

Alternative Fuel & Electric Vehicles –

US/TN Data & ETCleanFuels Projects

Jonathan Overly, Executive Director
East Tennessee Clean Fuels Coalition

Institute for a Secure & Sustainable Environment
2022 ISSE Research Conference

September 15, 2022



Agenda

- ✓ Our members and partners
- ✓ National and Tennessee AFV and EV Data (*fuel use, vehicles, growth*)
- ✓ Actions for growing PEV use
- ✓ Developing DET chapters in Tennessee
- ✓ Winning DOE grants – setting TN as leader in DOE-CC program
- ✓ Projects
 - ✓ *DRIVE Electric USA*
 - ✓ *DRIVE Electric USA #2*
 - ✓ *EMPOWER Project*
- ✓ Driving school districts to the EPA \$5 billion – “*TN Achieves*”
- ✓ Other partnerships & efforts
- ✓ *Don't miss the first ever Drive Electric TN “Momentum Summit”*

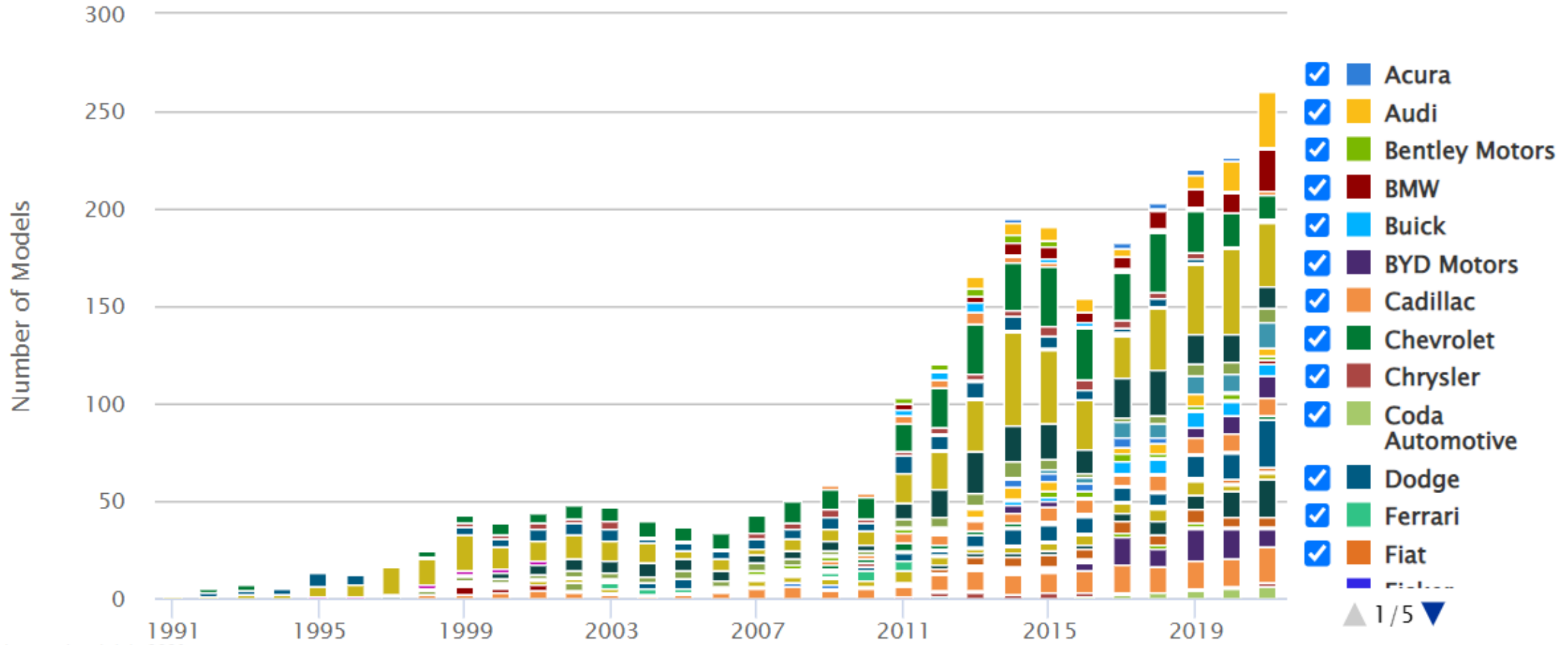


Our Members

This includes both Tennessee Clean Fuels and Drive Electric TN members.



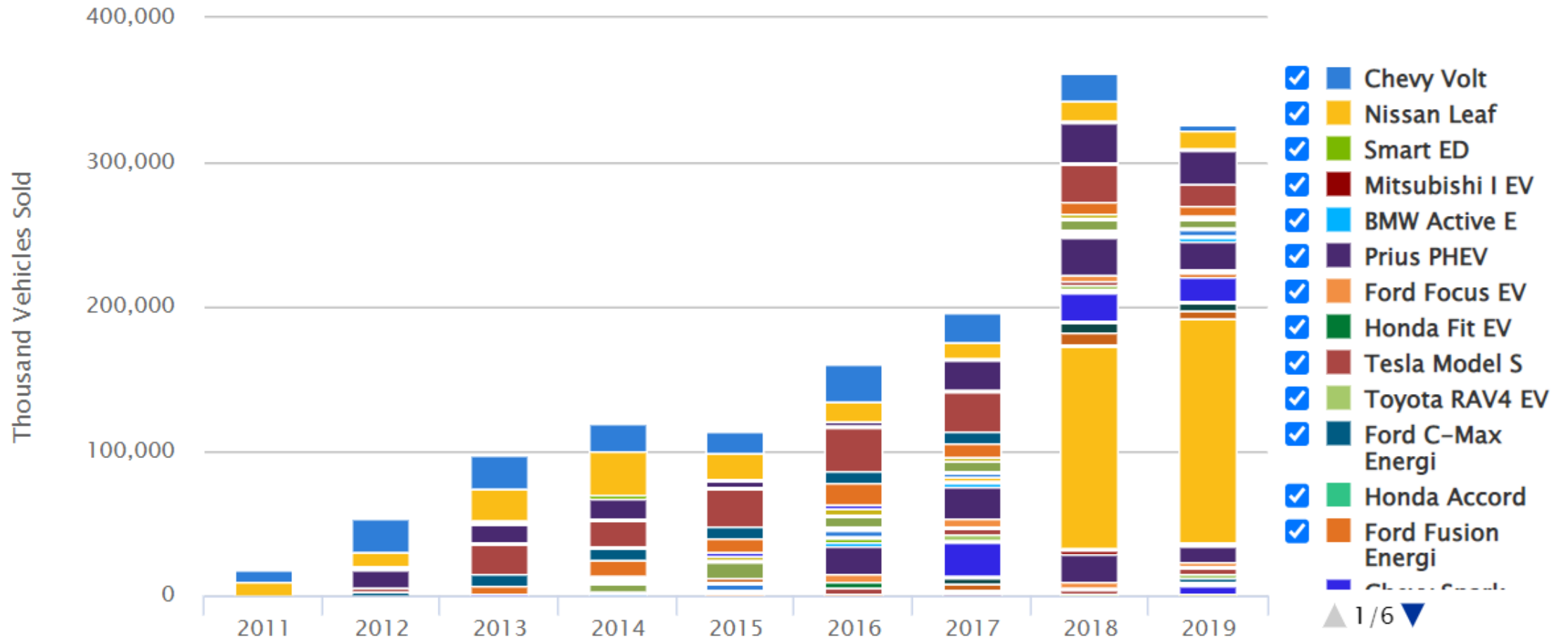
AFV and HEV Model Offerings, by Manufacturer



Last updated: July 2021
Printed on: September 3

Source: AFDC [Light Duty Vehicle Search](#)

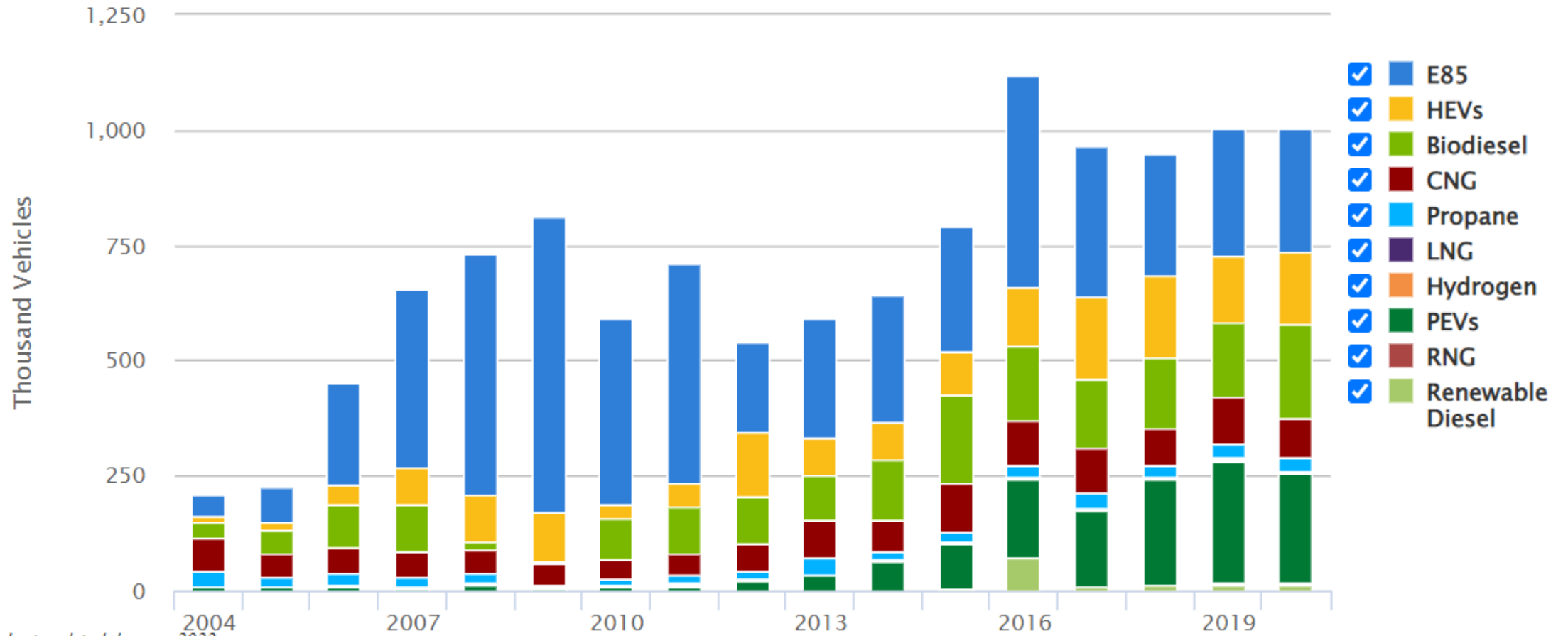
U.S. Plug-in Electric Vehicle Sales by Model



Last updated: January 2020
 Printed on: September 3

Source: [Transportation Research Center at Argonne National Laboratory](#)

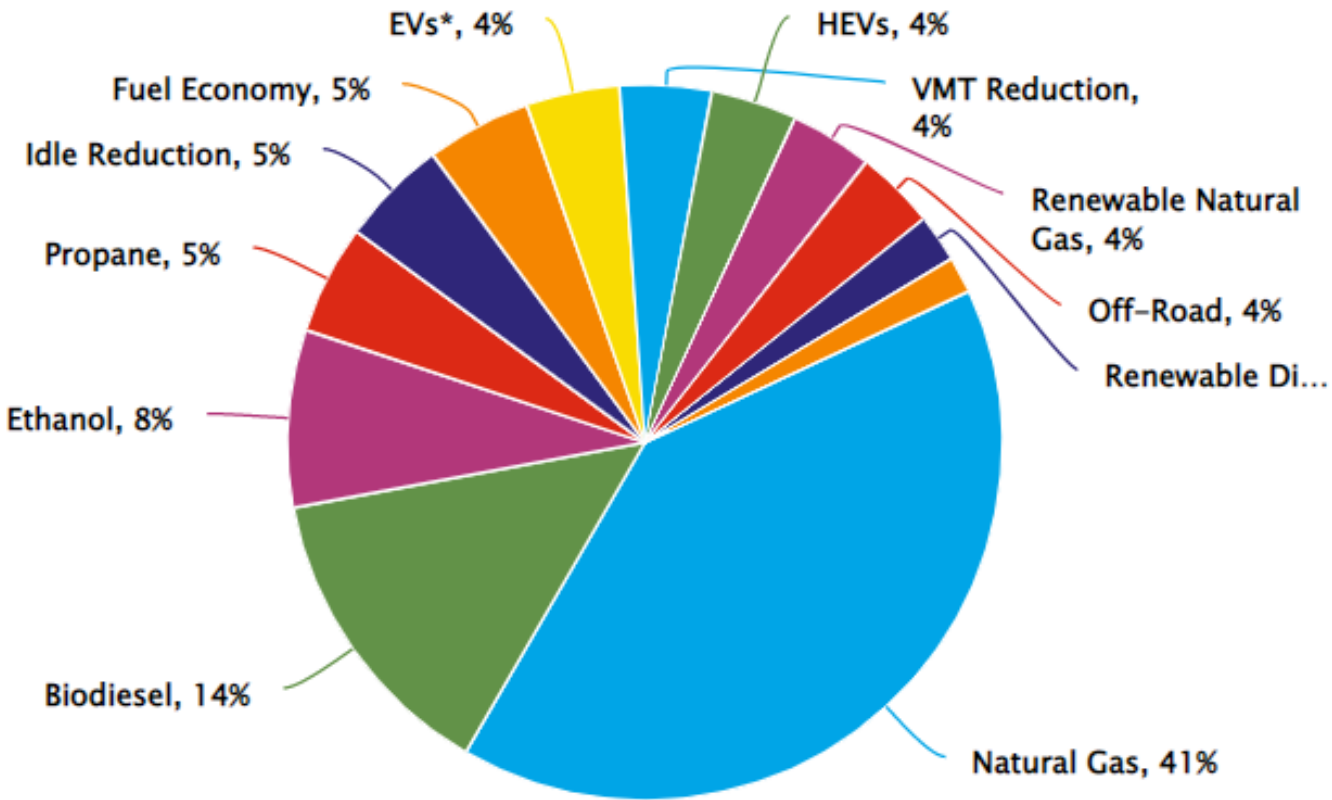
Clean Cities Alternative Fuel Vehicle Inventory



Last updated: January 2022
 Printed on: September 3

Source: [Clean Cities coalitions annual activity reports](#)

Energy Use Impact by Technology Type



In 2020 alone, coalition projects resulted in a cumulative impact in energy use equal to 740 million gasoline gallon equivalents by using alternative fuel vehicles. *Source: Clean Cities Coalitions 2020 Activity Report*

* EVs include all-electric vehicles and plug-in hybrid electric vehicles, but not hybrid electric vehicles.

This includes both Tennessee Clean Fuels and Drive Electric TN members.

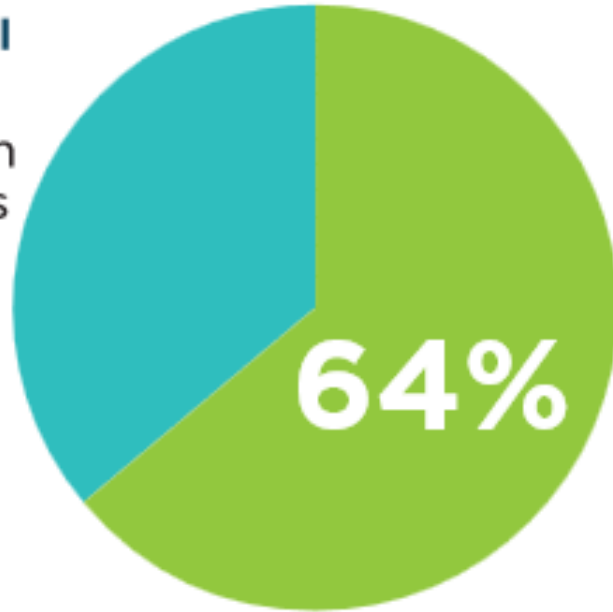
National

2021 NGV Fuel Use

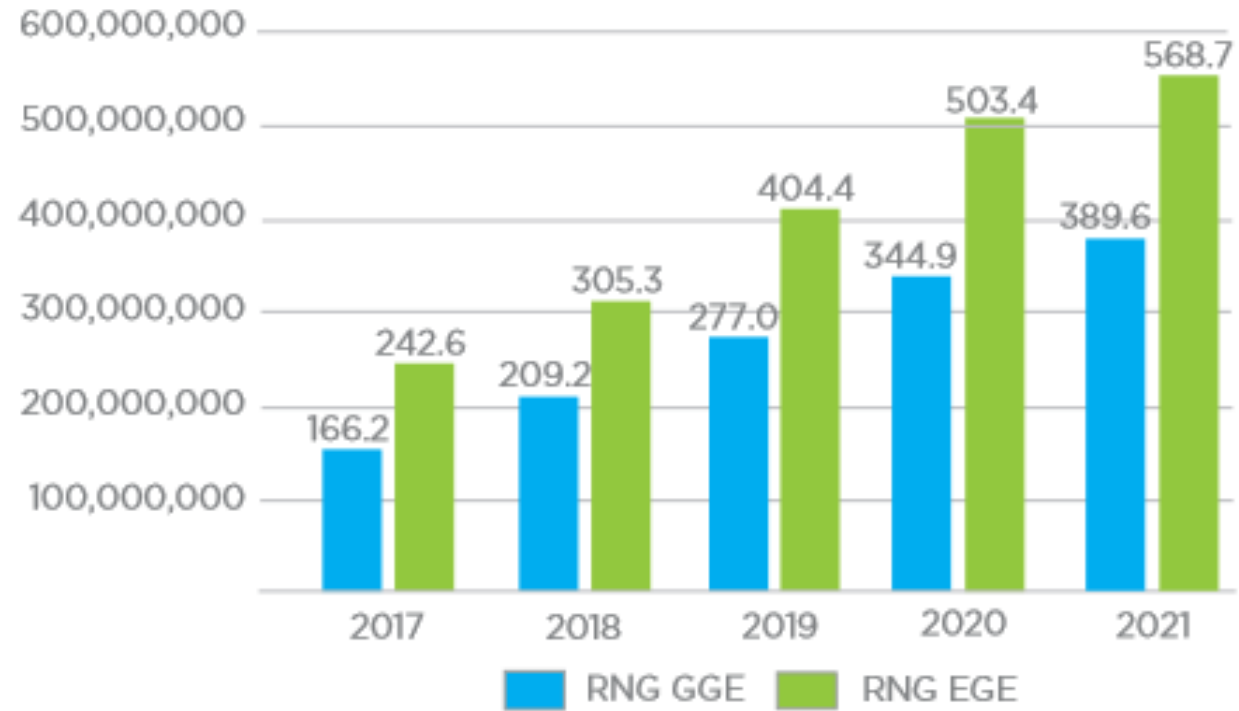
610 Million GGE Total

In 2021, **64%** of all on-road fuel used in natural gas vehicles was RNG

- Conventional Natural Gas
220 Million GGE
- Renewable Natural Gas
390 Million GGE

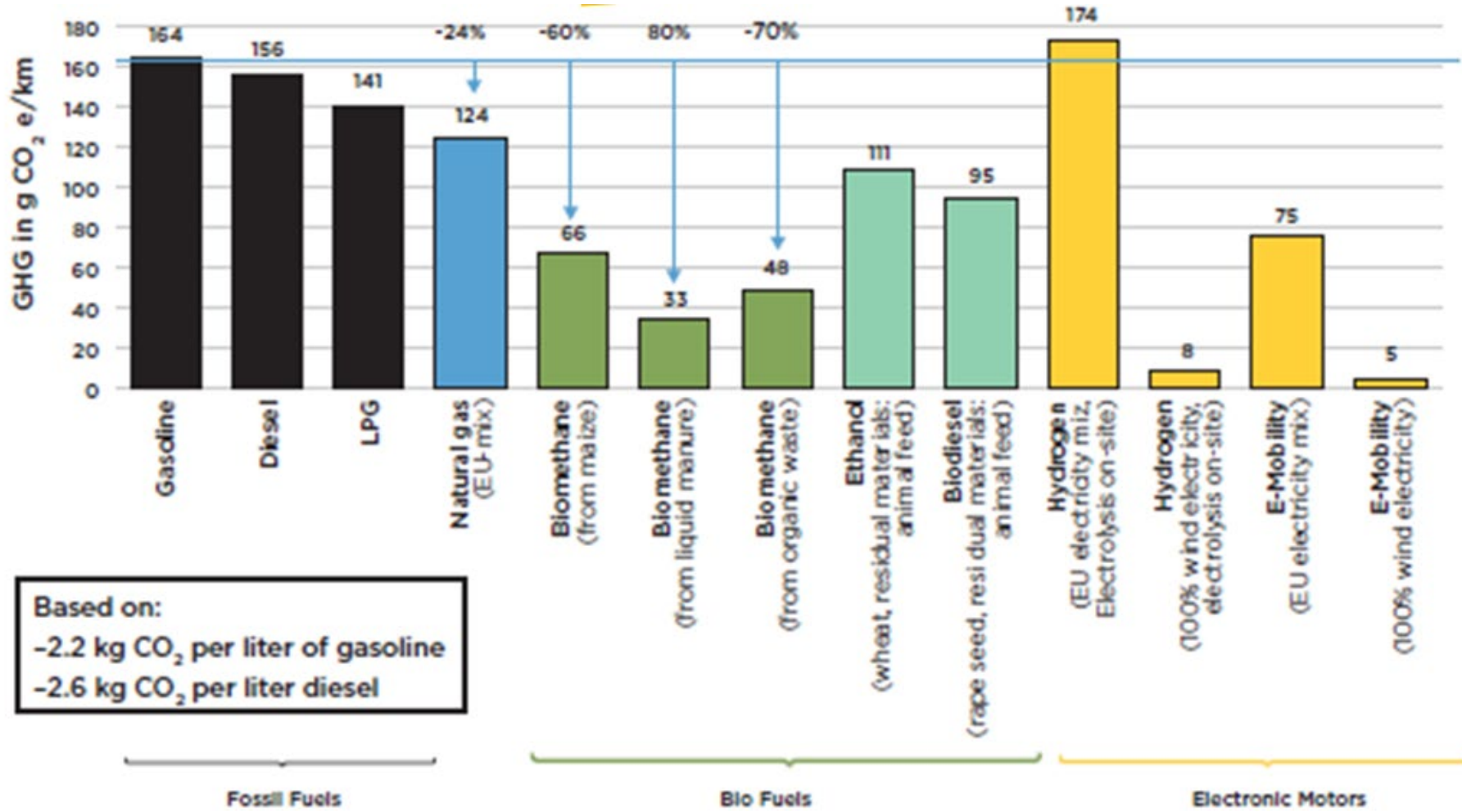


RNG Growth



Comparative GHG Emissions from Passenger Cars running on Different Fuels

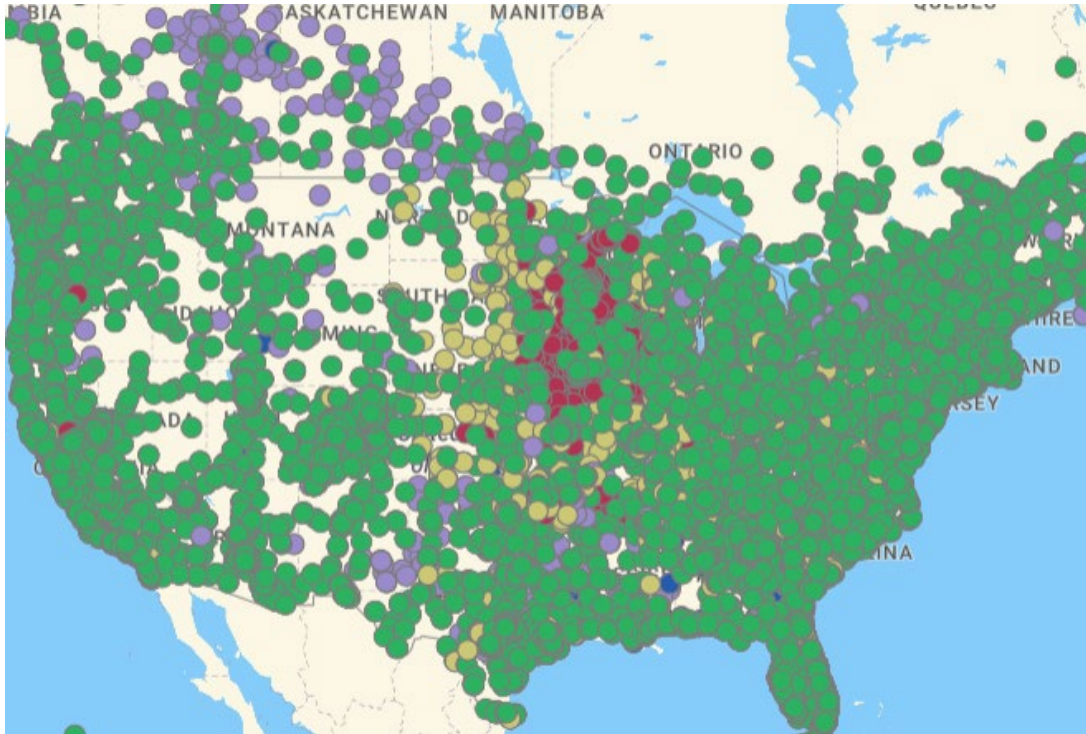
National



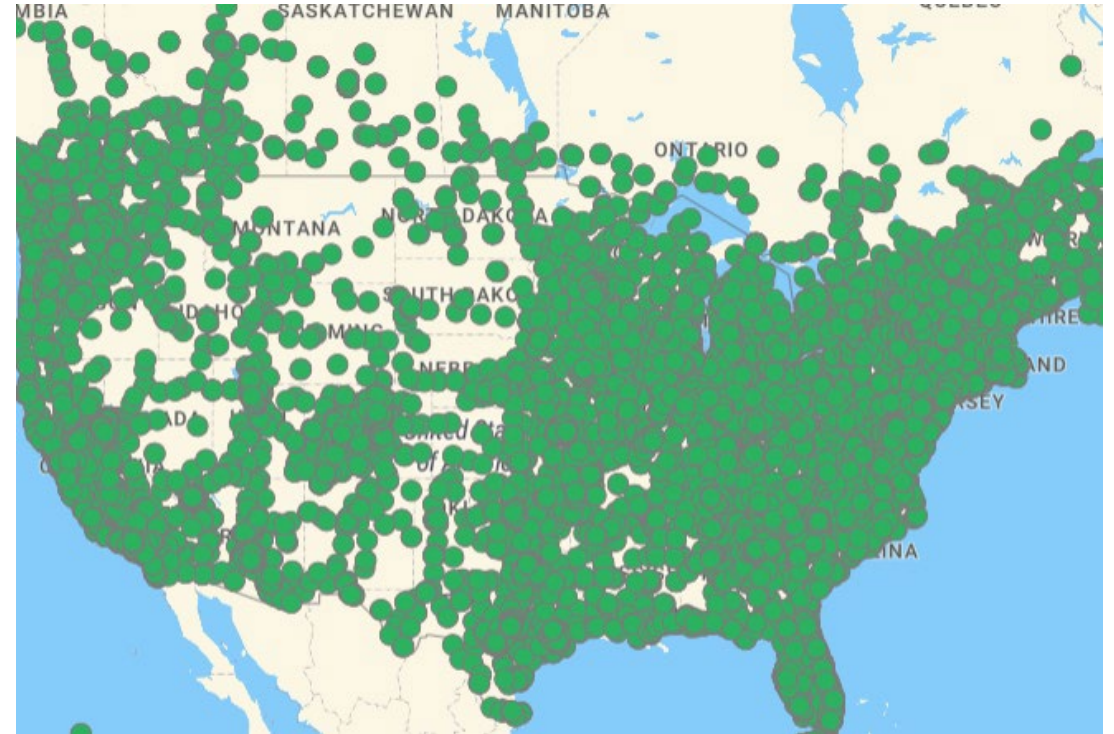
National Level – Alt. Fuel Stations

All maps from the AFDC Station Locator:
<https://afdc.energy.gov/stations/#/find/nearest>

Stations = ALL

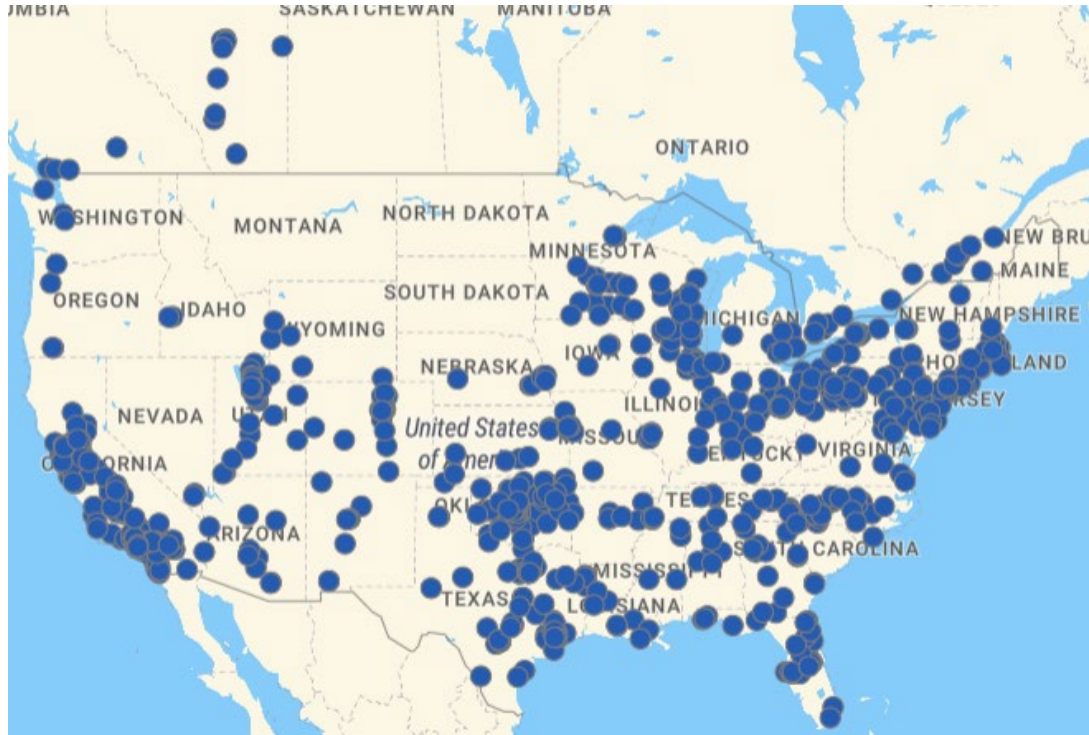


Stations = Electric



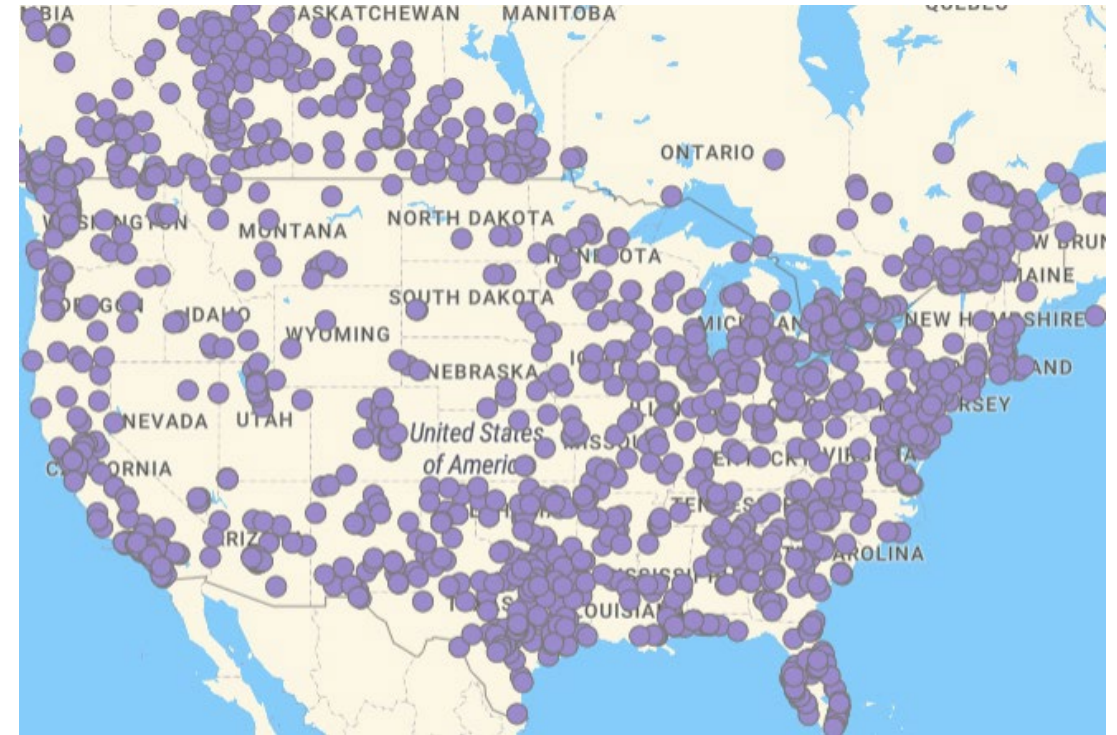
National Level – Alt. Fuel Stations (cont'd)

Stations = CNG (Compressed Natural Gas)



RNG = Renewable CNG or LNG

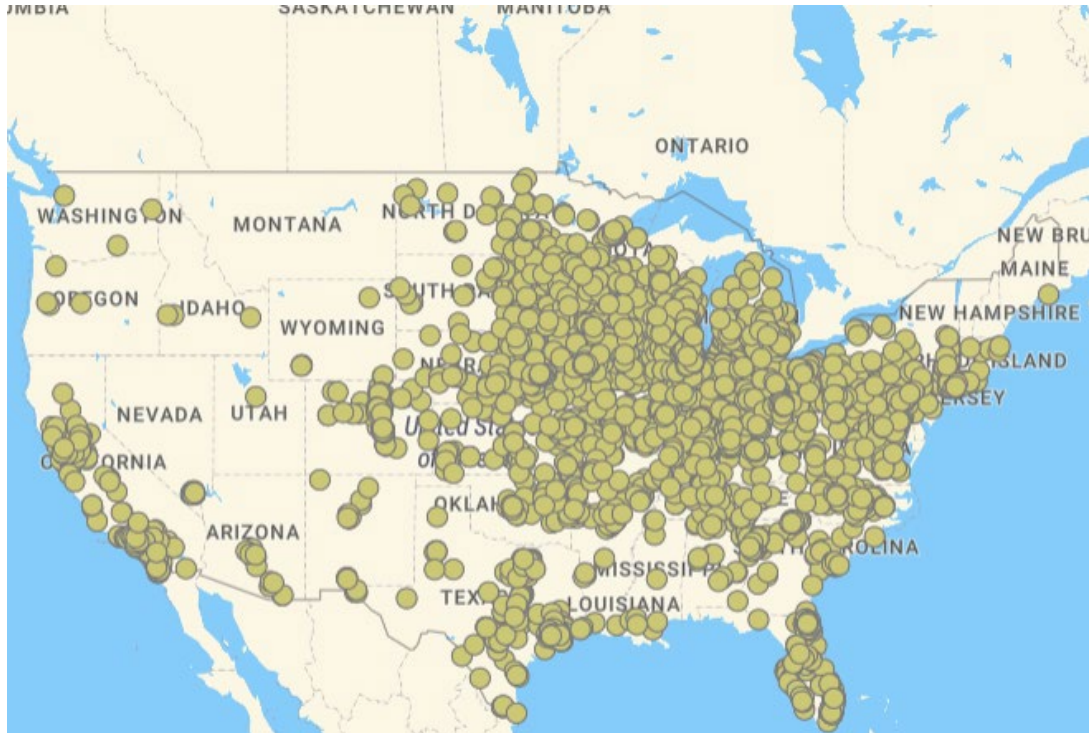
Stations = LPG – Propane Autogas



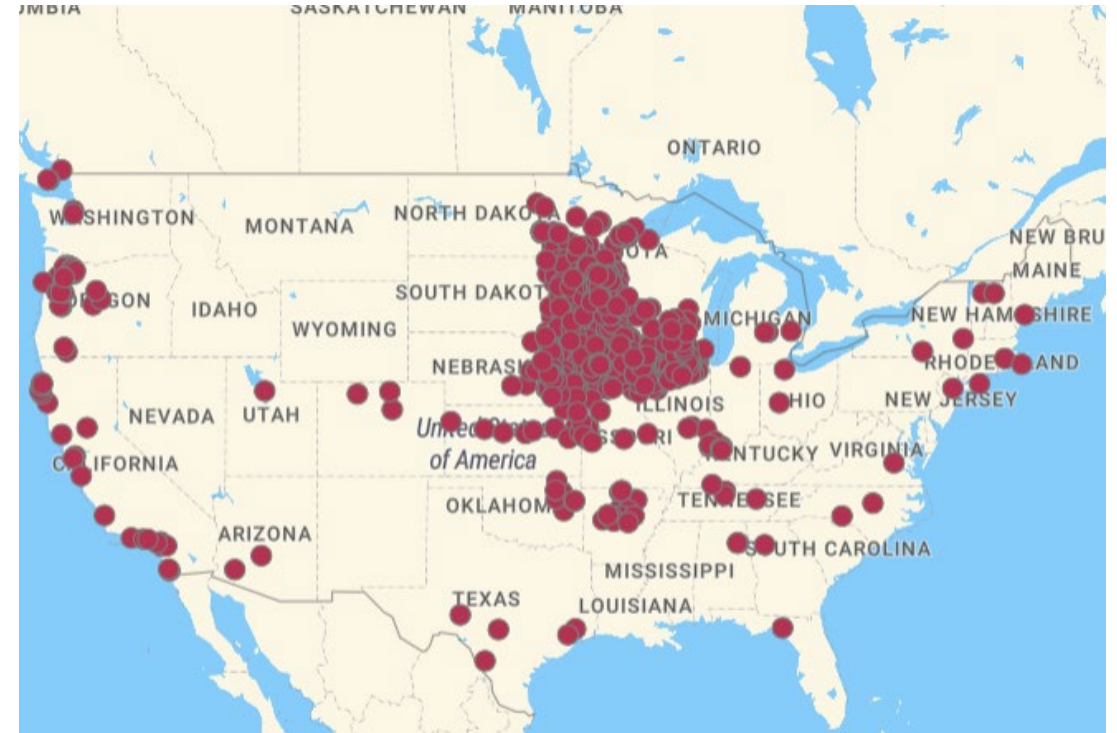
Renewable Propane

National Level – Alt. Fuel Stations (cont'd)

Stations = E-85 ethanol

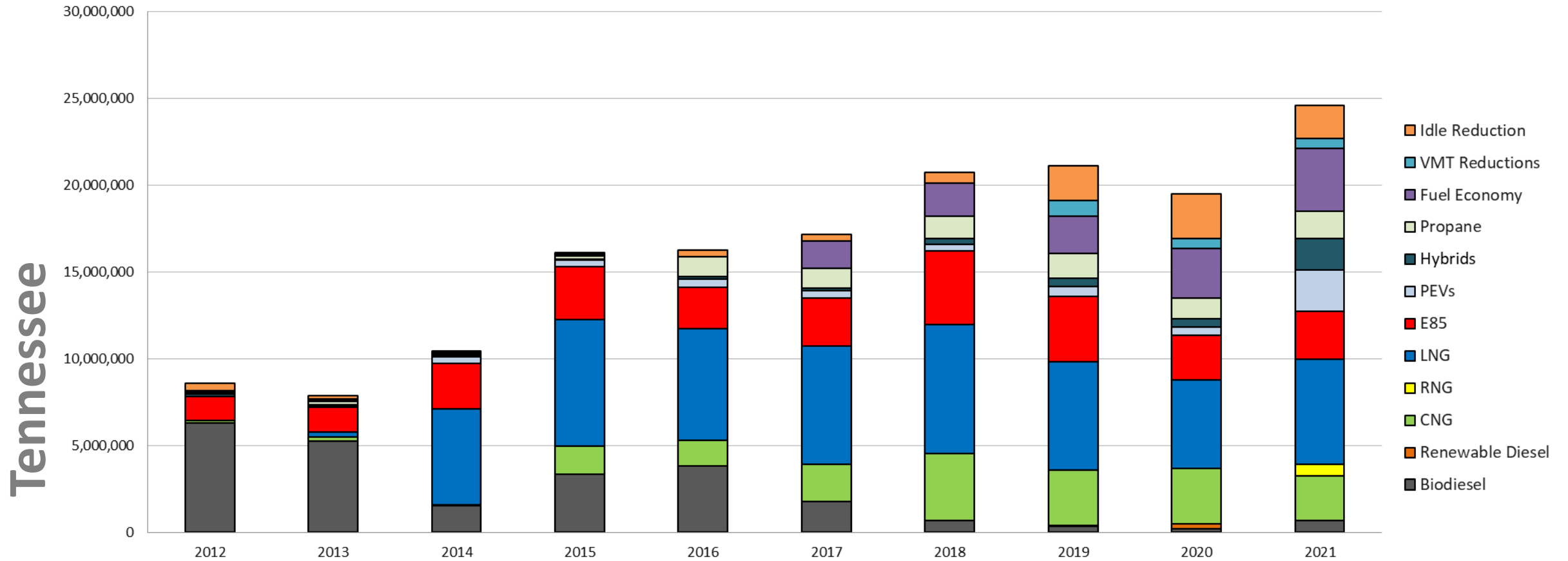


Stations = B-20 biodiesel



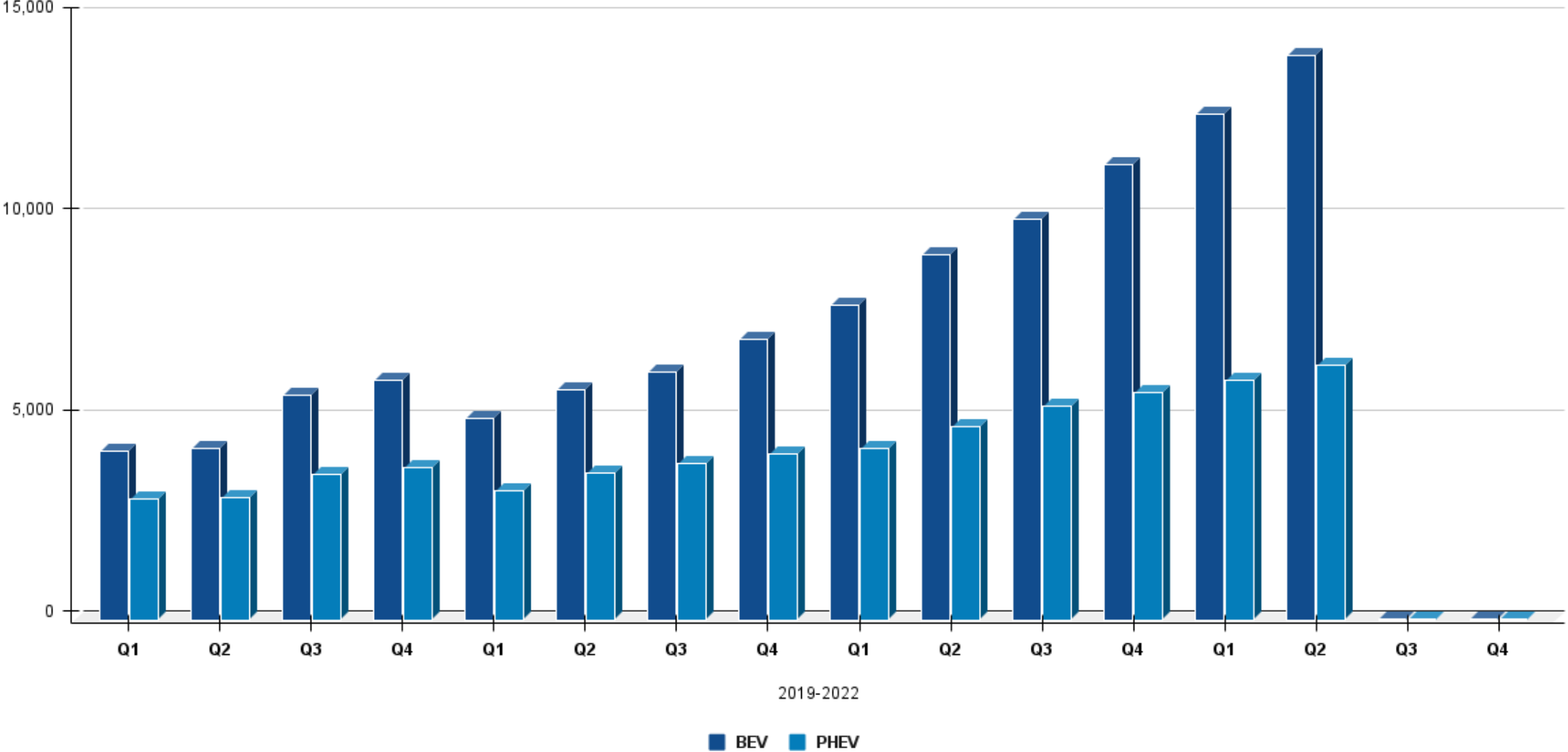
Both E85 and B20 are great choices if you care about GHG emission reductions!

ET+MWT GGE Reductions by Fuel/Tech.



Tennessee – PEV Registrations and Growth

Tennessee



Tennessee's EV Growth – Recent History

	12/31/19	12/31/20	12/31/21	% change – '19 - '20	% change – '20 - '21
BEVs (battery EVs)	5,911	6,953	11,277	18%	62.0%
PHEVs (plug-in hybrid EVs)	3,749	4,081	5,625	9%	29%
Totals = PEVs (plug-in EVs)	9,660	11,084	16,902	15%	52%

- ✓ Tennessee's and DET's collective goal for EVs is **200,000 on our roads by 2028**
- ✓ Actual needed growth rate to reach 200,000 goal by 2028 is higher; **MUST** continue nonlinear growth rate. If we doubled number of BEVs *every year*, would hit 192,000 in 2029.
- ✓ *Just looking at Jan. 1 – June 30, 2022, we have seen a 24% increase in the BEV numbers (14,002)*

Actions to Increase TN PEV Numbers

- ✓ Development of partnership **Drive Electric TN**
 - *Three Working Groups started in 2019 to address EV adoption barriers (Infra., Awareness, Policy & Pgms)*
 - *Development of more community EV chapters that hold educational events, and increasing local involvement in them*
- ✓ **Local Power Companies (LPCs) learning and developing incentives (alone and via multiple partnerships)**
- ✓ *Amazing work done by TDE&CD and partners to bring LOTS of clean-energy jobs to TN via EV, battery and related-component manufacturing*
- ✓ **Effective fed. funding mgmt. and **addition** of more funding from TVA and TDOT (millions) to expand infrastructure for both DCFC and Level 2 across multiple needs**
- ✓ *Fleet engagement – leaders developing or being developed (e.g., TVA, Nash., Chatt., Memphis)*
- ✓ **All kinds of partners (e.g., TVA, LPCs, ETCleanFuels, universities, TDEC, local citizens) developing projects and programs focused on EV research, engagement, and deployment**



PROJECTS

Bringing DOE Funds into Tennessee

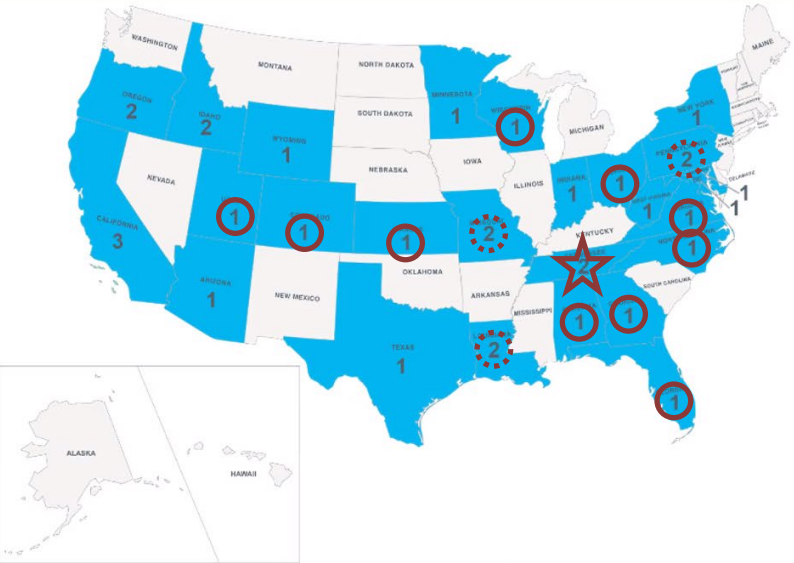
Clean Cities Coalitions Involved in FY20 TI Awards



U.S. Department of Energy

Clean Cities coalitions will play a key role in the success of these awards.

- 32 Clean Cities Coalitions involved in projects*
- Representing 26 States



*Based on pre-negotiated project information. Project partners may change.

FY20 TI Awards: \$37M for 18 Projects

Topic Areas and # of Projects

- Gaseous Fuels Technology Demonstration (2)
- Alt. Fuel Proof-of-Concept in New Communities and Fleets (8)
- EV and Charging Community Partner (3)
- TI Open Topic Projects (5)



This excludes the EMPOWER project and \$3M+ that will flow through ETCleanFuels 2022-2024.

DRIVE Electric USA

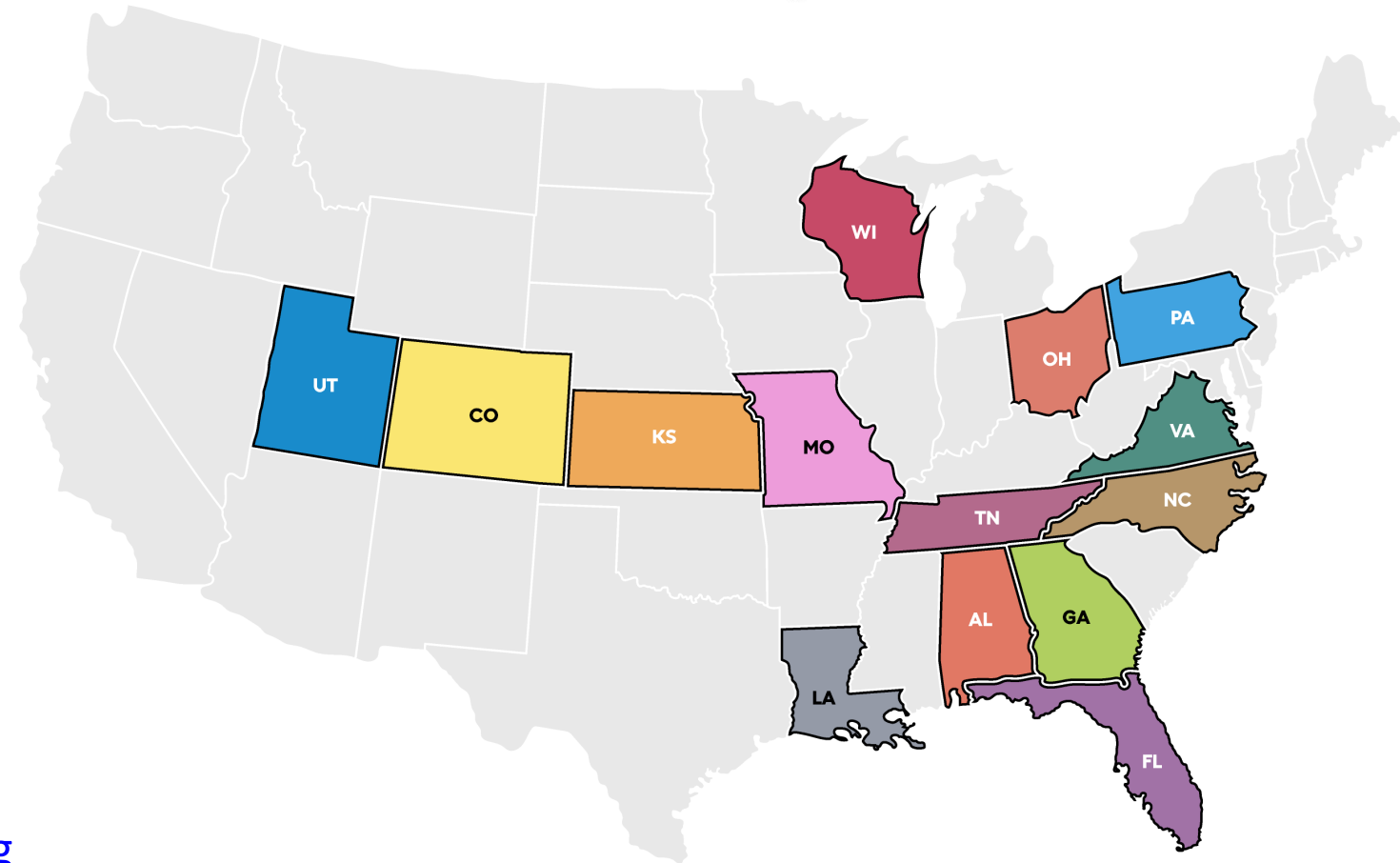


DRIVE ELECTRIC
— USA —

Partnership across 14 states to develop statewide, branded EV initiatives nationwide. *Project started with intent to grow the involvement by other states and seek additional funding.*

1.ETCleanFuels is the Prime

2.Clean Cities coalitions leaders that partner with electric utilities, state agencies, NGOs, municipalities and more to develop sustainable partnerships to advance EV efforts into the foreseeable future



www.DRIVEElectricUSA.org

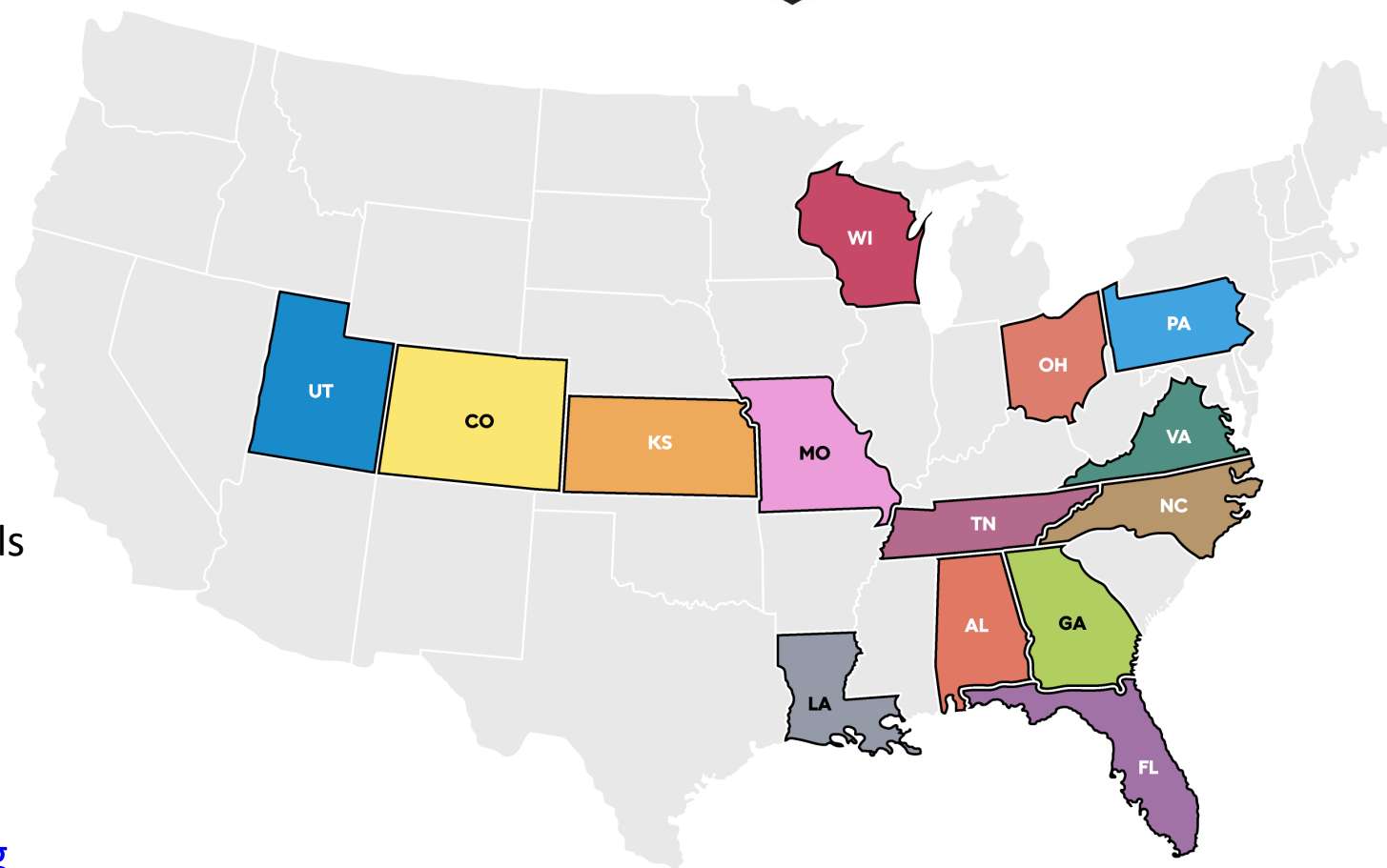
DRIVE Electric USA



DRIVE ELECTRIC
— USA —

Seven “Priority Areas” of work that each state is undertaking:

- 1) Building statewide, branded initiatives – *Develop a statewide Roadmap or Plan*
- 2) Consumer Education & Chapter Development
- 3) Engaging Electric Utilities & Regulators
- 4) EV Charging Infrastructure and Planning
- 5) Educating State & Local Government Officials
- 6) Dealer Engagement – *Develop “Certified EV Dealer” Programs*
- 7) Engaging Fleets & EV Adoption



www.DRIVEElectricUSA.org

PROJECT

DRIVE Electric USA “2”

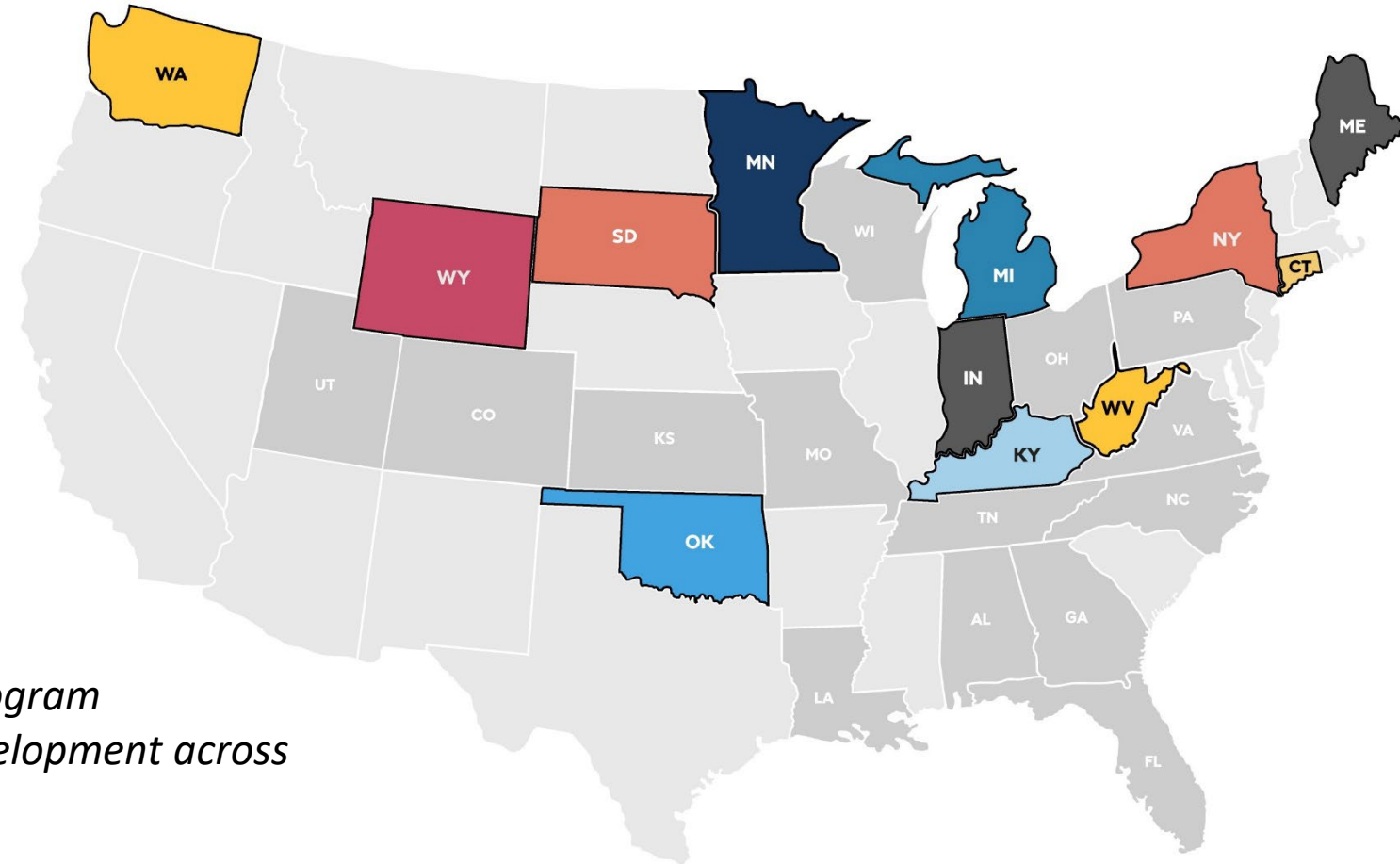


DRIVE ELECTRIC
— USA —

Partnership across 14 states to develop statewide, branded EV initiatives nationwide. *Project started with intent to grow the involvement by other states and seek additional funding.*

1.14 original states – gray

2.12 states currently included in DEUSA2 – colors



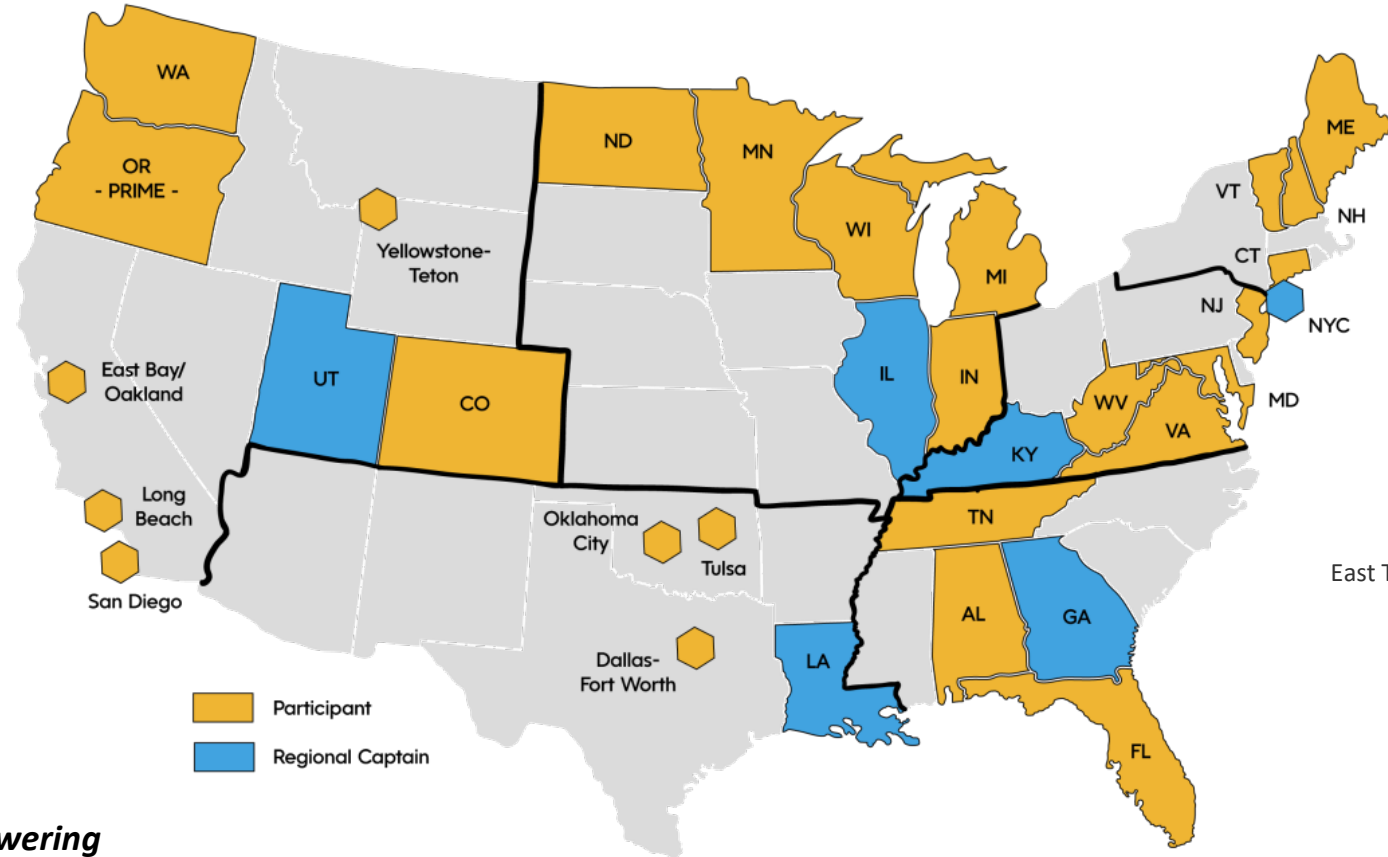
Project is being converted into a Program by seeking external funding for long-term development across even more states.

PROJECT EMPOWER

Build a nationwide,
sustainable Workplace
Charging Program

*Map of partner states
and communities >>>*

**Most CC-inclusive project
DOE-CC has ever seen!**



**EMPOWER = “Equitable, Mobility Powering
Opportunities for Workplace
Electrification Readiness”**



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Chief of Staff,
East Tennessee Clean Fuels



Madelyn Collins
Project Manager,
East Tennessee Clean Fuels

PROJECT EMPOWER

1. Partners, Process

- Significant partners include Clean Cities coalitions across the country, and many utilities
- Coalitions will work with partners in their area – like utilities – to reach directly out to employers in 30 states

2. Goals: By end of Year 3, have signed up 3,500 workplaces that have committed to install workplace charging equipment, and have 650 completed installations

>>> In TN, that equals 80 workplaces reached, 25 installs

3. Strong Energy & Environmental Justice component: 40% of all outreach must occur within underserved communities or at employers that benefit those communities



OTHER EFFORTS

2022: EPA Clean School Bus Program



- ★ EPA Priority County Systems
- ▭ EPA Priority City/Special Districts
- ★ **City/Special OR Contractor**
- ★ **County System**
- ★ **Dark Blue** Already have, or are actively considering or planning to procure an electric school bus and would like to apply for funding.
- ★ **Orange** We would like to learn more about electric school buses before moving forward.
- ★ **Light Yellow** We don't think electric school buses are a fit for our district at this time.
- ★ **Light Blue** Districts Allissa reached out to/contacted (EXCLUDES some that responded)



Savannah Robertson
DriveElectricTN Coordinator,
East Tennessee Clean Fuels



Leland Davidson
Project Manager,
East Tennessee Clean Fuels



PROJECTS



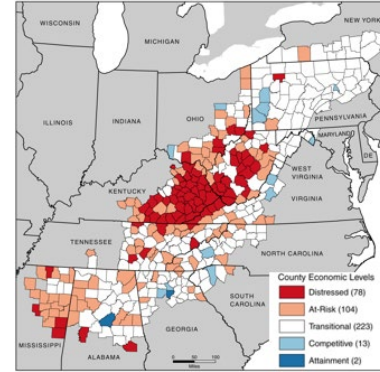
Rural EV Testbed

Upper Cumberland area focused project offering two-week EVs test drives, working on community education events, and installing Level 2 infrastructure in rural counties



Medium-Duty eTruck Project

Allow fleets in TN to borrow a class 4 all-electric box truck for up to two months



Rural Reimagined

Service to underserved communities by demonstrating EVs & developing infrastructure plans

Level-2, Carthage, TN

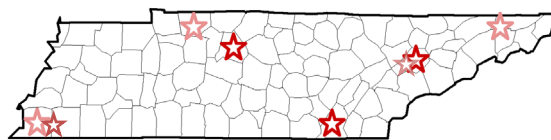


OTHER EFFORTS, PROJECTS



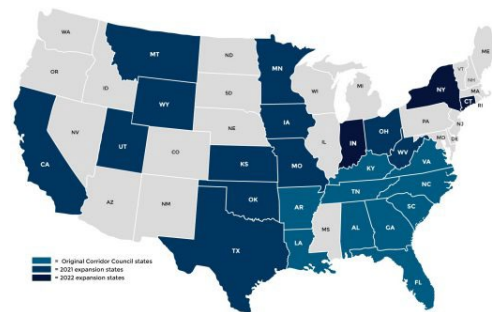
FHWA – NEVI State Plan

TDOT & TDEC crafted Plan; ETCleanFuels & TDOT developing criteria for evaluating sites for funding



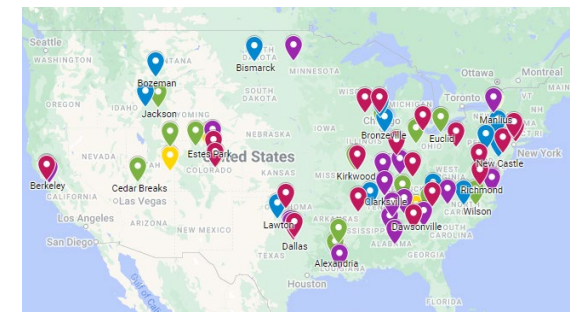
Green Fleet Planning

ETCF leads partnership across major cities in TN to review fuel use and GHGs *as a team* & make plans for adding cleaner vehicles



National Alt. Fuel Corridor Council

TN and AL Clean Cities manage nationwide CC + state DOT reps discussions about FHWA corridors – planning for corridor ID and wayfinding signage, and filling alt-fuel gaps



EV Community Preparedness

The NFPA and 30 Clean Cities coalitions helping many communities prepare for the EV revolution



Ainsley Kelso
Communications Coordinator,
East Tennessee Clean Fuels

Fleet Examples in Tennessee



1 Hawkins County Schools starting a new propane school bus program (*through state DERA funds*)



7 Clarksville-Montgomery County School System now up to **74** of their **350** school buses running propane autogas!

5 Metro Nashville – plan to have **25%** of fleet EV by 2030; **59** EVs ordered in 2022!

2 Knoxville now has *renewable* propane efforts moving forward with plans for almost **30** propane-powered vehicles by end of 2023!



1 Kingsport now has over 100 propane vehicles, handful of Nissan Leafs and has provided public L2 for city for years



8 Paris BPU becoming partner to help work on EV furthurance across multiple counties



1 Greeneville now has almost 90% of police vehicles on propane, plan to go almost 100%



4 Middle Tennessee Electric providing great leadership in developing plans and programs to expand EV education in their footprint; includes Wilson, Cannon, Rutherford and Williamson Counties.



3 Chattanooga acquiring MD and HD AFVs: 4 propane, 2 CNG, and 1 class 5 all-electric tire truck, plus all the necessary infrastructure!



9 Shelby County received DOE grant and is acquiring 4 Ford Lightnings in Roads & Bridges Dept., plus Level 2 and DCFC infrastructure for charging

Tennessee's Drive Electric License Plate Campaign

1,100 people signed up at start, thanks to TVA covering plate cost!

Waiting on production of the plates; expected in next two months.

Tennessee EV Specialty License Plate

FREE for the first year

Registering for your plate will help promote EVs throughout the state. The proceeds from these specialty license plates will also be used to fund DET's projects and programs to create a future of renewable energy, encourage economic growth, and protect community health.

[REGISTER NOW](#)



STFE & Momentum Summit



Don't miss it!

Being held at UTK Student Union!!

We are taking over management of STF&E while holding our first ever DET Momentum Summit.

Major partners >>>



&



Register here:

stfe2022.eventbrite.com



INSTITUTE FOR A SECURE & SUSTAINABLE ENVIRONMENT



Thank
You!



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