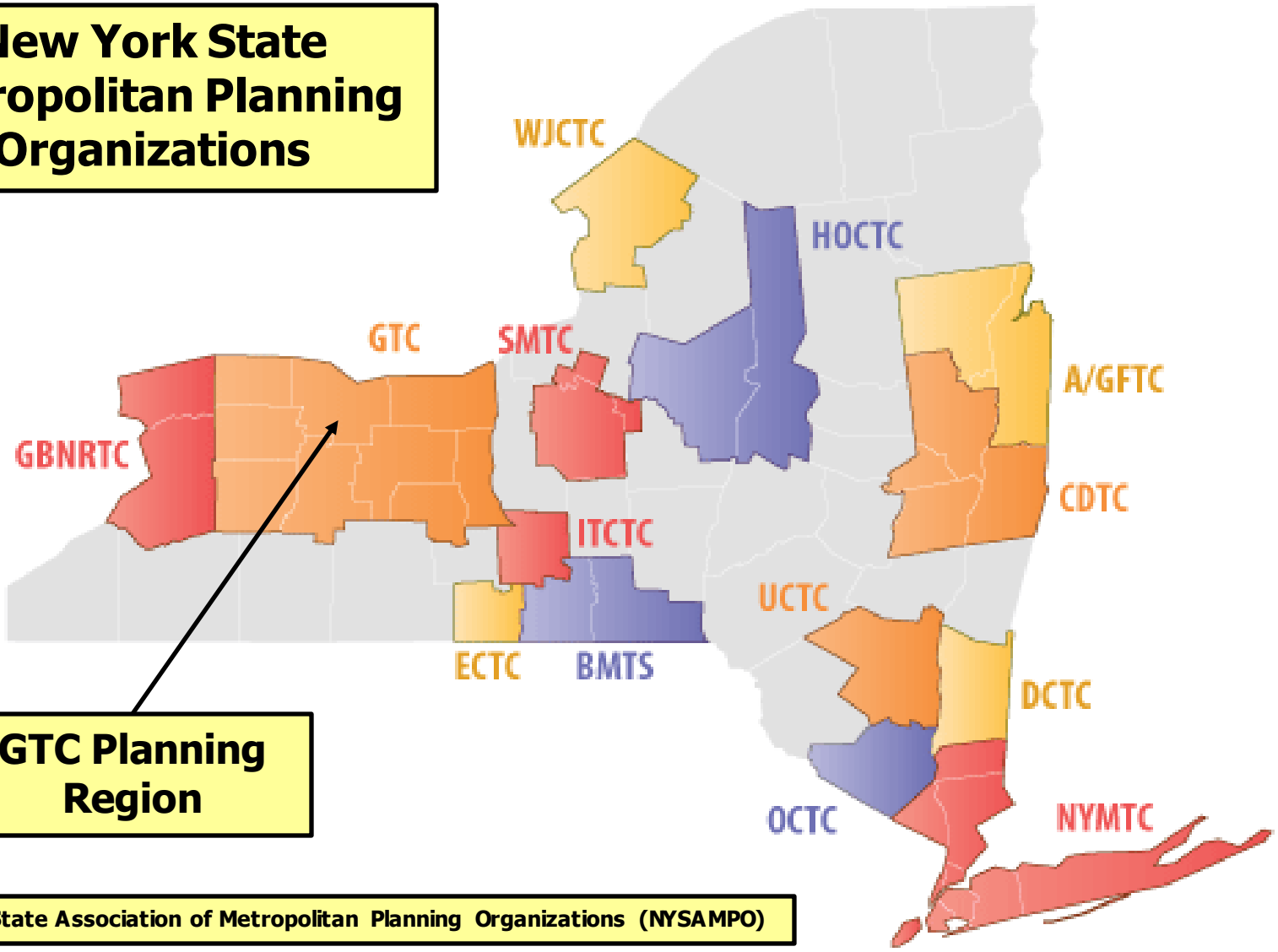
Alternative Fuel Corridor Planning in the Genesee-Finger Lakes Region

Joseph M. Bovenzi, AICP

GFL Local Government Workshop – Batavia, New York

May 13, 2022

New York State Metropolitan Planning Organizations



GTC Planning Region

Source: New York State Association of Metropolitan Planning Organizations (NYSAMPO)

Genesee Transportation Council (GTC)

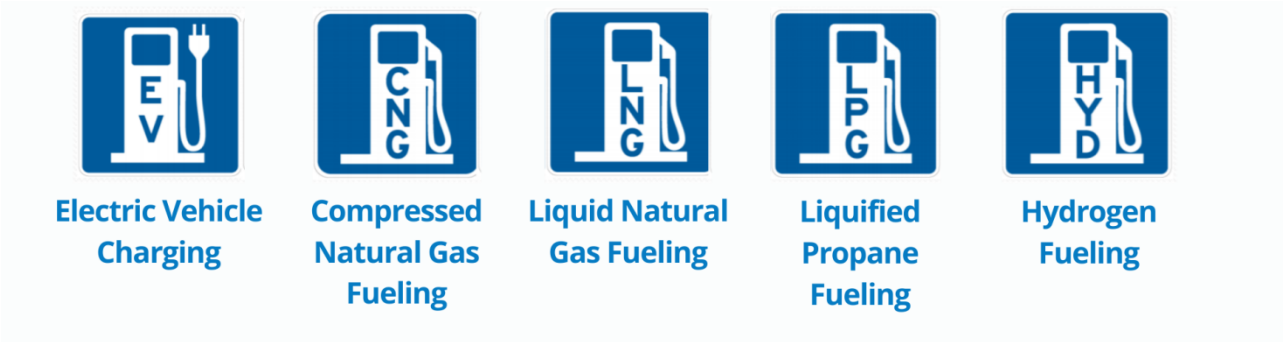
- **Metropolitan Planning Organization (MPO)**
  - **Nine-county Genesee-Finger Lakes Region**
    (***Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming, Yates***)
  - **Responsible for transportation policy, planning, and investment decision-making**
  - **Key Products:**
    - **Long Range Transportation Plan (LRTP)**
    - **Unified Planning Work Program (UPWP)**
    - **Transportation Improvement Program (TIP)**
  - **Local planning projects funded through UPWP**

Alternative Fuel Corridors (AFC) program

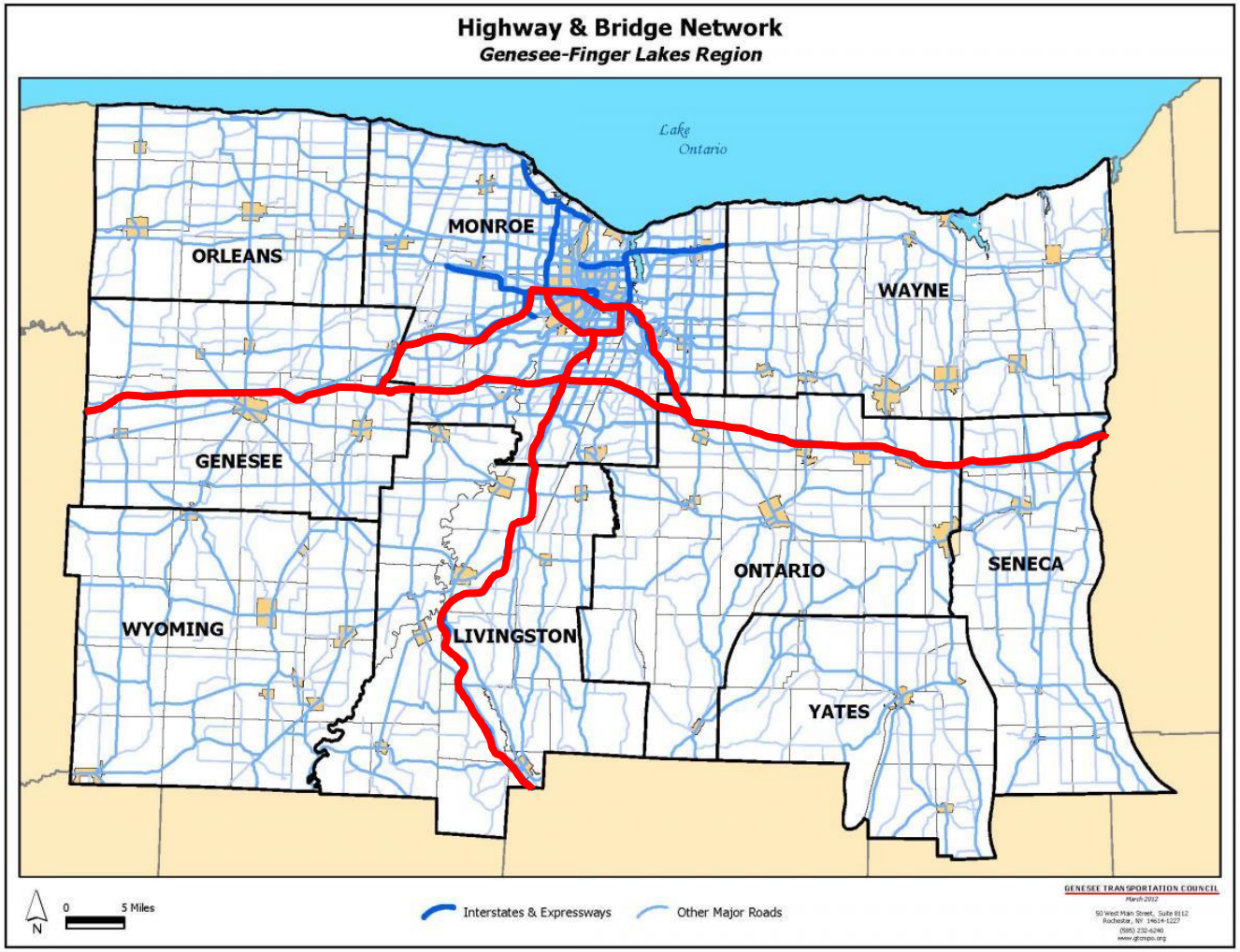
- Established in 2015 (FAST Act, Section 1413)
- Focus on Interstate system
- Rounds 1 – 5 designated 2016 – 2020
- Eligible Fuels:
  - Electric Vehicle (EV)
  - Compressed Natural Gas (CNG)
  - Liquified Natural Gas (LNG)
  - Liquid Propane Gas (LPG)
  - Hydrogen (H2)

Alternative Fuel Corridors (AFC) program

- **EV Corridor Designation Criteria (Round 6):**
  - **EV Ready (*Public DC Fast Charging*):**
    - **No greater than 50 miles apart**
    - **No greater than 1 mile from exits/interchanges**
    - **At least four Combined Charging Station connectors**
    - **Minimum site power of 600 kW (150 kW per port)**
  - **EV Pending - Does not meet location criteria for EV Ready**



Regional Highway Network – Potential AFC



Alternative Fuel Corridors – Current Designations

- **I-90:** ***CNG Ready; LPG Ready; EV Pending; LNG Pending; HYD Pending***
- **I-390:** ***EV Pending***
- **I-490:** ***EV Pending***
- **I-590:** ***No designations***

AFC Designation process coordinated by New York State Department of Transportation – Main Office

Bipartisan Infrastructure Law (BIL)

- Infrastructure Investment and Jobs Act (IIJA)
- Signed November 15, 2021
- Funding (*Federal Fiscal Years 2022-2026*):
  - Highway – $350.8 Billion
  - Transit – $91.2 Billion
- Focus on safety, bridges, climate, and resilience

BIPARTISAN INFRASTRUCTURE LAW

Alternative Fuel Programs – BIL

1. National Electric Vehicle Infrastructure (NEVI) Formula Program – $5 Billion (*FHWA*)
2. Charging and Fueling Infrastructure Grants - $2.5 Billion (*FHWA*)
   - Corridor Charging – $1.25 Billion
   - Community Charging – $1.25 Billion
3. Low or No Emission (Bus) Grants – $5.6 Billion (*FTA*)
4. Clean School Bus Program – $5 Billion (*EPA*)
5. Electric or Low-Emitting Ferry Program – $250 Million (*FTA*)

NEVI Program Overview

- Distribute funding to states to strategically deploy EV charging infrastructure – nationwide network
- Goal: 500,000 public EV chargers by 2030
- State EV Infrastructure Deployment Plan
  - Due to FHWA – August 1, 2022
  - FHWA Approval – Sept. 30, 2022
- New York State:
  - $175.5 Million (*FY 2022-26*)
- EV stations must be located along an AFC

Resources (Government)

- **Joint Office of Energy and Transportation**

  https://driveelectric.gov/

- **Alternative Fuel Corridors**

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

- **U.S. Department of Energy (DOE) Alternative Fuels Data Center**

  https://afdc.energy.gov/laws/11675

- **New York State Energy Research Development Authority (NYSERDA) – Charge NY**

  https://www.nyserda.ny.gov/All-Programs/ChargeNY

Resources (Utilities and Not-for-Profits)

- **Electrification Coalition**

  https://www.electrificationcoalition.org/

- **Greater Rochester Clean Cities (GRCC)**

  https://grcc.us/

- **EV Make-Ready Program – Joint Utilities of NY**

  https://jointutilitiesofny.org/ev/make-ready

- **Rochester Gas & Electric (RG&E)**

  https://rge.chooseev.com/ev/about/

GENESEE TRANSPORTATION COUNCIL

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Genesee-Finger Lakes Regional Fleet Electrification Study

May 13, 2022

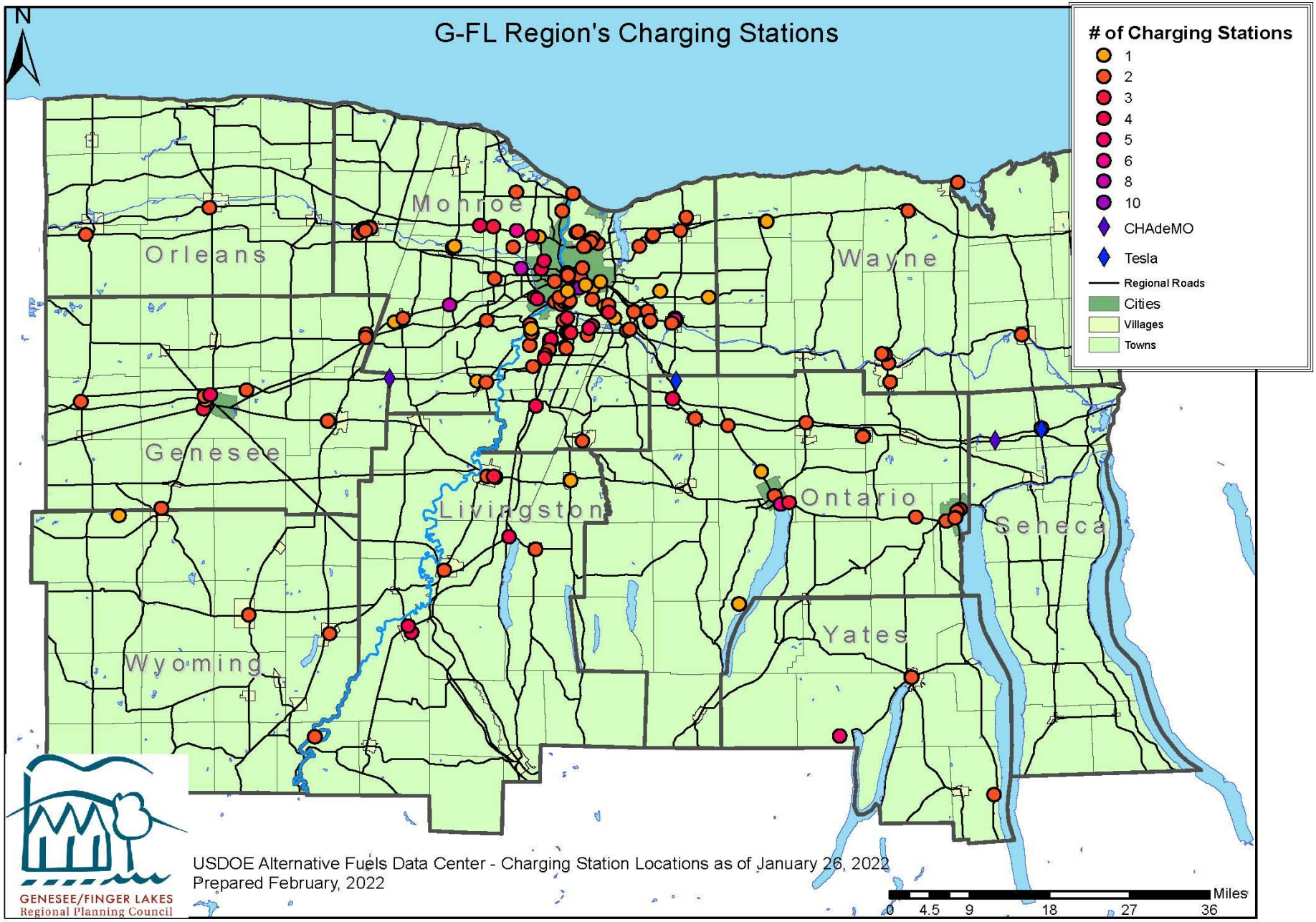
Local Government Workshop

Regional Fleet Electrification Feasibility Study

The Genesee-Finger Lakes regional Fleet Electrification Study is a strategy for advancing the conversion of fossil fuel vehicles to electric fleets.

The purpose of the study:

- Examine the economic, operational, and environmental benefits of fleet electrification.
- Identify challenges and opportunities for fleet electrification.
- Offer insights and recommendations on how fleet managers can begin the electrification process.

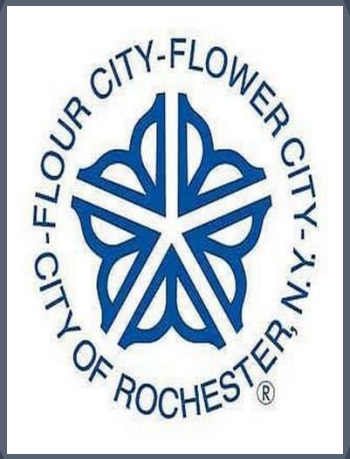

G-FL Region's Charging Stations
N
# of Charging Stations
1
2
3
4
5
6
8
10
CHAdeMO
Tesla
Regional Roads
Cities
Villages
Towns
Monroe
Orleans
Wayne
Genesee
Livingston
Ontario
Seneca
Yates
Wyoming
GENESEE/FINGER LAKES
Regional Planning Council
USDOE Alternative Fuels Data Center - Charging Station Locations as of January 26, 2022
Prepared February, 2022
Miles
0
4.5
9
18
27
36

Economic Development

- Energy sector employment in New York State and the Region
- Is our region ready and what can be done to position the region to see job growth in this sector?
- How to support LMI and disadvantaged communities, as well as communities that rely heavily on tourism.

Case Studies

- What are your goals and priorities for electrification?
- Describe your EV solution.
- What challenges or changes were there in training or maintenance?
- What impacts did you see from installing this technology?



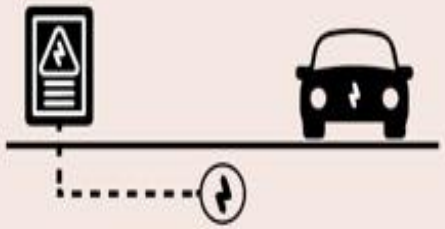
Recommendations

1. **EV-Capable**

   Install electrical panel capacity with a dedicated branch circuit and a continuous raceway from the panel to the future EV parking spot.

   Aspen, CO: 3% of parking is EV-Capable (IBC)

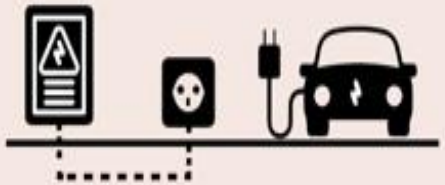
   Atlanta, GA: 20% is EV-Capable (Ordinance)



2. **EVSE-Ready Outlet**

   Install electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet (typical clothing dryer outlet).

   Boulder, CO: 10% of parking is EV-Ready Outlet



3. **EVSE-Installed**

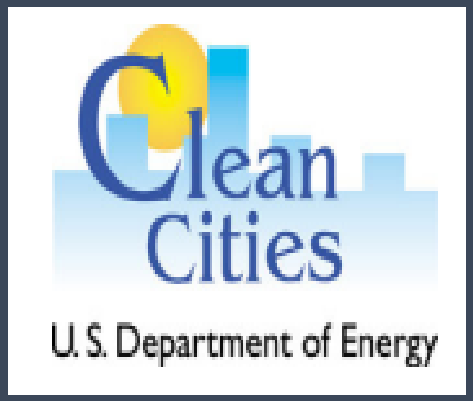
   Install a minimum number of Level 2 EV charging stations.

   Palo Alto, CA: 5-10% of parking is EV-Installed

- Federal, state and local level recommendations on policy, implementation, and design for widespread adoption

Steps for Going Electric

1. Define
2. Select Technologies
3. Vehicle & Equipment Procurement
4. Site Review, Design & Planning
5. Permitting & Approvals
6. Construction & Installation
7. Monitor Vehicles & EVSE Performance



Available Resources