

2023 Clean Vehicle Demonstration Days

Agenda

10- 11 AM Presentations

- NCCETC
- NCDOT
- Triangle Clean Cities
- NREL (in afternoon)
- Cenntro
- Alliance Autogas
- SEPA introductions
- Electrify EVSE
- Cary Cart Company
- Pioneer e-Mobility

11- 1 PM Ride and Drive (pizza served in tent near Ride and Drive at noon)



The NC Clean Energy Technology Center at N.C. State University, advances a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies.

For over 30 years, the Center has worked closely with partners in government, industry, academia and the non-profit community to support clean energy development and deployment in North Carolina and beyond.

Our Work

- Created in 1988 as a resource for aiding the deployment of renewable energy and energy efficiency
- UNC System-chartered Public Service Center administered by the College of Engineering at North Carolina State University
- Objective research, analysis, training & technical assistance

Major Program Areas:

- Clean Power & Efficiency
- Renewable Energy
- Clean Transportation
- Green Building
- Energy Policy & Economic Development
- Workforce Development, Education & Outreach



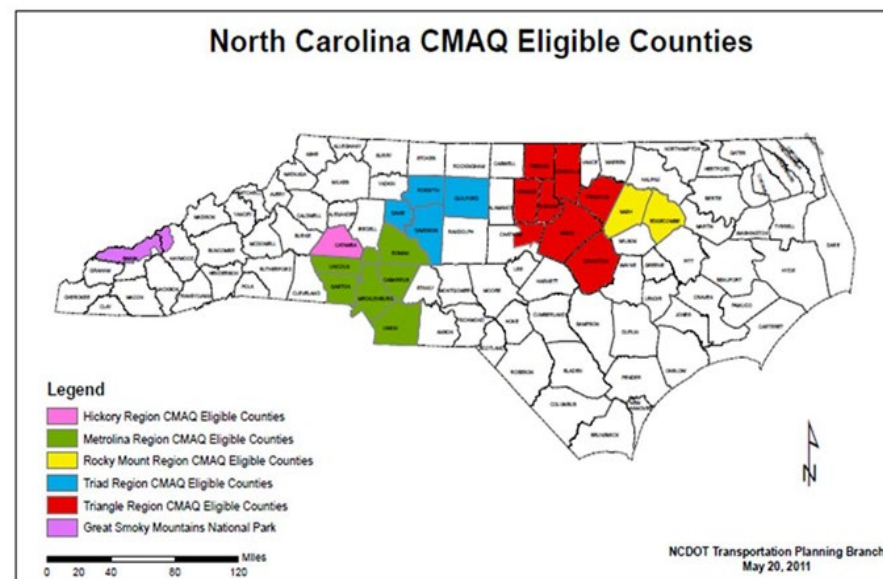
Clean Transportation Program

- We work to propel the development, awareness and use of alternative fuels and advanced transportation technologies through:
 - technical assistance, including trainings and fleet assessments
 - education and outreach initiatives, including workshops, meetings, conferences and marketing campaigns highlighting the benefits of using clean transportation technologies
 - administering clean transportation technology grants



Clean Fuels and Advanced Technology (CFAT) Project

- CFAT deploys federal Congestion Mitigation Air Quality (CMAQ) funding through the N.C. Department of Transportation (DOT)
- CFAT provides direct financial assistance for clean transportation projects each year to a variety of public and private entities, all focused on reducing transportation-related air pollution emissions
- CFAT funds focus on 24 CMAQ-eligible counties currently in “maintenance” status under federal air quality rules; electric charging infrastructure can be funded statewide



- New CFAT RFP will be released this summer (\$3 million total)

Technical Assistance

- We can provide advice and/or analysis on the following topics:
 - Idle reduction
 - Electric vehicles and infrastructure
 - Telematics
 - Alternative fuels (propane, biofuels, natural gas, hydrogen)
 - Resilience



- The 2023 Conference will be held in person Aug 14-16 at the Raleigh Convention Center
- Events will featured key industry experts and highlighted alternative fleet success stories
- www.sustainablefleetexpo.com



NORTH CAROLINA **CLEAN TRANSPORTATION PLAN**



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

The final draft of the Clean Transportation Plan was submitted to Gov Roy Cooper April 6, 2023

Agenda

- **NC Clean Transportation Plan Process**
 - Executive Orders
 - Purpose
 - Partners and Work Groups
- **NC Clean Transportation Plan**
 - Focus Areas
 - Key Recommendations
 - State actions & Supporting Strategies

NC Clean Transportation Process

Executive Orders

EO 80 (2018)

Reduce economy wide emissions by **40% below 2005** levels by 2025

Increase total number of registered ZEVs to at least **80,000 by 2025**

Reduce energy consumption in state-owned buildings by **40% below 2002-2003 levels**

EO 246 (2022)

Reduce economy wide emissions by **50% below 2005** levels by 2030 and achieve net-zero emission no later than 2050

Increase total number of registered ZEVs to at least **1.25 million by 2030**

Increase the sale of passenger ZEVs so that **50% of in-state sales** are zero emission by 2030

EO 271 (2022)

Propose a NC Advanced Clean Trucks rule by **May 2023**

Develop and prioritize statewide complementary strategies

Complete a **ZEV infrastructure needs assessment**

Plan Purpose

The Clean Transportation Plan is the state of North Carolina's Plan. The Plan is in support of **Executive Order 246**. The plan should:

- Be a plan for all of North Carolina
- Advocate for public, private, and non-profit participation
- Consider all layers of governance
- Focus on equitable outcomes

NCCTP Partners & Work Groups

Clean transportation practices and technologies change rapidly. To understand this, the NCCTP collaborated with a diverse group with a wide range of interests.



The NC Clean Transportation Plan

Focus Areas

Governance

Governance activities include guidance that could occur at any level of government (local, regional, state or federal) including legislation, policy, codes, ordinances and mechanisms that promote equitable outcomes.

Communications and Engagement

Methods to increase equitable engagement and empower public, private and non-profit effectiveness as well as methods to directly engage and involve stakeholders, the general public and traditionally underserved demographic cohorts.

Partnerships

Bringing government, industry, advocates and the public together to advance clean transportation solutions.

Infrastructure

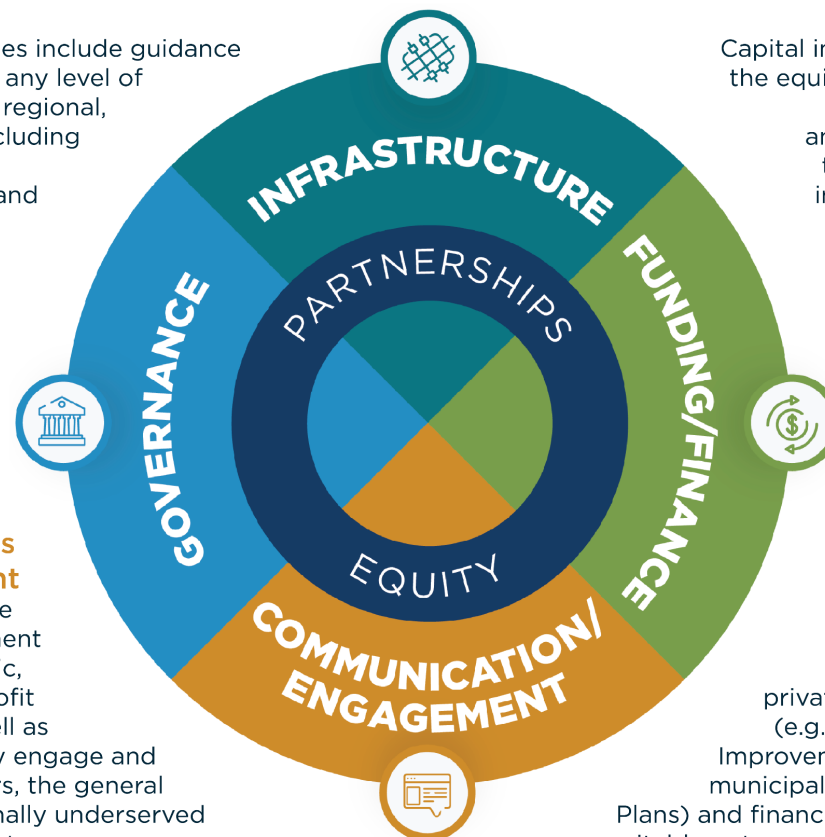
Capital investment resulting in the equitable implementation of increased capacity and connectivity of our transportation system including EV charging, modernization of the electric grid, active transportation and transit supportive infrastructure.

Funding and Finance

These programs include financial resources (public and private), funding programs (e.g., State Transportation Improvement Program, grants, municipal Capital Improvement Plans) and financing tools that support equitable outcomes and implementation.

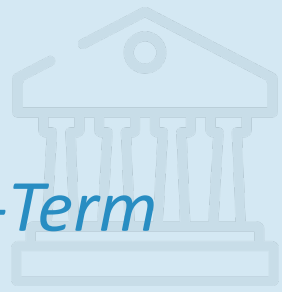
Equity

Improving access to clean transportation and equitable outcomes for all with a focus on traditionally underserved populations.



Governance Activity

Timeframe: *Near-Term*



Create a dedicated clean transportation team

State Action

N.C. Dept of Transportation should establish a **Clean Transportation Team** to:

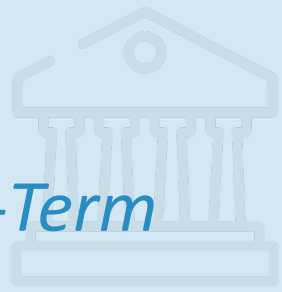
- Advance the **implementation** of the NCCTP
- Track and communicate implementation of the NCCTP **objectives** and **key metrics**
- Apply for and support disbursement of applicable **federal grant programs**
- Convene and facilitate the **Clean Transportation Interagency Task Force**
- Convene and **support public stakeholder work groups**

Supporting Strategy

The new Clean Transportation Team will lead, support or partner in the remaining key recommendations as appropriate.

Governance Activity

Timeframe: *Near-Term*



Align statewide policy through a Clean Transportation Interagency Task Force

State Action

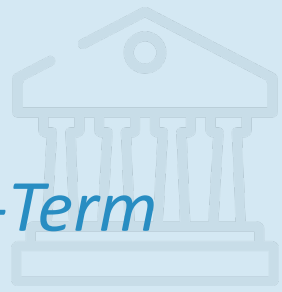
N.C. Dept of Transportation will convene a **Clean Transportation Interagency Task Force** comprised of representatives across different **state agencies**.

The task force will support the Clean Transportation Team's efforts to implement key recommendations and will:

- Promote efforts to **identify and support traditionally underserved communities** and **ensure their inclusion** in clean transportation opportunities
- Continue **modernization of procurement procedures** and support state efforts to transition state motor fleets to ZEVs
- Review existing policies to **identify potential conflicts and opportunities**

Governance Activity

Timeframe: *Near- to Mid-Term*



Increase equitable outcomes in transportation planning projects

State Action

N.C. Dept of Transportation and the Clean Transportation Interagency Task Force will work to **enhance existing environmental justice efforts** and **promote equitable outcomes** by doing the following:

- Involve **environmental justice partners and community leaders** to inform implementation of the NCCTP
- Identify **equity metrics** to incorporate into projects and promote accountability

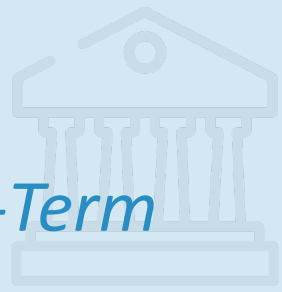
Supporting Strategy

Supporting partners will be asked to:

- Assist with creating **new** engagement and decision-making processes
- Work with communities to **listen to and address concerns** with NCCTP-related investments
- Explore the creation of **zero-emission delivery zones**

Governance Activity

Timeframe: *Near- to Mid-Term*



Ensure access and affordability to clean transportation

State Action

NCDOT will develop policies and programs that promote **access and affordability** to clean transportation options and will **prioritize infrastructure investments** for traditionally underserved communities.

- Address **Justice40* targets** and include access and affordability into federal procurement processes
- Provide **technical assistance and partnership to businesses and small fleet owners** to assist the transition to zero-emission vehicles (ZEV)

Supporting Strategy

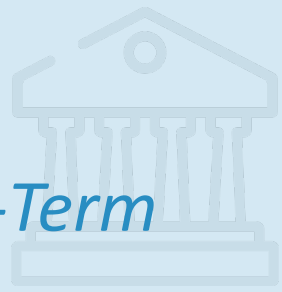
The Clean Transportation Team and NCCTP Work Groups will continue researching ways to:

- Create **incentives and advantages** for clean transportation projects proposed in traditionally underserved communities
- Deploy **rebates, incentives or other support** for traditionally underserved populations

**The Justice40 Initiative is a government-wide initiative to ensure 40% of program/project benefits reach traditionally underserved communities as determined by the Justice40 census tract*

Governance Activity

Timeframe: *Near-Term*



Evaluate and update project prioritization programs

State Action

NCDOT will work with the agency's existing Strategic Prioritization Office (SPOT) work group to **refine the project evaluation process** to include opportunities identified in the NCCTP.

- Review best practices for how **greenhouse gas (GHG) emission evaluations** are used in prioritization processes
- Evaluate how Regional and Division prioritization processes can improve **equity, VMT per capita reduction, climate and health impacts**
- Research the **Strategic Transportation Investments (STI) Law** normalization process to evaluate benefits to providing a **higher** percentage of funding for **non-highway** projects

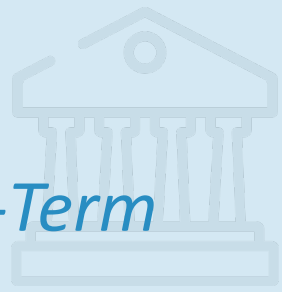
Supporting Strategy

The NCCTP work groups will continue researching the best ways to:

- Review land use policies to **support multimodal travel** modes
- Remove barriers to funding **standalone multimodal projects**

Governance Activity

Timeframe: *Near- to Mid-Term*



Partner with utilities to promote clean transportation

State Action

The Clean Transportation Interagency Task Force will **partner with electric utilities** to promote **clean energy and clean transportation** options.

- Provide **updates to N.C. Utilities Commission (NCUC)** regarding implementation of NCCTP and facilitate ongoing coordination between NCUC and utilities
- Partner with **electric utilities** to encourage statewide **access** to—and **funding** for—clean energy and clean transportation infrastructure

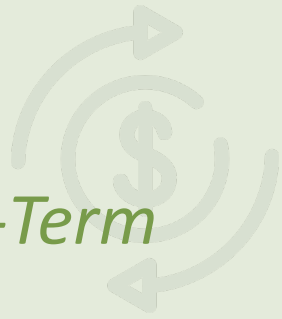
Supporting Strategy

Create **best practices and updated policies** to facilitate, expedite, and standardize clean transportation and utility-related infrastructure:

- Develop a clearinghouse of **best practices and resources**
- Work with the energy sector to participate in **strategy development** and **power requirements**
- **Expand** existing utility programs that promote the growth of **charging infrastructure**
- Identify specific needs and opportunities to **expand charging infrastructure for medium- and heavy-duty vehicles**

Funding and Finance Activity

Timeframe: *Near-Term*



Maximize existing funding to support clean transportation outcomes

State Action

N.C. Dept of Transportation and N.C. Dept of Environmental Quality will evaluate **current funding programs** to **maximize funding potential** to support the goals of Executive Orders 80, 246 and 271.

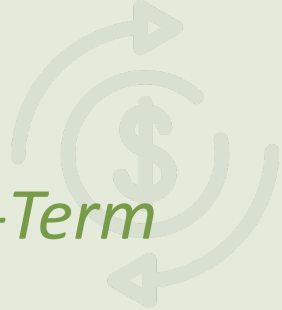
- Prioritize **funding incentives** and **advantages** for clean transportation projects
- Work with interagency task force and other stakeholders to **notify traditionally underserved communities of funding opportunities**
- Explore **investments in infrastructure** for medium- and heavy-duty vehicles

Supporting Strategy

- Provide **technical assistance for traditionally underserved communities** to navigate the funding application process and secure funding

Funding and Finance Activity

Timeframe: *Near-Term*



Evaluate new funding that advances clean transportation outcomes

State Action

N.C. Dept of Transportation and Clean Transportation Interagency Task Force will evaluate applicable federal funding opportunities under the **Inflation Reduction Act (IRA)** and **Infrastructure Investment and Jobs Act (IIJA)** to further NCCTP strategies.

- Work with the Office of State Budget and Management (OSBM) and Governor's Office to **track and pursue funding opportunities**
- Evaluate **discretionary funding opportunities** to advance priorities identified in the NCCTP
- Work with partners to provide **technical support** to small businesses, local governments and fleet owners

Supporting Strategy

- Partner with “**green banks**” and other **financial institutions** to support implementation of NCCTP priorities
- Identify **effective funding strategies** to **promote small and disadvantaged business** electrification
- Identify financial incentive options for **leasing or buying new or used** clean transportation technology and infrastructure

Infrastructure Activity

Timeframe: *Near- to Mid-Term*

Evaluate and deploy clean transportation infrastructure to support all types of fleet vehicles and applications

State Action

NCDOT is developing a **zero-emission vehicle (ZEV) infrastructure needs assessment** as part of Executive Order (E.O.) 271. This assessment will evaluate the **charging and fueling needs** to support the goals of E.O. 271 and the achievement of at least 1.25 million registered ZEVs in NC as called for in E.O. 246

- Evaluate the **number, type, distribution, and cost of chargers and other fueling stations** needed to achieve North Carolina's ZEV goals
- The assessment will strive to identify the greatest opportunities to expand the charging network in traditionally underserved communities
- Consider infrastructure needs of **larger vehicles**

Supporting Strategy

- Consider infrastructure needs of **residents in multi-unit dwellings** and for **consumers lacking off-street parking**
- Create a process for continued statewide planning of clean vehicle charging and fueling infrastructure
- Fund, prioritize and support transition of **school and transit bus fleets** to clean transportation alternatives
 - Continue seeking funding opportunities to replace school buses with **zero- to low-emission alternatives**
 - NCDOT Integrated Mobility Unit will advocate for **transit electrification and multimodal** options

Infrastructure Activity

Timeframe: *Near- to Mid-Term*

Expand transportation demand management strategies

State Action

NCDOT should support and promote the transportation demand management programs outlined in the **vehicle miles traveled (VMT) reduction toolkit**, including:

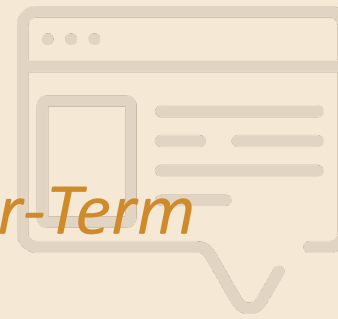
- Expanding infrastructure for **non-motorized mobility, rail and public transit**
- Increasing access to broadband to **facilitate working from home** and **other travel choices** (including support from the NC Dig Once Policy)
- Implementing planned **complete streets elements**

Supporting Strategy

- Improve quality of **crash data and exposure data** for rural and urban contexts

Communication and Engagement Activity

Timeframe: *Near-Term*



Establish a coordinated clean transportation communication strategy

State Action

NCDOT and the Clean Transportation Interagency Task Force will seek dedicated funding opportunities to support a **coordinated communication strategy**. This strategy will include:

- Identifying resources, staff and partnerships to develop and implement an **education and awareness campaign**
- Developing **tailored and accessible messaging** for traditionally underserved communities
- Coordinating with each state agency to **include clean transportation initiatives** within their **annual public involvement plans**

Supporting Strategy

- Develop **training materials** to further **educate and engage** stakeholders
- Develop **publicly available tools and dashboards** that improve transparency and access to information
- Work with non-profit advocacy groups to **connect clean transportation messaging and resources** with a diversity of demographic cohorts
- Promote and provide outreach for **electric vehicle (EV) demonstrations** and **promotional events**

Thank you!

*For more details on the key recommendations of the plan, visit the **NCDOT website** and search **NC Clean Transportation Plan**.*

Thank you to the public, members of the Supporting Agency Partners, and Advisory Committee, and the members of the five subject matter work groups for your contribution to the development of the North Carolina Clean Transportation Plan.

Triangle Clean Cities Coalition

Triangle J Council of Governments

4.11.23

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Follow us on LinkedIn, Facebook and Twitter

@trianglealtfuel



US Department of Energy Clean Cities Program





Triangle Clean Cities

- ▶ What is the Triangle Clean Cities Coalition?
 - ▶ Program housed at Triangle J COG *we are changing our name in July*
 - ▶ Promote domestic alternative fuels and shift away from petroleum use where possible
 - ▶ Education and Outreach around:
 - ▶ Alternative and renewable fuels
 - ▶ Idle-reduction measures
 - ▶ Fuel economy improvements
 - ▶ Practice and policy changes
 - ▶ Emerging transportation technologies



► US Department of Energy Clean Cities Program (<https://cleancities.energy.gov>)



Value to Stakeholders?

We are a resource!

Connectors: to peers, partners, industry vendors, technical SMEs and more

Funding: Evaluate sources and eligibility, leverage partnerships and initiatives, help to tell a compelling story/framing, support review and editing of proposals

Communication: “Outside 3rd party” that can broadcast successes and lessons learned to local and national audiences | videos, blog posts, podcasts, webinars, etc.

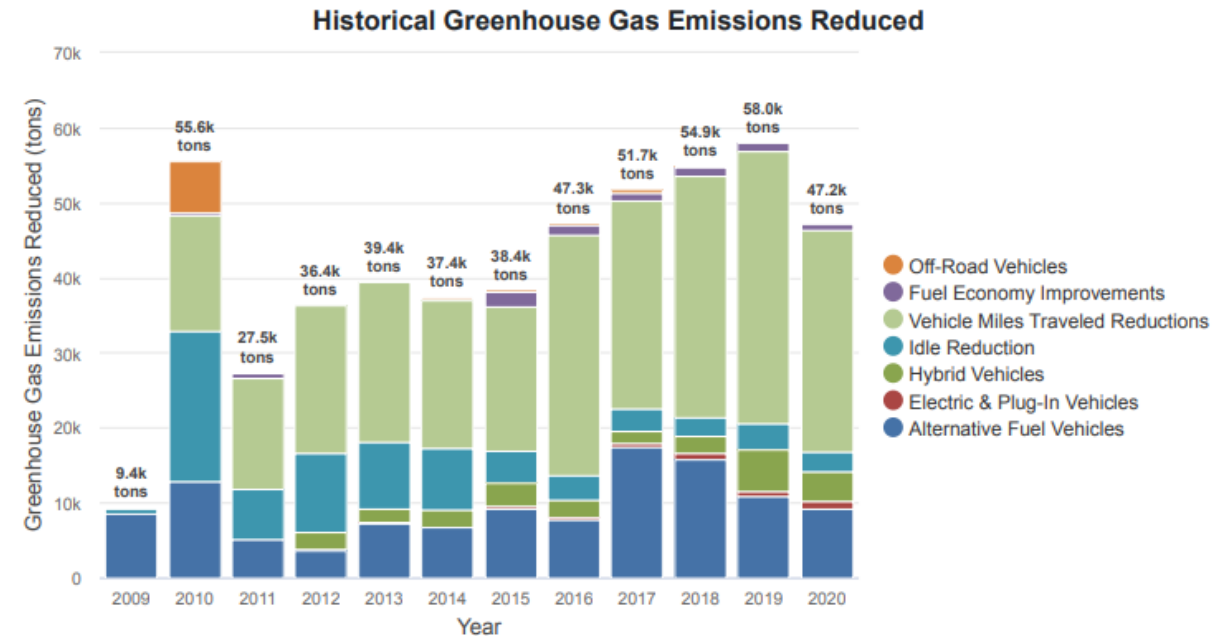
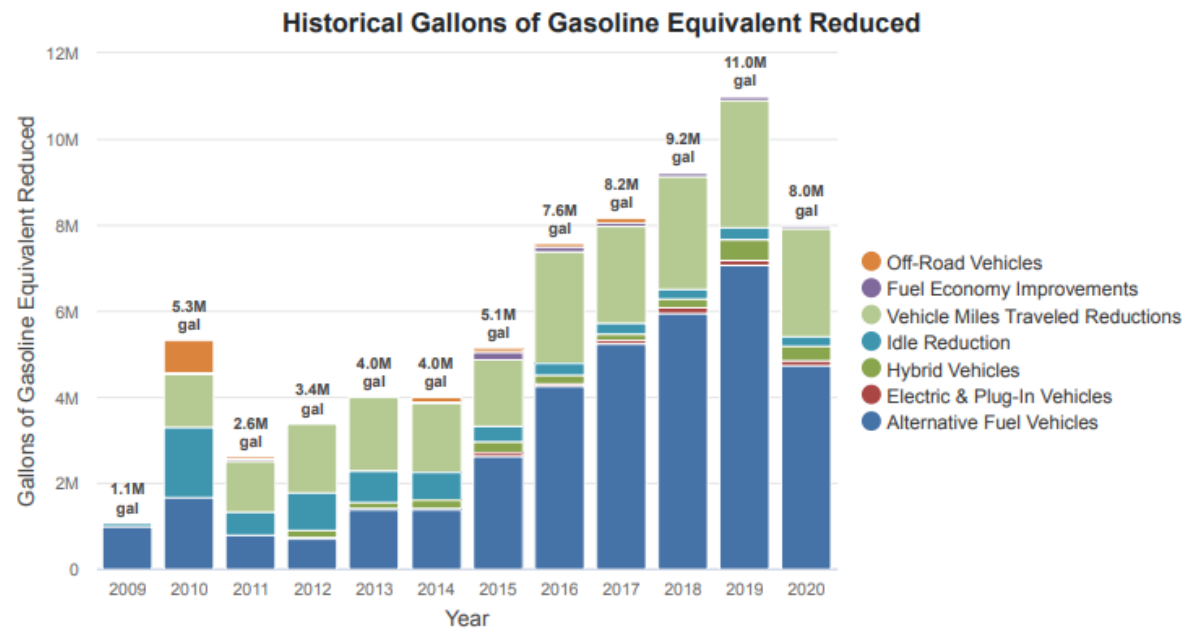
Reporting your success: we report stakeholder data to the DOE annually, showing DOE and congress the import of their investment for you and other local fleets





Triangle Clean Cities

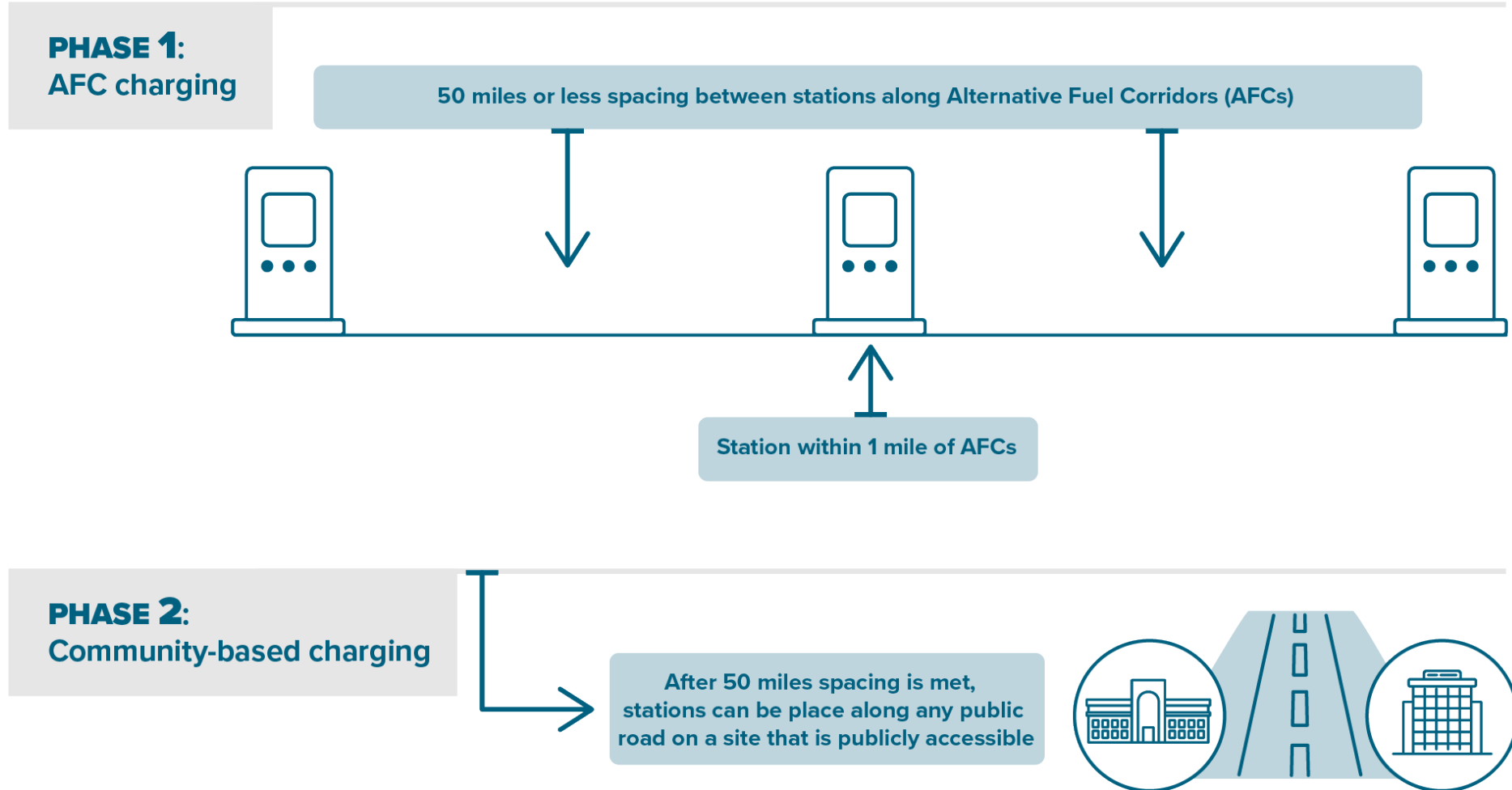
► Impact



National Electric Vehicle Infrastructure (NEVI) Formula Program



NEVI STATION CRITERIA





Calstart, I-95 Zero Emission Commercial Corridor

CALSTART Statement on Department of Energy Decision to Award East Coast Commercial ZEV Corridor Freight Corridor Planning Project

February 15, 2023

Washington, DC – Today the Biden-Harris Administration, through the Department of Energy (DOE) Vehicle Technology Office and Hydrogen and Fuel Cell Technologies Office, announced funding that will support critical strategic planning to decarbonize goods movement along heavily trafficked freight corridors here in the United States. The East Coast Commercial ZEV Corridor project alone will create and catalyze partnerships and develop strategic investment plans to support the deployment of commercial medium- and heavy-duty zero-emission vehicle (ZEV) infrastructure from Georgia to New Jersey. It will focus on maximizing benefits to

Charging and Fueling Infrastructure (CFI) Discretionary Grant

Tuesday, April 18th, Triangle Clean Cities webinar



alee@tjcog.org



Creating SE Hydrogen Network

Triangle Clean Cities &
Southeast Hydrogen Energy Association (SHEA)

**Looking for our local and regional stakeholders involved in adoption and workforce development*



alee@tjcog.org



Anti-Idling Campaign '23

- Impactful, low-hanging fruit
- Number of city and county and fleets in the region interested
- Interested? Please reach out!



alee@tjcog.org



DRIVE Electric USA

US Department of Energy



DRIVE Electric USA

www.driveelectricusa.org



DRIVE ELECTRIC
— USA —

Plug-in nc

1. Partnership across 14 states to develop statewide, branded EV initiatives
2. ETCleanFuels is the Prime
3. **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
4. **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) **Fleet Engagement & EV Adoption**





DRIVE Electric USA

www.driveelectricusa.org

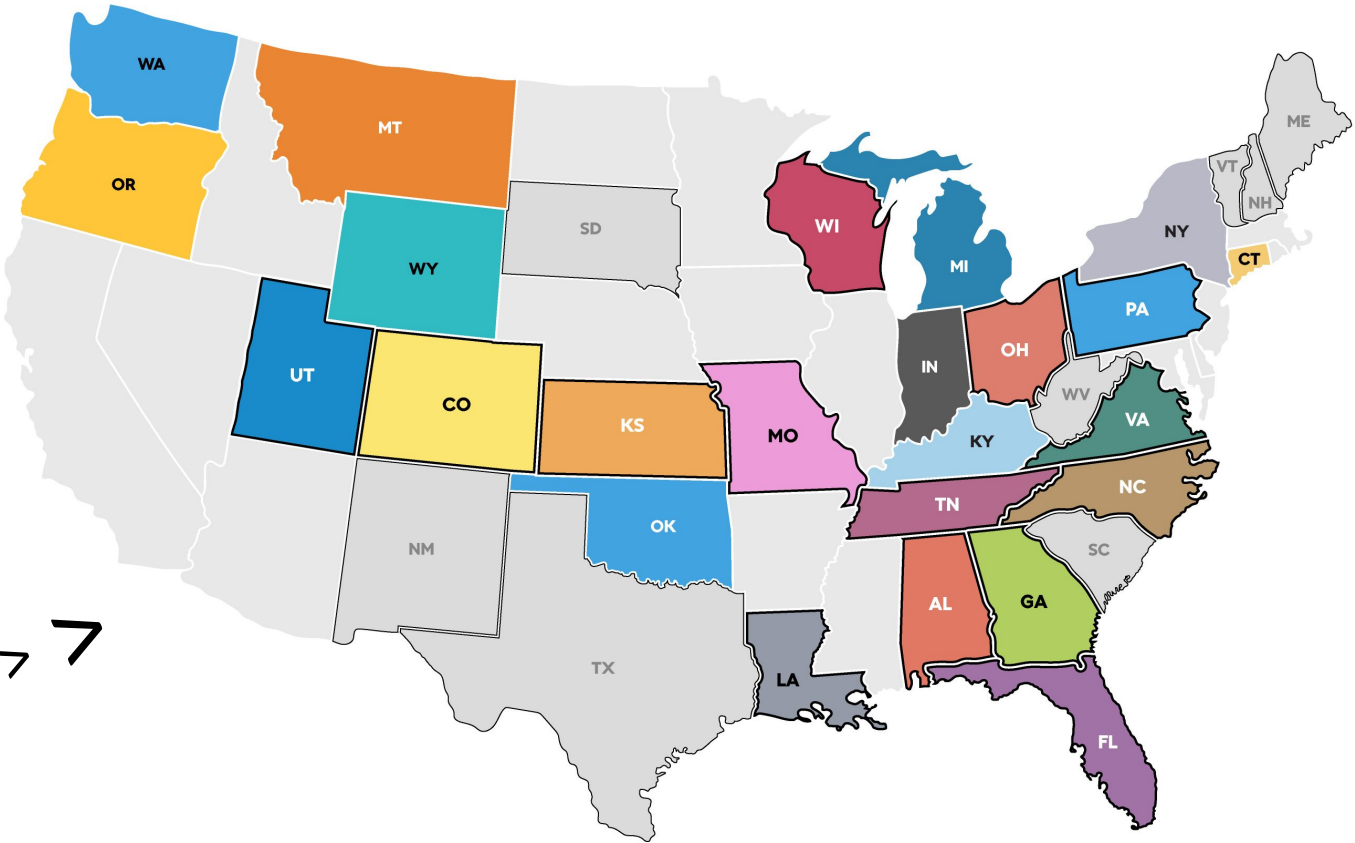
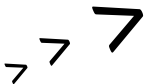
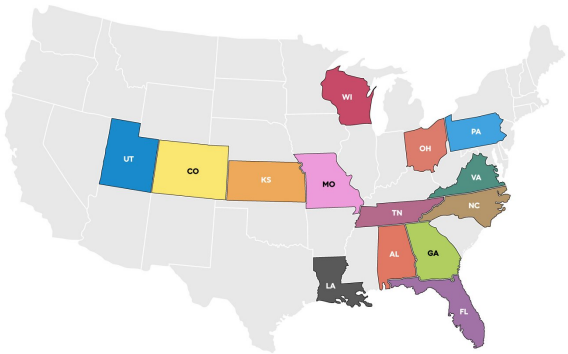


DRIVE ELECTRIC^{TS}
— **USA** —

plug-in nc

Project started with intent to grow the involvement by other states and seek additional funding.

- 1. 14 original states – *black borders*
- 2. 10 states have signed MOU to join effort – *no borders*
- 3. 8 states interested – *light gray*



Other Projects

Fleet electrification

Workforce development

General public education initiatives - Earth Day!

Coalition expansion

Annual report to track and celebrate efforts



Follow us on LinkedIn, Facebook and Twitter

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U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

U.S. Department of Energy Clean Transportation Initiatives

Sam Spofforth, National Renewable Energy Laboratory

April 11 and 12 2023



VTO Technology Integration Program

Provide objective data and real-world lessons learned that inform future research needs and support local decision-making to advance affordable, domestic transportation fuels and energy-saving technologies



**Clean Cities
Coalitions**



**Information
and Tools**



**Technical
Assistance**



**Training,
Outreach,
Partnerships**



**Financial
Assistance**



**Regulatory Activities /
State and Alt Fuel
Provider Fleets**



**Advanced Vehicle
Technology
Competitions**

VTO Technology Integration Strategies

1. Work closely with the nationwide network of local Clean Cities coalitions to support local decision-making



2. Help stakeholders evaluate transportation needs and energy choices



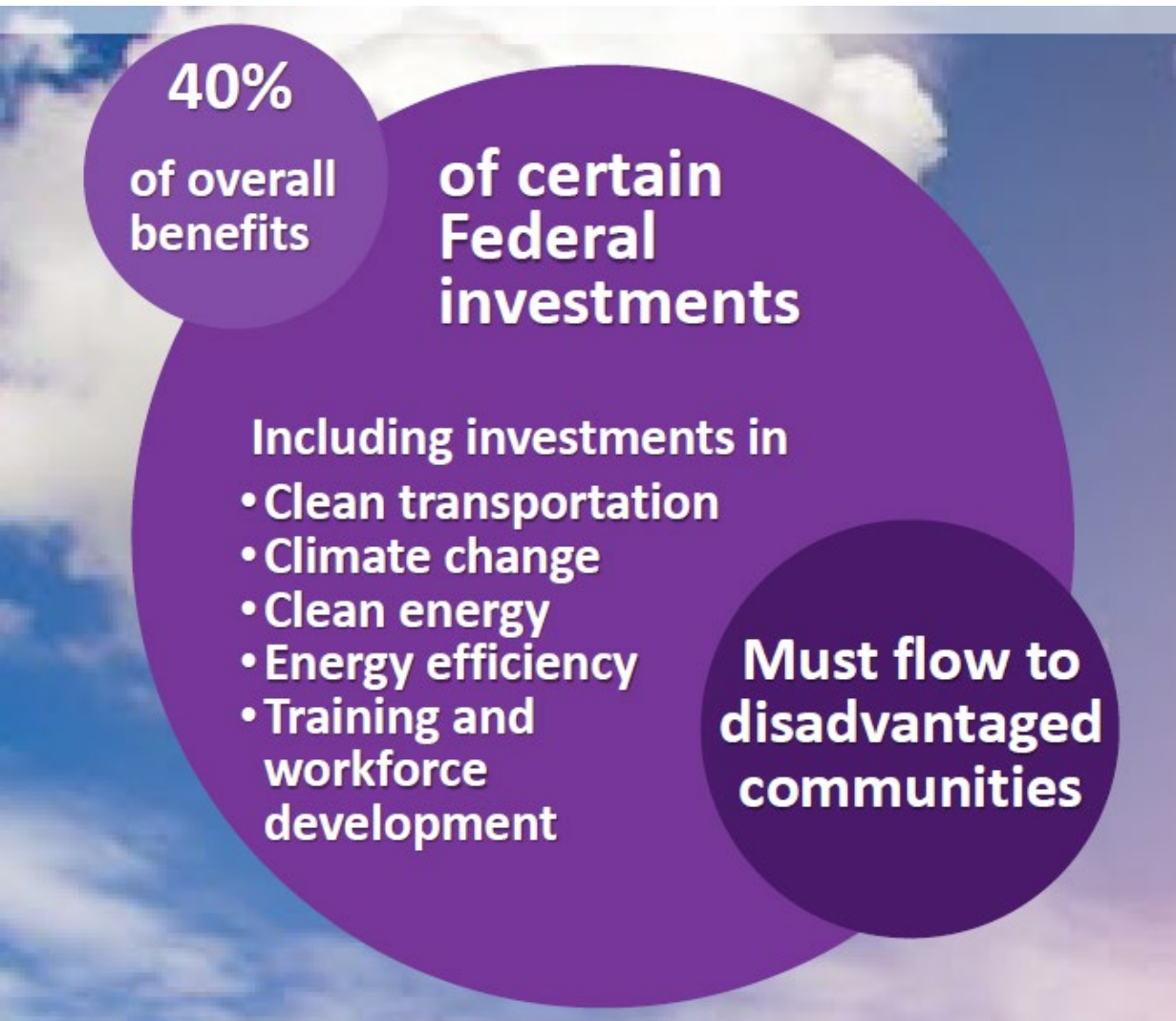
3. Fund projects that:

- Shift to domestic transportation energy sources,
- Improve transportation fuel efficiency,
- Reduce harmful emissions, and
- Demonstrate new mobility choices.

Upcoming FOA Activities from VTO

- **FY22 FOA award announcement – coming soon**
 - Electric drive technologies
 - Advanced engine designs
 - Training
 - And more
- **FY23 FOA also coming soon – notice of intent already published**
 - Advanced batteries
 - Vehicle-to-building technology
 - Advanced materials
 - And more

Justice40 Initiative at DOE



DOE Justice40 Policy Priorities

1. Decrease **energy burden** in disadvantaged communities (DACs)
2. Decrease **environmental exposure and burdens** for DACs
3. Increase **parity in clean energy technology** (e.g., solar, storage) **access and adoption** in DACs.
4. Increase **access to low-cost capital** in DACs.
5. Increase **clean energy enterprise creation** (MBE/DBE) in DACs.
6. Increase the **clean energy job pipeline and job training** for individuals from DACs.
7. Increase **energy resiliency** in DACs.
8. Increase **energy democracy** in DACs.



Clean Cities 30th Anniversary

- Clean Cities is celebrating its 30th year in 2023
- First designation of a Clean Cities Coalition was Atlanta in 1993
- A number of events celebrating this milestone throughout the year
- More to come soon



More than 75 Clean Cities coalitions with thousands of stakeholders, representing ~80% of U.S. population



Coalition projects have helped to put nearly
1 million alternative fuel vehicles on the road.²



89 million gasoline gallon equivalents
of energy were saved through fuel economy improvement projects like telematics, driver training, and outfitting fleets with idle reduction equipment.²

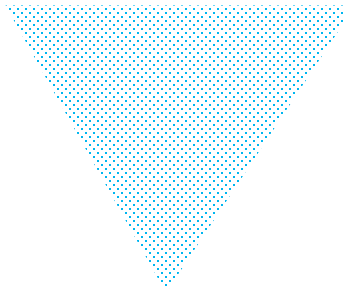


Full infographic: cleancities.energy.gov/files/pdfs/28th_infographic.pdf

cleancities.energy.gov

Joint Office of Energy and Transportation

Mission and Vision



Mission

To accelerate an electrified transportation system that is affordable, convenient, equitable, reliable, and safe.

Vision

A future where everyone can ride and drive electric.

BIL Programs Supported by the Joint Office

The Joint Office will provide unifying guidance, technical assistance, and analysis to support the following programs:



National Electric Vehicle Infrastructure (NEVI) Formula Program (U.S. DOT)

\$5 billion for states to build a national electric vehicle (EV) charging network along corridors



Charging & Fueling Infrastructure Discretionary Grant Program (U.S. DOT)

\$2.5 billion in community and corridor grants for EV charging, as well as hydrogen, natural gas, and propane fueling infrastructure



Low-No Emissions Grants Program for Transit (U.S. DOT)

\$5.6 billion in support of low- and no-emission transit bus deployments



Clean Air Act Program (U.S. EPA)

EV Charging Minimum Standards

Charging is a predictable and reliable experience, by ensuring that there are consistent plug types, power levels, and a minimum number of chargers capable of supporting drivers' fast charging needs;

Chargers are working when drivers need them to, by requiring a 97 percent uptime reliability requirement;

Drivers can easily find a charger when they need to, by providing publicly accessible data on locations, price, availability, and accessibility through mapping applications;

Drivers do not have to use multiple apps and accounts to charge, by requiring that a single method of identification works across all chargers; and,

Chargers will support drivers' needs well into the future, by requiring compatibility with forward-looking capabilities like Plug and Charge.



Funding Opportunity Announcements

Open Funding Opportunities

Number	Title	Type	Program	Concept Deadline	Application Deadline
DE-FOA-0002880	Notice of Intent to Issue FOA no. DE-FOA-0002881 entitled Joint Office of Energy and Transportation Ride and Drive Electric, Fiscal Year 2023 FOA	NOI	DOE/EERE Joint Office of Energy and Transportation	N/A	N/A
DE-FOA-0002892	Notice of Intent to Issue FOA no. DE-FOA-0002893 entitled Fiscal Year 2023 Vehicle Technologies Office Program Wide FOA	NOI	DOE/EERE Vehicle Technologies Office (VTO)	N/A	N/A

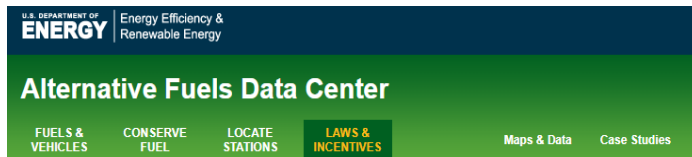
FOAs are also listed on [Grants.gov](#), the portal for numerous grant programs administered by federal government agencies, and the DOE [Office of Energy Efficiency and Renewable Energy \(EERE\) eXCHANGE](#) for all EERE FOAs.

[Driveelectric.gov/funding-opportunities/](#)

Inflation Reduction Act:

Summaries on the AFDC


afdc.energy.gov/laws




EERE » AFDC » Laws & Incentives

Federal and State Laws and Incentives


Find federal and state laws and incentives for alternative fuels and vehicles, air quality, fuel efficiency, and other transportation-related topics.


**Federal**

[Recent Federal Actions](#)
[Key Federal Legislation](#)

**State**


[Recent State Updates](#)
[Local Examples](#)
[Utility Examples](#)


**Search**
by category or keyword


**See All**
in summary tables
[Bipartisan Infrastructure Law](#)
[Inflation Reduction Act](#)


Clean Vehicle Credit: Learn about the [electric vehicle tax credit](#) and find [EVs assembled in North America](#).


Search by Technology


[Biodiesel](#)

[Electric](#)

[Ethanol](#)

[Hydrogen](#)

[Natural Gas](#)

[Propane](#)

Public Law 117-169

Note: You can search by title, description, or public law number.

Category Search

Jurisdiction	Technology/Fuel	Incentive/Regulation	User
<input type="checkbox"/> All <input type="checkbox"/> Federal <input type="checkbox"/> Alabama <input type="checkbox"/> Alaska <input type="checkbox"/> Arizona <input type="checkbox"/> Arkansas <input type="checkbox"/> California	<input type="checkbox"/> All <input type="checkbox"/> Biodiesel <input type="checkbox"/> Ethanol <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane (LPG) <input type="checkbox"/> Hydrogen Fuel Cells <input type="checkbox"/> EVs	<input type="checkbox"/> All <input type="checkbox"/> Grants <input type="checkbox"/> Tax Incentives <input type="checkbox"/> Loans and Leases <input type="checkbox"/> Rebates <input type="checkbox"/> Exemptions <input type="checkbox"/> Time-of-Use Rate	<input type="checkbox"/> All <input type="checkbox"/> Commercial <input type="checkbox"/> Government Entity <input type="checkbox"/> Tribal Government <input type="checkbox"/> Personal Vehicle Owner or Driver <input type="checkbox"/> Alternative Fuel

SEARCH CLEAR

12 results for:
Keyword: Public Law 117-169

Search Results | 12 laws and Incentives

[VIEW ALL](#) [DOWNLOAD CSV](#)

Jurisdiction	Title	Type
Federal	Alternative Fuel Excise Tax Credit	Incentives
Federal	Biodiesel Mixture Excise Tax Credit	Incentives
Federal	Biodiesel Income Tax Credit	Incentives
Federal	Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	Incentives
Federal	Advanced Technology Vehicle (ATV) and Alternative Fuel Infrastructure Manufacturing Incentives	Incentives
Federal	Alternative Fuel Mixture Excise Tax Credit	Incentives
Federal	Alternative Fuel Infrastructure Tax Credit	Incentives
Federal	Pre-Owned Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	Incentives
Federal	Commercial Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Tax Credit	Incentives
Federal	Heavy-Duty Zero Emission Vehicle (ZEV) and Infrastructure Grants	Incentives
Federal	Electric Vehicle (EV) and Fuel Cell Electric Vehicle (FCEV) Manufacturing Tax Credit	Incentives
Federal	Port Electrification Grants	Incentives

U.S. National Blueprint for Transportation Decarbonization

A Coordinated Approach

Four agency MOU signed 9/22 established a historic, whole-of-government approach to transportation decarbonization

- Consistent and expanded stakeholder outreach
- Clear signals to industry
- Coordination at all staff levels:
 - RDD&D planning and execution
 - Infrastructure deployment
 - Policy & regulation development
 - Data, tools, education and training

Underpinned by a singular
aligned transportation
decarbonization vision/blueprint



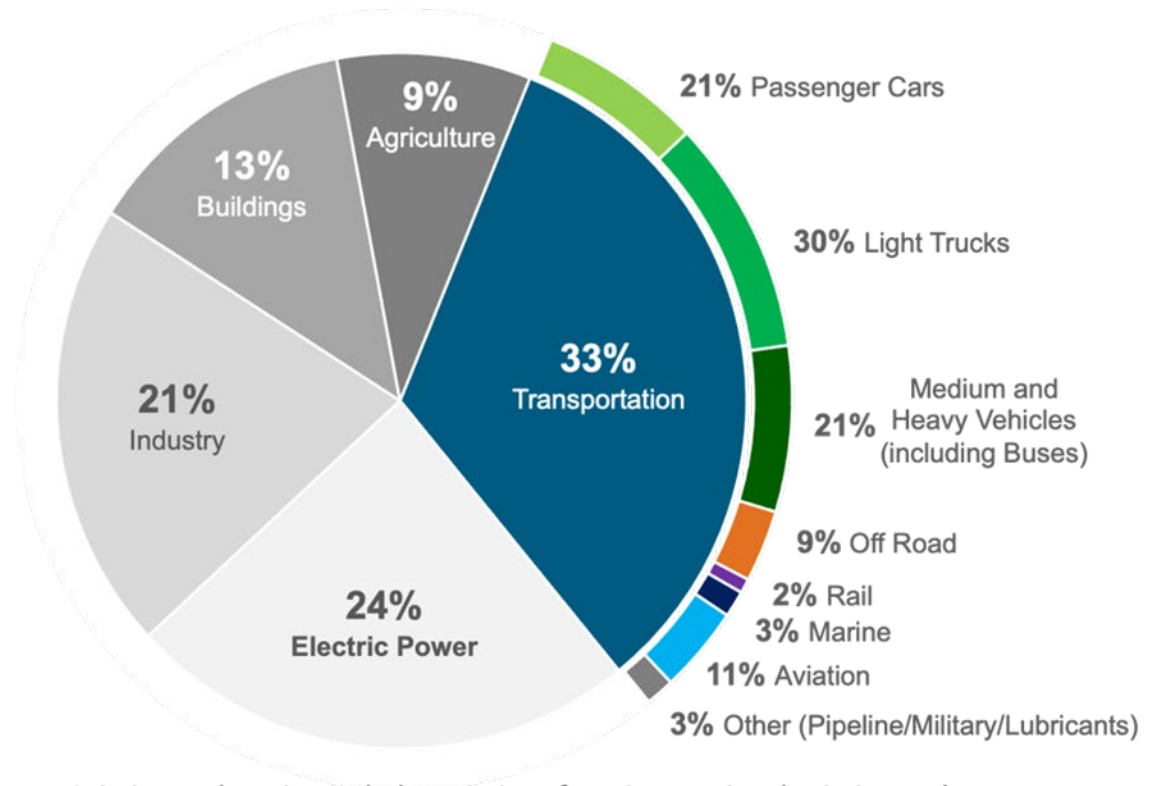
Focus on the Entire Transportation Sector

The goal is complete decarbonization of the transportation sector

The Blueprint

- Covers every mode and sets up **realistic, achievable** pathways based on innovation and science
- Builds on existing federal commitments
- Is a strategic approach that **leverages market forces** for **widescale** deployment of **cost-effective** clean transportation technologies
- Focuses on solutions that can be **incrementally deployed**, delivering results by 2030
- Addresses full **lifecycle emissions** and integration with the **electric grid**

2019 U.S. GHG Emissions



Aviation and marine include emissions from international aviation and maritime transport. Fractions may not add up to 100% due to rounding.

Call to Action: Milestones and Timeline

The climate crisis requires rapid, dedicated, and coordinated actions.

Before 2030

Research and Investments to Support Deployment

Maximize BIL and IRA investments

Set clear, ambitious but achievable targets across all travel modes

Collaborate with local communities on equitable land-use policies

Incentivize efficient travel modes and vehicles

Develop a robust workforce and domestic supply chain solutions

Secure and maximize public/private partnerships

2030-2040

Scaling Deployment of Clean Solutions

Implement transportation strategies to meet market and consumer needs

Transition all new vehicle sales to zero-emission vehicles

Ensure clean fueling infrastructure is fully integrated into energy systems

Scale up sustainable fuels across all sectors

2040-2050

Completing the Transition

Ensure no one gets left behind



























Focus on achieving zero-emissions economy

Replace all legacy vehicles and petroleum infrastructure with clean solutions

Fully leverage the system-wide potential for efficient travel modes



Achieving net-zero emissions will require a suite of technology solutions across all modes of transportation.

	 BATTERY/ELECTRIC	 HYDROGEN	 SUSTAINABLE LIQUID FUELS
1 icon represents limited long-term opportunity  2 icons represents large long-term opportunity  3 icons represents greatest long-term opportunity 			
Light Duty Vehicles (49%)*		—	TBD
Medium, Short-Haul Heavy Trucks & Buses (~14%)			
Long-Haul Heavy Trucks (~7%)			
Off-road (10%)			
Rail (2%)			
Maritime (3%)		 †	
Aviation (11%)			
Pipelines (4%)		TBD	TBD
Additional Opportunities	<ul style="list-style-type: none"> • Stationary battery use • Grid support (managed EV charging) 	<ul style="list-style-type: none"> • Heavy industries • Grid support • Feedstock for chemicals and fuels 	<ul style="list-style-type: none"> • Decarbonize plastics/chemicals • Bio-products
RD&D Priorities	<ul style="list-style-type: none"> • National battery strategy • Charging infrastructure • Grid integration • Battery recycling 	<ul style="list-style-type: none"> • Electrolyzer costs • Fuel cell durability and cost • Clean hydrogen infrastructure 	<ul style="list-style-type: none"> • Multiple cost-effective drop-in sustainable fuels • Reduce ethanol carbon intensity • Bioenergy scale-up

* All emissions shares are for 2019

† Includes hydrogen for ammonia and methanol



THANK YOU

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Sam Spofforth, Clean Cities Project Leader, NREL

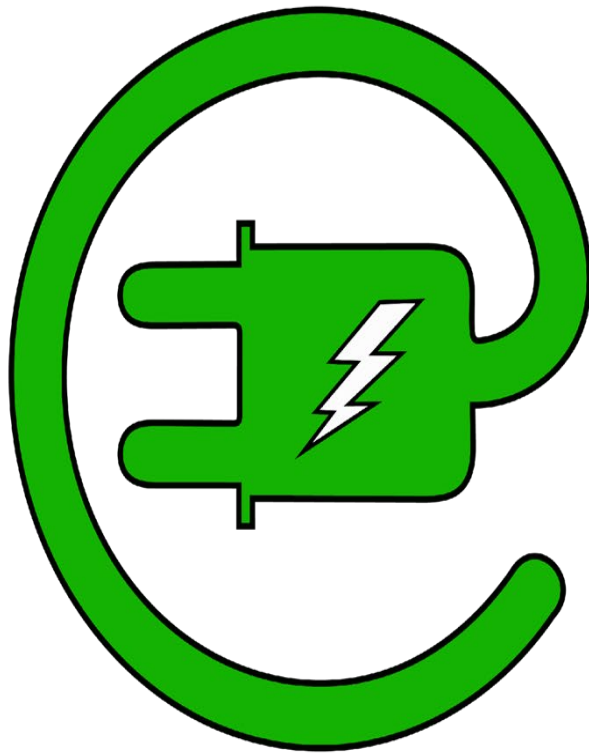
On Detail to DOE VTO TI Team

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cleancities.energy.gov

afdc.energy.gov

FuelEconomy.gov



Solutions that
reduces carbon
emissions,
increases
resiliency and
accelerates the
electric vehicle
charging
infrastructure with
Mobile DC Fast
Charging

 **electrify EVSE**



(Reuters) – “During several days of brutal cold in Texas, the city of Austin saw its fleet of 12 new electric buses rendered inoperative by a statewide power outage...

That problem will be magnified next year, when officials plan to start purchasing electric-powered vehicles exclusively.”

(Nichola Groom, Tina Bellon; 3.05.2021)

2022 IS THE YEAR that will see the acceleration of investment in and deployment of *Electric Vehicle Fleets*. Fleet managers are being tasked by leaders in every sector: business, government, utilities, first responders, and many others to beginning deployment of electric vehicles.











Municipalities



Service & Utility



Package Delivery



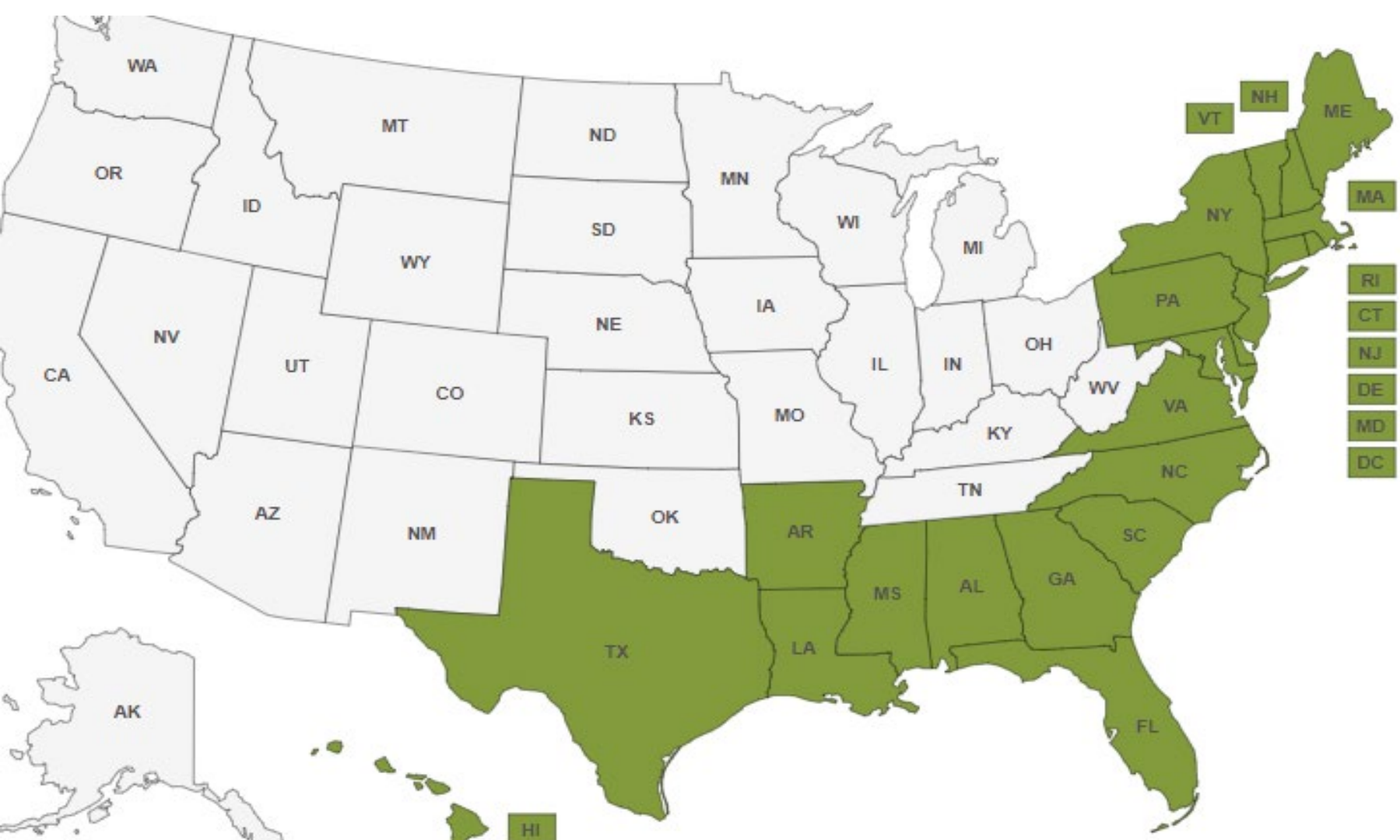
Healthcare

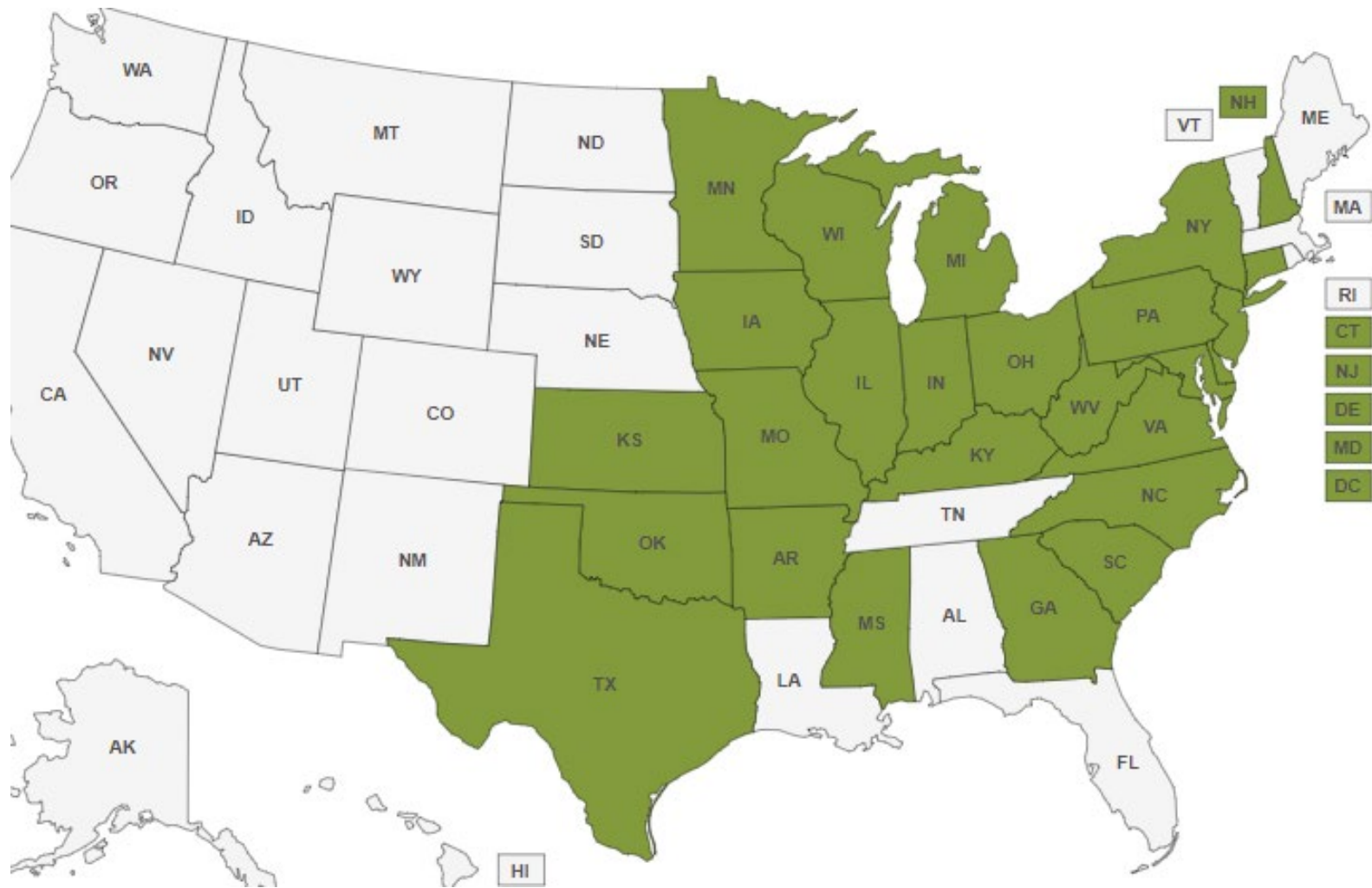


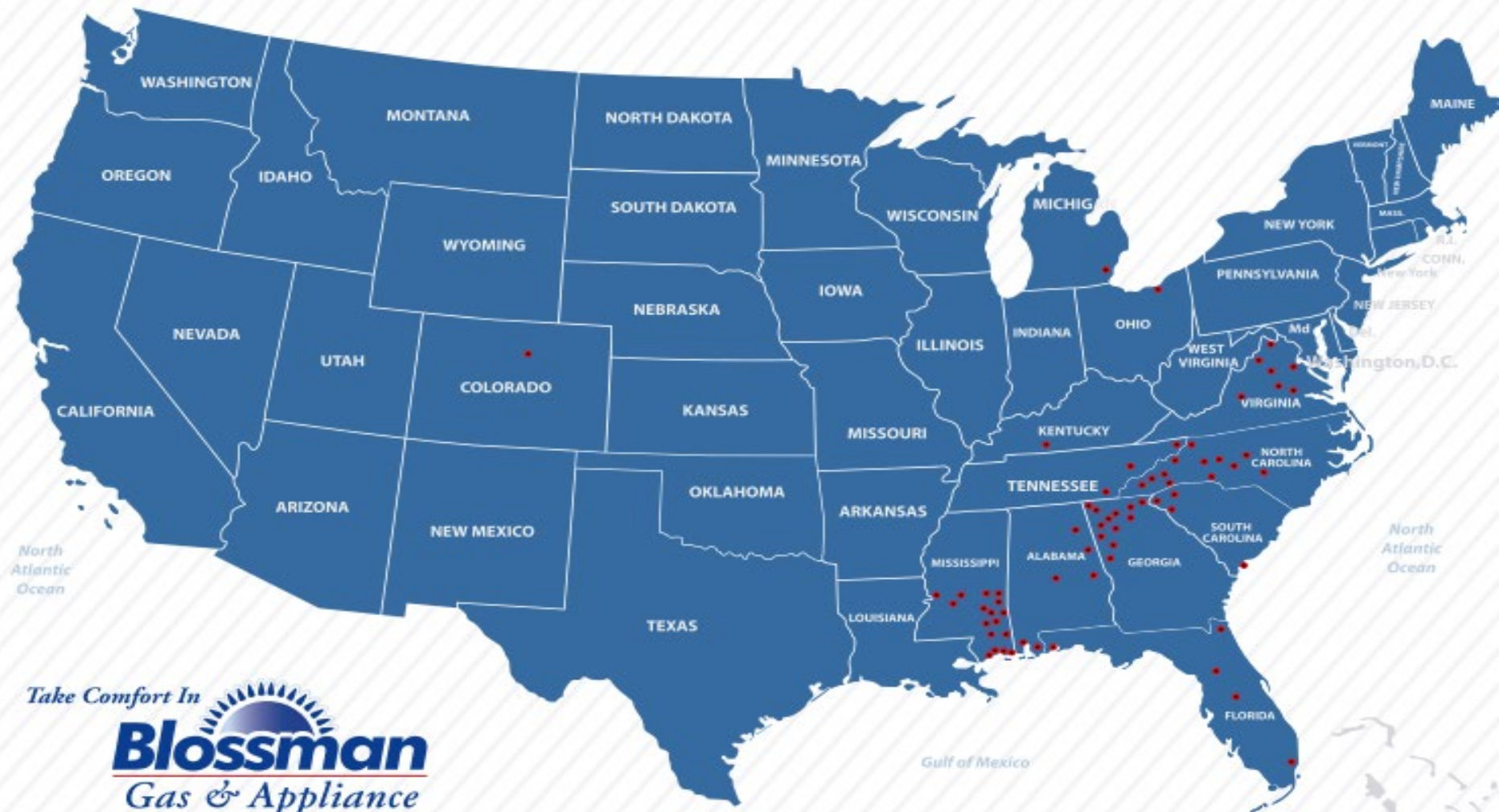
School Districts



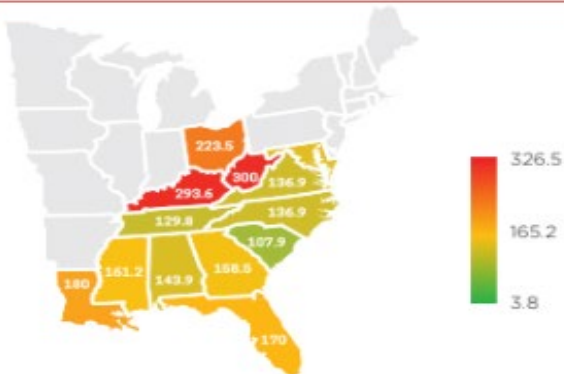
Paratransit







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Gas & Appliance



ELECTRICAL GRID

Along with emissions, the U.S. electrical grid can also lead to higher NO_x and particulate matter emissions than the regulated internal combustion engine vehicles tail-pipe productive. Hence, full electrification is not correlative to decarbonization.

167 gCO₂eq/MJ
AVERAGE GRID ELECTRICITY

RENEWABLE PROPANE (rP) 50/50 blend of propane and renewable propane (rp)

Currently, renewable propane provides a lower carbon footprint solution in all 50 U.S. states except Vermont where compared EVs that are charged using the electrical grid. The entire U.S. propane industry is targeting at least a 50 percent replacement of conventional propane with renewable propane by 2050.



CONVENTIONAL PROPANE

Because of propane's low-carbon, high-energy output, it's a perfect fuel for residential and commercial applications such as vehicle fleets, agriculture and industrial work, and landscape management, just to name a few.

79.6 gCO₂eq/MJ
AVERAGE FOOTPRINT

47 gCO₂eq/MJ
AVERAGE FOOTPRINT

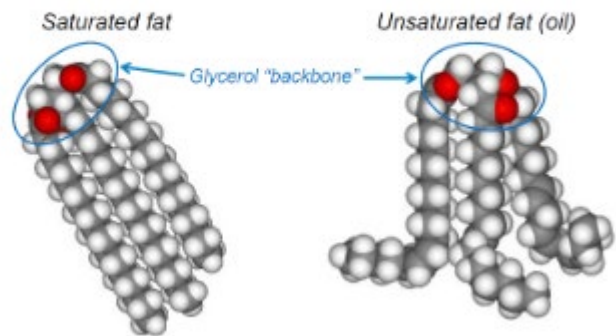
*At Blossman Gas we deliver more than propane...
We've been delivering home comfort since 1951.*

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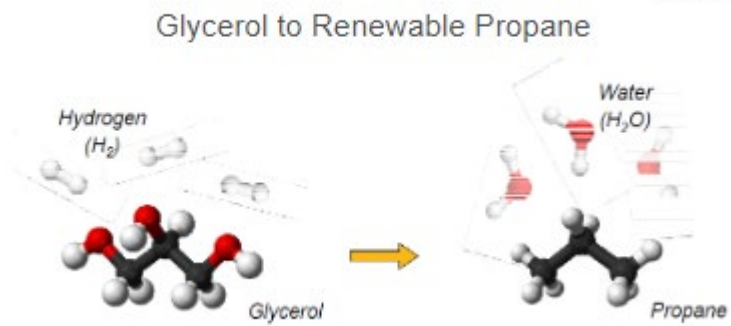


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RHD FEEDSTOCKS (FATS AND OILS)



HYDROTREATING EXAMPLE



Feedstock	Structure	Sources
Bio-oils	Triglyceride – the propyl backbone can be converted to propane	Algae Animal fats/tallow Plant oils: Jatropha, Palm, Peanut, Rapeseed (Canola), Soybean, Sunflower.
Bio C ₃ or C ₄	Propyl and butyl	Bio-propylene (3) Glycerine (3) Bio-butylene (4) Butyric acid (4)
Bio C ₅ or C ₆	Penta and Hexa	Sugars and starches



If one gallon of propane is equal to 27 kWh of electricity, then we can compare the costs of these fuels directly by looking at the price per unit (propane gallons or kilowatt hours) and finding the price difference. This can easily be done by looking at your electric bill and multiplying the price per kWh by 27. The resulting number will be a dollar figure that will be either greater than or less than the price of a gallon of propane. For example, if you are paying 12¢ per kWh, the electrical cost comparison figure to a gallon of propane will be \$3.24 ($.12 \times 27 = 3.24$). Electricity is cheaper than propane if propane is selling for \$3.24 per gallon and propane is cheaper than electricity if it is selling for less than \$3.24 per gallon.

Mobile Off-Grid EV Charging



Pioneer eMobility

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