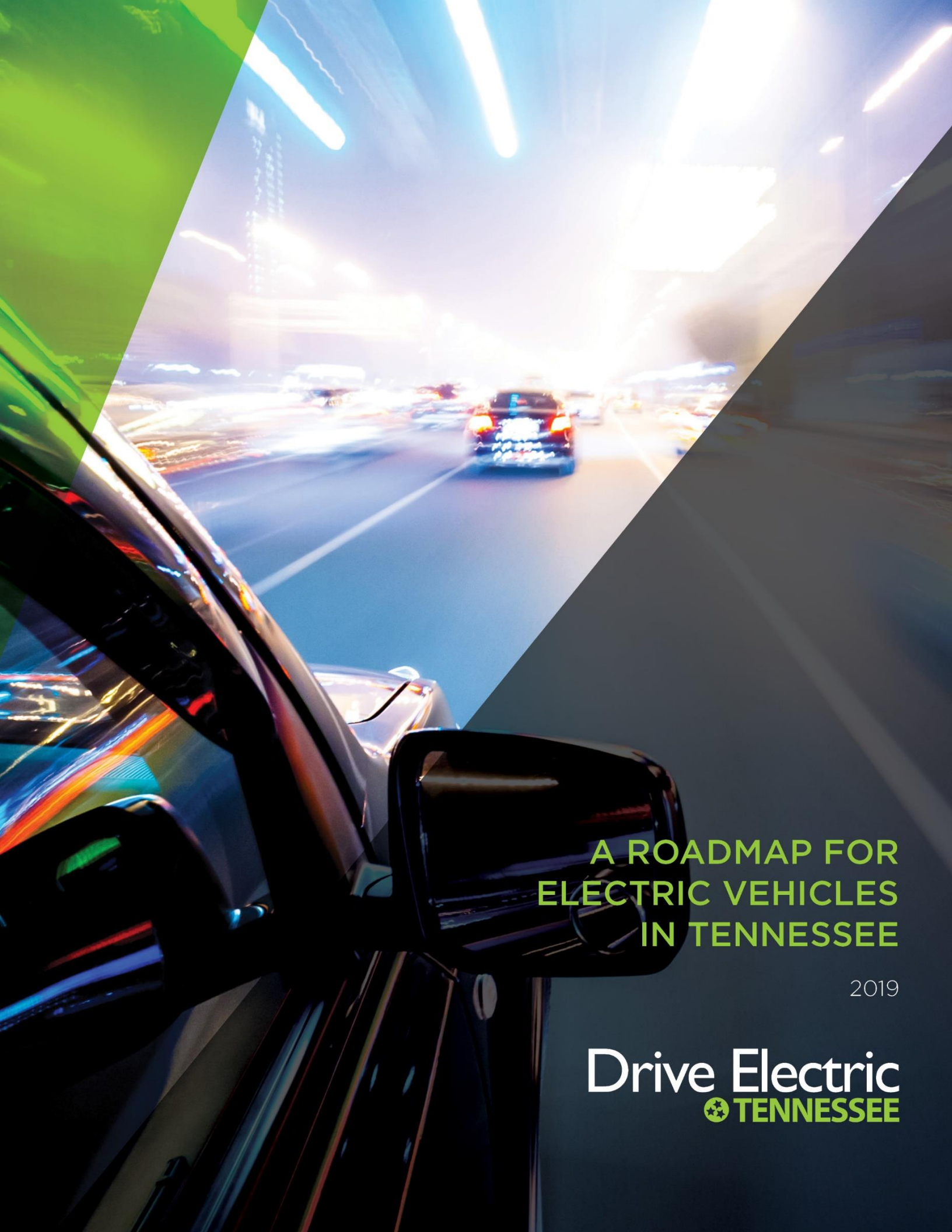


A ROADMAP FOR ELECTRIC VEHICLES IN TENNESSEE

2019

Drive Electric TENNESSEE

TABLE OF CONTENTS

ACKNOWLEDGMENTS

More than 30 stakeholder organizations supported the development of the Drive Electric Tennessee (TN) Roadmap. Representatives from several organizations provided their time and expertise to shape this roadmap as key contributors. This list recognizes those who participated in the roadmap development process, though their appearance on the list does not constitute an endorsement of the roadmap.

KEY CONTRIBUTORS

- Chattanooga Area Regional Transportation Authority (CARTA)
- EPB of Chattanooga
- Knoxville Utilities Board
- Memphis Light Gas & Water
- Oak Ridge National Laboratory
- Tennessee Clean Fuels
- Tennessee Department of Environment and Conservation – Office of Energy Programs
- Tennessee Department of Transportation – Long-Range Planning Division
- Tennessee Tech University
- Tennessee Valley Authority (TVA)

PARTICIPANTS

- Atlas Public Policy
- Bridgestone
- BYD
- CDE Lightband
- ChargePoint
- City of Nashville
- City of Knoxville
- City of Chattanooga
- Cummins Filtration
- Draft Agency
- General Motors
- Greenlots
- GRIDSMART
- Local Motors
- Nissan
- Schneider Electric
- Sierra Club
- SoftServe
- Southeast Energy Efficiency Alliance (SEEA)
- Southern Alliance for Clean Energy (SACE)
- Stantec
- Tennessee Automotive Association
- University of Tennessee – Knoxville
- Vanderbilt University
- Volkswagen

Navigant Consulting, Inc. (Navigant) was retained to facilitate stakeholder engagement and develop the Drive Electric TN Roadmap.

INTRODUCTION TO THE ROADMAP

In 2017, global sales of new plug-in electric vehicles[1] (EVs) passed the one million vehicle mark, while the total number of electric cars on the road worldwide surpassed three million.[2] The introduction of long-range battery EVs at a sub-$40,000 price point has further boosted market adoption. However, the United States lags China and Europe in EV market share, and Tennessee lags other states that have set more ambitious policies (e.g., zero emission vehicle targets, sustained rebates, and statewide marketing campaigns).

Although the Tennessee EV population in 2017 was less than 0.1% of the total light-duty vehicle market, the state is a growing center of R&D innovation in the vehicle electrification and manufacturing space. Tennessee ranks No. 1 in the nation for employment concentration of automobile and vehicle component manufacturing,[3] and of the state's three major automotive assembly plants, two are committed to producing EVs (the LEAF is assembled at Nissan's Smyrna plant, and upcoming EV models will be produced at Volkswagen's Chattanooga plant). Other automotive suppliers produce next-generation EV components for light-, medium-, and heavy-duty vehicles (e.g., DENSO in Maryville). Despite today's low EV penetration, Tennessee has the automotive foundation to become an EV leader. Furthermore, future EV adoption will support jobs and opportunities in the state's established automotive manufacturing sector.

In 2018, a broad group of Tennessee stakeholders came together to develop the **Drive Electric Tennessee (TN) Roadmap** in two phases over a nine-month period. The core group of key contributors included utility companies, Tennessee State agencies, cities and transit agencies, universities, automotive companies, technology providers, advocacy groups, and others. Navigant Consulting, Inc. facilitated this collaborative process.

The stakeholder group came together to:

- Understand the gaps in the deployment of EVs in Tennessee today
- Establish a more coordinated transportation electrification effort going forward
- Align R&D efforts and prepare for future technology developments in connected and autonomous vehicles
- Synchronize stakeholder support across the state
- Form new and lasting partnerships across industries and sectors
- Encourage Tennessee to become a leader in EV adoption

The first phase of work examined the current state of the EV market in Tennessee, explored opportunities to spur EV adoption, and ultimately determined a Shared Vision and aspirational adoption level for the state under the newly-branded **Drive Electric TN** name. During the second phase, stakeholders designed initiatives and projects to support the Shared Vision over a 10-year planning horizon. This document presents the results of this work in an actionable framework for stakeholders.

This roadmap is intended to address the transportation electrification needs of all Tennesseans. For example, it features projects for both urban and rural populations; for light-duty, medium-duty, and heavy-duty vehicles (including trucks and buses); and a focus on communication and collaboration. These

[1] Electric vehicles (EVs) refers to battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV).

[2] Global EV Outlook 2018, International Energy Agency, https://www.iea.org/gevo2018/.

[3] Governor Haslam, Commissioner Rolfe Announce Volkswagen to Create 1,000 New Jobs in Chattanooga, Tennessee Office of the Governor, https://www.tn.gov/governor/news/2019/1/14/volkswagen-to-create-1000-new-jobs-in-chattanooga.html.

needs will likely change over time, and so this roadmap will be a living document that will grow and evolve along with the Tennessee EV market.

Moving forward, Drive Electric TN will champion the implementation of roadmap projects. Some projects are already underway, and others will require the support of new partners, additional funding streams, and even more innovative ideas. Key contributors are formulating an operating model, which will allow interested partners to advance the roadmap over the next 10 years.

We thank the many contributors to the Drive Electric TN Roadmap. Stakeholder engagement and ongoing feedback were critical to this process and will be essential to the roadmap's success.

1. OUR FOCUS

1.1 Shared Vision and Mission

Our Shared Vision defines our outlook on Tennessee's clean transportation sector. Our Mission describes, at a high level, how we will achieve the Shared Vision. While this Vision, Mission, and roadmap focus on the State of Tennessee, several stakeholders including the Tennessee Valley Authority cross state lines and hope that this approach will expand beyond Tennessee to encourage EVs in surrounding regions.

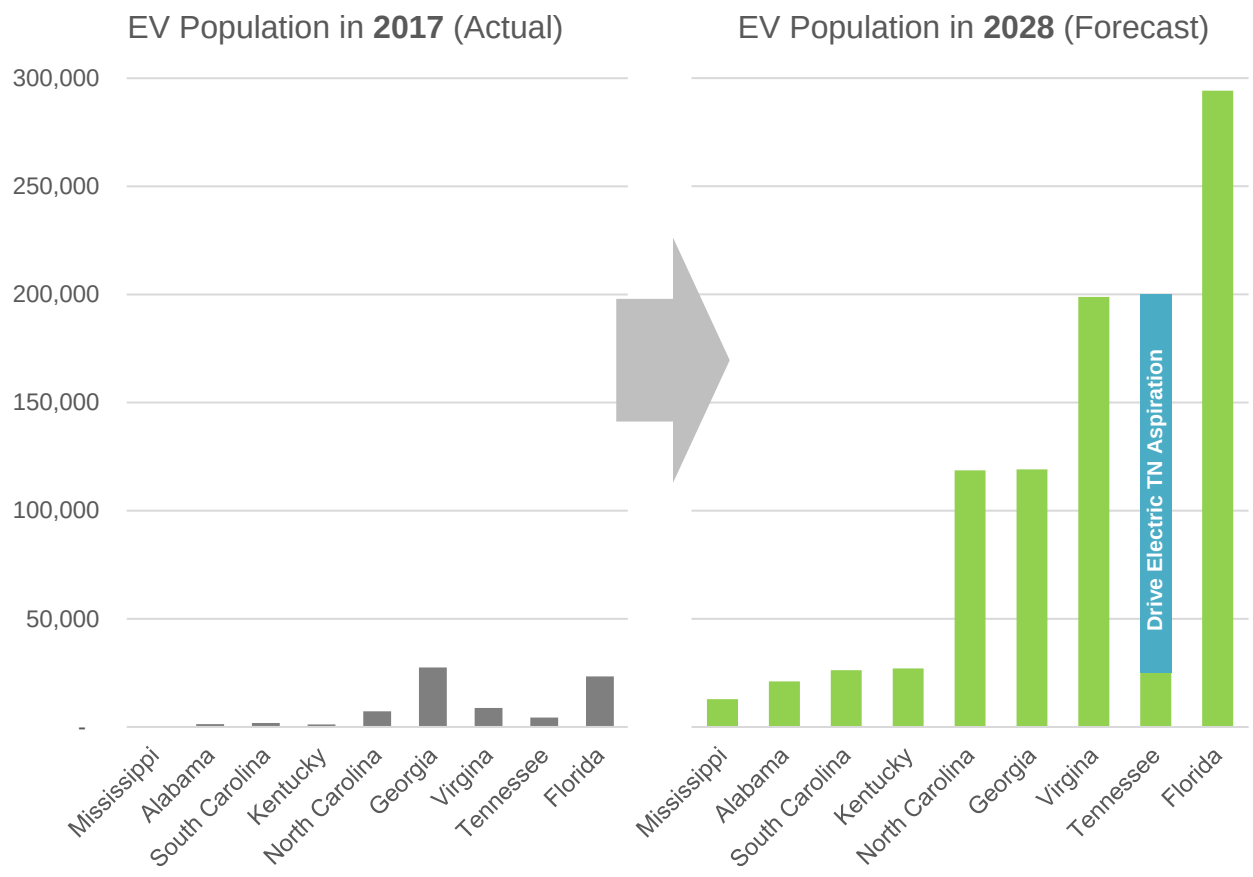
SHARED VISION	MISSION
Driving Tennessee to become an electric transportation leader in the Southeast	Collaboratively pursuing initiatives that will significantly increase EV adoption from 5,000 EVs today to 200,000 EVs by 2028, guided by shared principles that benefit all residents of Tennessee

1.2 Aspiration

As described in our Mission, there were less than 5,000 light-duty plug-in EVs on Tennessee roads in 2017.[4] Drive Electric TN aims to increase this number to at least 200,000 EVs by 2028.[5] This is an ambitious but achievable adoption goal based on the projects outlined in this roadmap.

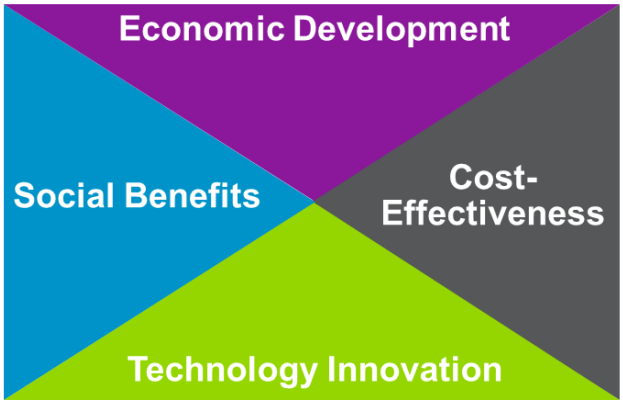
[4] 2016 and 2017 light-duty BEV and PHEV population, Navigant and Hedges, 2017.

[5] The 200,000 EV goal is shown in the following figure as the blue bar stacked on top of the green baseline VAST™ forecast from Navigant. VAST™ is a proprietary model developed in R, Python, and ArcGIS by Navigant to forecast geographic penetration and dispersion of electric vehicles and charging stations. VAST™ is a cutting-edge systems dynamics model that takes inputs including vehicle registrations by make and model, expected gasoline and battery prices, vehicle lifetime, incentives, annually collected survey data on vehicle owners, and demographic data (e.g., population, income, units in housing structure, vehicle ownership, household counts, educational attainment, etc.) to forecast local adoption levels for plug-in electric vehicles.



1.3 Guiding Principles

Our Guiding Principles provide specific direction for our actions and help define our success. Four key categories underpin the Shared Vision and Mission of Drive Electric TN:



Economic Development	Social Benefits	Cost-Effectiveness	Technology Innovation
• Promote local and regional economic development • Be attentive to local customer preferences and needs • Be mindful of supply chain and other resource constraints	• Include social equity considerations to benefit all Tennesseans • Reduce environmental impacts	• Prioritize cost-effective investments • Maintain a safe, reliable, affordable, and continuously optimized electric grid	• Foster entrepreneurship and technical innovation in the transportation sector • Prepare for a more connected, autonomous transportation sector

2. OUR ACTION

2.1 Roadmap Framework

The Drive Electric TN Roadmap is organized by ***four key Opportunity Areas***, which were identified as categories of major EV market gaps in Tennessee. Within each Opportunity Area are a set of initiatives, which focus on target solutions to address the market gaps. Finally, projects are specific undertakings by Drive Electric TN members in a set timeframe to support an initiative. Projects are described in detail in Chapter 4. The overall roadmap framework is depicted below.

2.2 Opportunity Areas and Initiatives

The following four Opportunity Areas contain the actions described in this roadmap:

Driving Charging Infrastructure Availability	Driving Awareness	Driving Innovative & Supportive Policies	Driving EV Availability, Offerings & Innovation

2.2.1 Driving Charging Infrastructure Availability

The lack of sufficient EV charging infrastructure (also referred to as electric vehicle supply equipment or EVSE) can be a major barrier to adoption, compounding “range anxiety” (fear of limited electric driving range) and hesitations about driving an EV. A well-maintained, conveniently-located charging network

helps overcome driver range anxiety and provides a compelling alternative to gas station refueling when sited near attractive amenities. An effective EVSE network means more than just the installation of new charging stations; it requires functional, affordable charging stations located where drivers are willing to park and charge.

EVSE stations can and should be located in homes, in apartment complexes, at workplaces, in public parking garages, at commercial locations (e.g., restaurants, shopping malls, etc.), at curbsides, in fleet depots, and elsewhere. The network must also include industry-standard or universal charging protocols and a range of charging levels; for example, Level 2 charging (standard household electricity) and DC Fast Charging (higher electric output and shorter charging times). While the majority of EV charging can occur at home, it is important for Tennessee drivers to feel comfortable when they are going about their everyday personal and business lives in an EV, whether they are driving across Memphis or making the trip from Nashville to Knoxville.

Tennessee has an existing network of charging infrastructure, partly due to its role as a charter market for the U.S. Department of Energy (DOE) and ECOtality EV Project, which began in 2009. Tennessee has more than 800 public charging locations, primarily Level 2.[6] However, this relatively high number does not mean the EVSE network is as successful as it should be. For example, the charging stations are clustered in city centers and along certain major highways,[7] but there are large, rural areas that have very little EV infrastructure. Additionally, many older public EVSE stations are listed as unavailable or do not work when a driver pulls up to the charging station, resulting in a bad EV experience. In particular, there is a gap in DC Fast Charging infrastructure, although Electrify America is making investments in this area.[8] These issues make it critical for the Drive Electric TN Roadmap to address charging infrastructure.

For infrastructure, it is also important to consider the increasing capabilities and grid impacts of new EV models with significantly greater range and battery capacity. Advancements in EV models and related EVSE have the potential to add significant value for electric utilities, drivers, and other stakeholders. It will be important to build managed EVSE infrastructure in the early years so that EV drivers become accustomed to infrastructure that leverages EVs as grid resources.

The following three initiatives support the **Driving Charging Infrastructure Availability** Opportunity Area:

Driving Charging Infrastructure Availability	
EV Infrastructure Coordination & Planning	Initiative to guide coordinated future EVSE efforts including a statewide needs assessment, benchmarking, and strategic planning projects

[6] 240 V (residential) / 208 V (commercial) charging equipment, typically delivering 10-20 miles of range per hour (https://www.energy.gov/eere/electricvehicles/vehicle-charging).

[7] I-24 and parts of I-40 (Nashville to Dandridge), I-75 (Knoxville to the Georgia border), and I-65 (Madison to Franklin) in Tennessee are considered “EV ready” with public DC fast charging stations located approximately every 50 miles, within 5 miles of the highway. However, some of these stations are broken and are being removed.

[8] There are six active Electrify America DC fast charging stations in Tennessee and an additional station that is expected to go online soon (https://www.electrifyamerica.com/locate-charger). Each station accommodates between four and ten DC fast chargers.

EV Infrastructure Build-Out	Initiative to install public EVSE, focusing on areas identified in the EV Infrastructure Coordination & Planning Initiative
EV Infrastructure Standards & Maintenance	Initiative to ensure the usefulness and functionality of all installed EVSE on an ongoing basis, preventing disrepair

Together, these initiatives cover the EVSE lifecycle: planning, building, and maintaining infrastructure. Each of these steps is critical in establishing a sustainable charging network for all personal, commercial, and other EV users and use cases.

2.2.2 Driving Awareness

Promoting awareness around EVs is critical to generating user interest, and ultimately, adoption. Most people have still never ridden in or driven an EV, yet this experience can have a huge impact in changing customer perceptions about electric transportation. Many people do not know the benefits and costs of an EV compared to a traditional vehicle, and some people are not aware of EVs at all. Greater awareness is important both for individual consumers and fleet owners, whose decisions control a larger number of highly-visible vehicles.

Based on recent consumer surveys, range anxiety and cost are still barriers to an EV purchase. Charging infrastructure availability and lowering long-term costs can motivate consumers to buy EVs, but current EV adopters' primary motivation is still the benefit to the environment (low or zero emissions).[9] However, this is changing as more people discover the broad appeal and benefits of going electric with their vehicle decisions.

Greater awareness is needed throughout the entire EV decision-making process, beginning at the dealership. Dealers should understand the capabilities of their EV offerings and be able to communicate them effectively to potential buyers.[10] Consumers will subsequently benefit from a better understanding of factors such as range, miles-per-gallon equivalent, and charge time. This education should also extend to the ongoing lifetime costs and savings associated with the lease or purchase of an EV, such as battery replacement needs, which will be especially important for fleet owners and economically-minded individuals. For all consumers, education should include more information about lifestyle impacts from owning an EV, such as where and when to charge.

The following three initiatives support the **Driving Awareness** Opportunity Area:

[9] AAA (https://newsroom.aaa.com/2018/05/1-in-5-us-drivers-want-electric-vehicle/), CarMax (https://www.carmax.com/articles/hybrid-electric-2017-survey-results), and Consumers Union (https://www.ucsusa.org/sites/default/files/attach/2016/05/Electric-Vehicle-Survey-Methodology.pdf).

[10] Dealership education supports consumer awareness, and is addressed specifically in the *Driving EV Availability, Offerings, and Innovation* Opportunity Area.

Driving Awareness	
EV Ride & Drive Promotion	Initiative to provide first-hand experience of riding in or driving an EV, focused on getting people in the seat and behind the wheel
Fleet Education	Initiative to support fleet owners in the decision to procure EVs (light-duty and medium/heavy-duty such as buses and trucks)
EV Consumer Education	Initiative to broadly educate Tennesseans on the benefits, costs, lifestyle impacts, and all things related to owning an EV

These initiatives address two important audiences—personal drivers and fleet owners—and emphasize the sharing of information and experiences.

2.2.3 Driving Innovative and Supportive Policies

Policies at the state and local levels can have a significant and measurable impact on EV market growth. For example, the nine Zero Emission Vehicle (ZEV) states have adopted the California-led regulatory framework that requires automakers to meet a certain threshold of ZEV sales.[11] Consequently, these states are expected to draw the majority of EVs available from automakers, making the EV markets more appealing to adopters through diversity in vehicle options. Rebates and other financial incentives can also spur EV adoption on the consumer side, making EVs more affordable by offsetting the upfront cost of the vehicles. However, Tennessee is a non-ZEV states, and the previous $2.5 million Tennessee Electric Vehicle Rebate Program was exhausted in 2016.

To compete for EV market growth in the absence of ZEV mandates or ongoing rebate programs, Drive Electric TN members have identified other policy options that can accelerate the growth of electric transportation in the state. Many of these policies could enhance the EV ownership experience, while other policies can mitigate the costs of owning and operating an EV or associated charging infrastructure. Drive Electric TN embraces the breadth and potential of EV-focused policy development in Tennessee, be it at the state, local, utility, or EV and EVSE manufacturer level.

The following five initiatives support the **Driving Innovative and Supportive Policies** Opportunity Area:

Driving Innovative and Supportive Policies	
State Government Relations	Initiative to establish lines of communication about EVs across state offices and departments and among external stakeholders
Standardized Local Policies	Initiative to identify, design, and share best practices, policies, and programs to support EVs at the local level (city/county)

[11] "What is ZEV?" Union of Concerned Scientists (https://www.ucsusa.org/clean-vehicles/california-and-western-states/what-is-zev#.XAWVzGhKgdU).

Corporate Policies	Initiative to identify, design, and share best practices, policies, and programs for Tennessee employers to support EVs
Coordinated Utility Programs	Initiative to identify, design, and share best practices, policies, and programs to support EVs for local power companies throughout Tennessee and the Tennessee Valley to support EVs
EV / EVSE Incentives	Initiative to support future funding for EV and EVSE incentives

For now, the Drive Electric TN Roadmap focuses primarily on collaboration and communication across stakeholder groups. Future statewide funding opportunities, should they arise, will be included in updates to this roadmap.

2.2.4 Driving EV Availability, Offerings, and Innovation

Ultimately, Tennesseans considering the purchase of a new car must be able to find the right EV that fits their needs and preferences. The EV options must be cost-competitive with traditional vehicles, they must deliver the same (or better) functionality, and they must be attractive to diverse customers. This requires broad collaboration across automakers, their dealerships, and other stakeholders, with the simple goal of offering EVs that meet Tennessee customers' needs.

For example, the Ford F Series pickup truck leads the way for registered vehicles in Tennessee. However, the majority of EV models on the market fall into the small (BMW i3, Chevy Bolt), mid-sized (Nissan Leaf, Tesla Model 3), and large (Tesla Model S) passenger vehicle classes. There are 13 different 2018 mid-sized EV models available on the market,[12] but few if any offerings in the pickup and SUV classes. EV offerings under these classes are expected to significantly expand in the next 2 to 5 years, and Tennessee should be positioned to draw these models to the state by working with automakers and demonstrating high demand.

Another current limitation for EV offerings is the limited used EV market in Tennessee. Despite significantly cheaper fuel costs, the total cost to own an EV over 5 years remains higher than the cost for a similar conventional vehicle, due largely to depreciation of the battery pack (this is the amount by which the value of a vehicle declines from its purchase price to its estimated resale value). While this is a downside for the total cost of ownership of a new EV, it also means that there are extremely affordable used EVs out there that should be made available to Tennessee customers.

The following four initiatives support the **Driving EV Availability, Offerings, and Innovation** Opportunity Area:

[12] US Department of Energy, https://www.energy.gov/eere/electricvehicles/find-electric-vehicle-models.

Driving EV Availability, Offerings, and Innovation	
Automaker (OEM) Collaboration	Initiative to establish lines of communication among automakers and other stakeholders to bring relevant EV models to Tennessee
Dealer Collaboration	Initiative to work with Tennessee car dealerships (aligned with automakers) to stock, advertise, and better sell EVs
Mobility Services Collaboration	Initiative to explore and establish rental company and ride share EV offerings in collaboration with other stakeholders
Consumer Preference Assessment	Initiative to better describe the Tennessee vehicle and EV markets, based on consumer surveys and other research

Early projects in these initiatives are also focused on collaboration, as the Tennessee EV market is still relatively young. This upfront collaboration will lead to effective action down the road.

3. OUR SUCCESS

3.1 Goals

Drive Electric TN's high-level goals are tied to the four Opportunity Areas:

DRIVING CHARGING INFRASTRUCTURE AVAILABILITY

Develop a charging infrastructure that enables Tennessee residents to (1) drive and charge an EV in their daily lives (home, work, and public charging) or (2) access electric public transit options

DRIVING AWARENESS

Increase awareness and first-hand experience of the benefits of driving an EV such that the majority of vehicle owners are aware of EVs when they begin their next purchasing process

DRIVING INNOVATIVE & SUPPORTIVE POLICIES

Create consistent, innovative, and supportive policies across Tennessee at the state, county, city, and utility levels, inclusive of incentives, electricity rates, planning standards, and other policies and programs

DRIVING EV AVAILABILITY, OFFERINGS & INNOVATION

Make EV models viable, accessible, and comparable purchasing alternatives to traditional vehicles

It is important to monitor progress toward the four goals described above through ongoing market research and the measurement of roadmap project metrics. Achieving these goals will put Tennessee on the right track to fulfilling the Shared Vision and meeting the aspirational 200,000 EV adoption level.

3.2 Challenges to Overcome

The Drive Electric TN Roadmap sets an ambitious pace for EV adoption in Tennessee, but we do recognize there are many challenges to overcome to get there. Drive Electric TN contributors identified the following threats, which were considered throughout the roadmap development process:

- Automakers cannot or do not deliver the right EV models or in sufficient quantities to Tennessee
- Local dealerships cannot or do not stock EVs
- Not enough resources and/or funding is invested in EV initiatives in Tennessee
- Lack of interest and participation from stakeholders

- Users may have poor experiences with EVs and/or supporting infrastructure
- The used / secondary EV market does not develop for EVs
- EVs receive especially negative press for any reason (e.g., inoperable charging infrastructure)
- Other vehicle technologies leapfrog EVs, replacing EVs as a strong alternative fuel vehicle option
- Traditional vehicles make a large leap in efficiency, making EVs less attractive by comparison

The projects that make up the Drive Electric TN Roadmap are designed to avoid or tackle these issues, but we also acknowledge the possibility that the roadmap will require some fundamental revisions over the course of the 10-year timeframe. Drive Electric TN will continuously monitor the EV market to evolve the roadmap such that it can address and overcome these challenges as they arise.

4. OUR APPROACH

4.1 Project Development

The success of the Drive Electric TN Roadmap depends on meeting our goals by implementing initiatives and projects. Roadmap projects are focused activities by Drive Electric TN members in a set timeframe to support one (or more) of the initiatives, designed to address specific market gaps. In total, 45 projects were identified and outlined that support the 15 Drive Electric TN initiatives described previously in Chapter 2.2.

Drive Electric TN members drafted a set of projects to align Drive Electric TN actions with the Shared Vision and goals over the next 10 years. Stakeholder organizations played an active, collaborative, and invaluable role in developing projects during several key Drive Electric TN workshops and events. Local knowledge was critical to properly define project profiles containing key characteristics such as potential collaborators, timeline, potential costs, outcomes, metrics, and dependencies. These characteristics provide a framework for monitoring and tracking progress for the duration of the project.

As an example, the project profile for the *Statewide EVSE Plan* within the *EV Infrastructure Coordination & Planning* initiative, displayed below, provides insight into the level of detail that went into developing each project in this roadmap. These are the building blocks for Drive Electric TN Roadmap success and each project profile can be found in the Appendix B attachment to the roadmap.

Statewide EVSE Plan

A strategic plan for the deployment of EVSE around the state that includes a needs assessment and benchmarking study. The strategic plan will evaluate charging type/locations, site host/ownership potential models and facilitate coordination between infrastructure developers.

The plan will include specific actions to improve EVSE infrastructure and provide 5-year & 10-year EVSE milestones.

Potential Collaborator(s)
- Utilities
- State departments
- Charging infrastructure providers
- Research institutes

Outcomes
- Coordinated effort to improve Tennessee's EV charging infrastructure
- Ability to make cost-effective and high priority EVSE investments

Metrics
- Completed plan
- Completed milestones

Timeline
Wave 1
- 2019 start
- 1.5-year project duration
- Regular plan updates (i.e. biennial publication)

Potential Costs: Medium
- Research and assessment (by Drive Electric TN members and/or consultants)

Prerequisite for:
- Repair & Replace
- Charging for Workplace
- Interstate & Highway Charging Network
- Metro Area Charging Network
- Charging for Multi-Family & Limited Income

4.2 Roadmap Timeline Development

After establishing the set of roadmap projects needed to support Drive Electric TN, stakeholders went through a project prioritization process to compare and rank feasibility and the most effective use of resources over the next 10 years. Through the prioritization process, projects fell into three "waves" based on their start dates. Project start dates accounted for resources and critical dependencies on other projects or external factors.

- *Wave 1* projects will start between 2019 and 2021
- *Wave 2* projects will start between 2021 and 2023
- *Wave 3* projects will start between 2023 and 2028

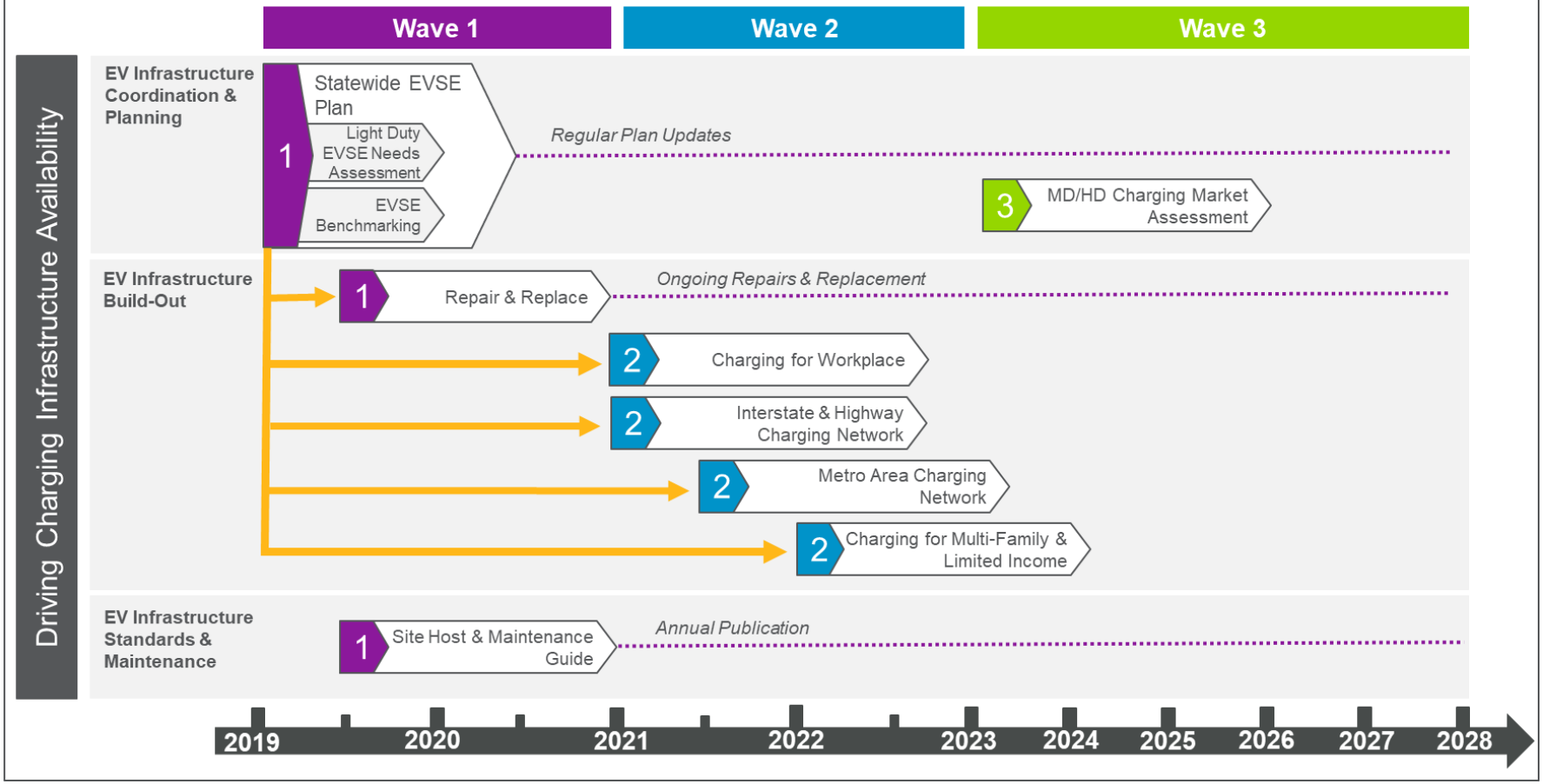
Some projects face especially challenging circumstances, such as projects that depend on a significant amount of unsecured funding or have other uncertainties that must be addressed before committing to a start date. For example, even though light-duty EV and EVSE rebates are proven to be very valuable tools for driving EV adoption, they currently lack a known program funding source. These projects are distinguished in the roadmap timeline as having a "critical unmet external need." The roadmap timeline

also identifies vital dependencies between projects and highlights projects in need of ongoing stakeholder engagement beyond the established project duration. Because these conditions may change, the roadmap timeline will be regularly revisited and updated. This process is described in the next chapter.

The following pages show the complete roadmap timeline, organized by Opportunity Area, and provide high-level descriptions of every project in the roadmap. For additional information, the appendices contain more detailed information and key characteristics for each project.

Opportunity Area Roadmap:
Driving Charging Infrastructure Availability

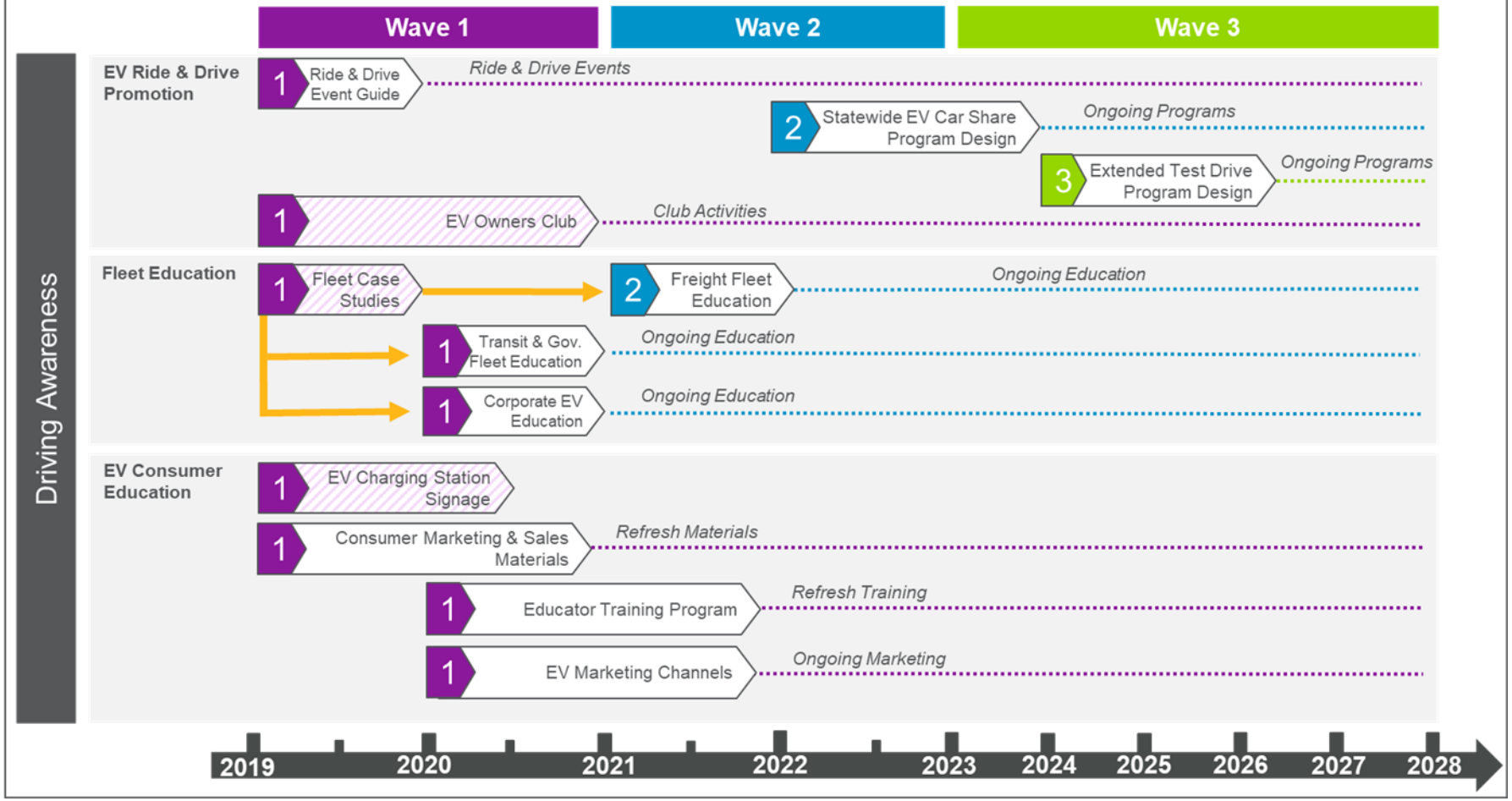
Key: Direct dependency; Recurring or ongoing activity; Critical unmet external need; Project already started



Initiative	Project Name	Project Description
EV Infrastructure Coordination & Planning	Statewide EVSE Plan *(Wave 1)*	Develop a strategic plan for the deployment of EVSE around the state, including a Light-Duty EVSE Needs Assessment to evaluate coverage and usage of the current charging infrastructure and an EVSE Benchmarking study to benchmark current charging infrastructure against other regions
	MD/HD Charging Market Assessment *(Wave 3)*	Evaluate the infrastructure needs for fleet or transit agency medium-duty/heavy-duty vehicles
EV Infrastructure Build-Out	Repair & Replace *(Wave 1)*	Repair/replace underperforming chargers to maintain the functionality and accessibility of public EVSE investments to date based on the Statewide EVSE Plan
	Charging for Workplace *(Wave 2)*	Expand workplace charging infrastructure based on the Statewide EVSE Plan
	Interstate & Highway Charging Network *(Wave 2)*	Expand standardized public charging infrastructure across TN driving corridors based on the Statewide EVSE Plan
	Metro Area Charging Networks *(Wave 2)*	Expand standardized public charging infrastructure across TN metro areas based on the Statewide EVSE Plan
	Charging for Multi-Family & Limited Income *(Wave 2)*	Expand charging infrastructure for multi-family and limited-income communities based on the Statewide EVSE Plan
EV Infrastructure Coordination & Planning	Site Host & Maintenance Guide *(Wave 1)*	Develop a “How to be an EVSE Site Host” guide and provide recommended maintenance specifications and best practices for keeping EVSE operational

Opportunity Area Roadmap: Driving Awareness

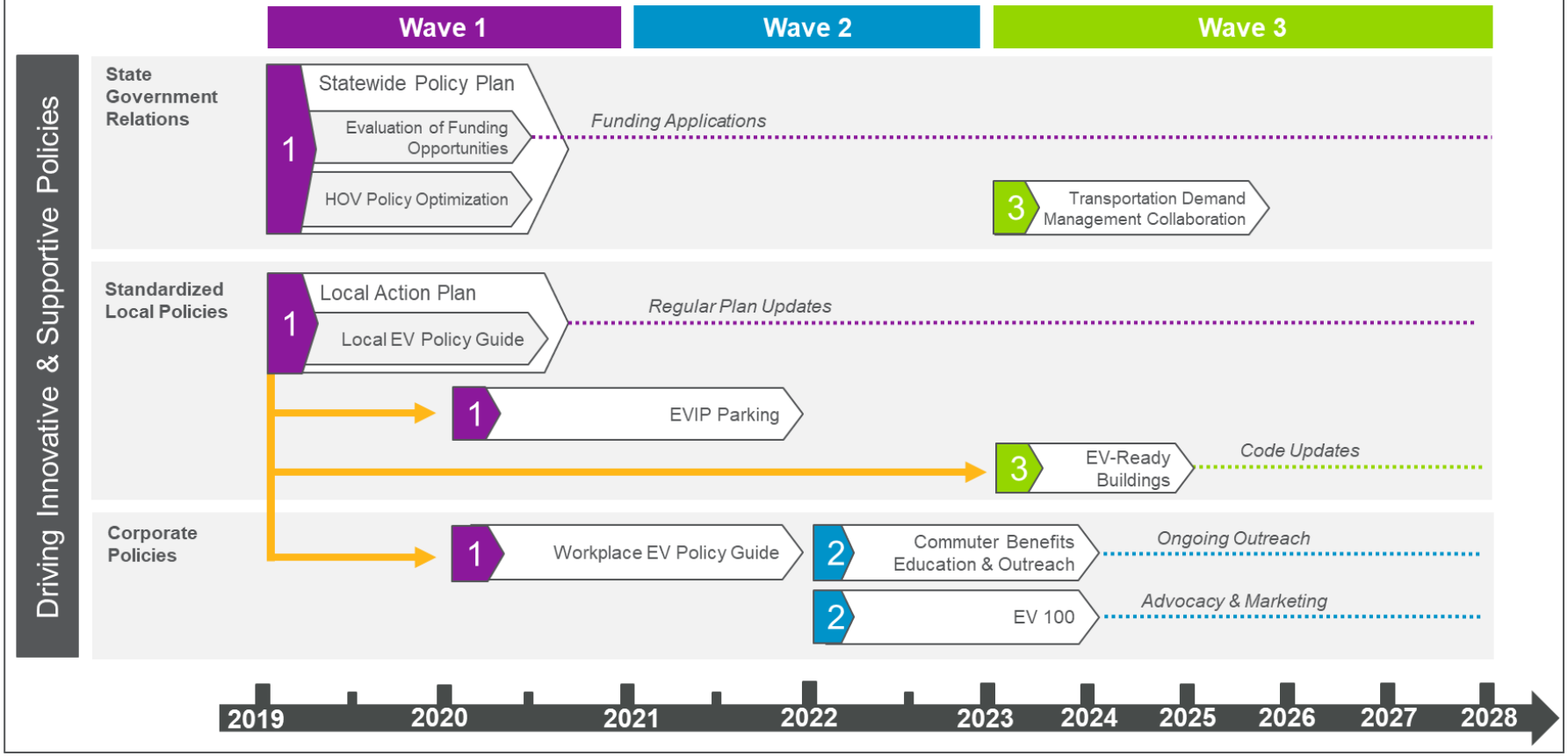
Key: Direct dependency; Recurring or ongoing activity; Critical unmet external need; Project already started



Initiative	Project Name	Project Description
EV Ride & Drive Promotion	Ride & Drive Event Guide *(Wave 1)*	Organize EV ride & drive events across the state, based on a Drive Electric TN event guide
	EV Owners Club *(Wave 1)*	Establish an organized Tennessee EV Owners Club (or clubs) to leverage for EV education events
	Statewide EV Car Share Program Design *(Wave 2)*	Establish an EV car share program for Tennessee users
	Extended Test Drive Program Design *(Wave 3)*	Establish a program to take an EV home for a few days or week, using company fleet cars or dealership test cars
Fleet Education	Fleet Case Studies (Wave 1)	Develop a case study report with examples of successful fleet conversions to EVs
	Transit and Government Fleet Education *(Wave 1)*	Partner with state/local governments for bus fleet replacement to electric buses and conversion of EV light-duty vehicle (LDV) fleets
	Corporate EV Education *(Wave 1)*	Partner with key corporate accounts to raise awareness about the benefits of EVs and increase the adoption of corporate EV fleets
	Freight Fleet Education *(Wave 2)*	Partner with shipping service companies to convert local freight fleets to electric trucks
EV Consumer Education	EV Charging Station Signage *(Wave 1)*	Improve public knowledge of charging stations, including location and availability, via additional and optimized signage
	Consumer Marketing & Sales Materials *(Wave 1)*	Develop and conduct a broad-based consumer awareness campaign to improve education about EVs
	Educator Training Program *(Wave 1)*	"Train the trainer" to create EV ambassadors by educating local power company representatives (and others) who can spread a consistent message to customers
	EV Marketing Channels *(Wave 1)*	Develop a single online portal for information on projects, events, incentives, etc., including material developed under other Drive Electric TN projects

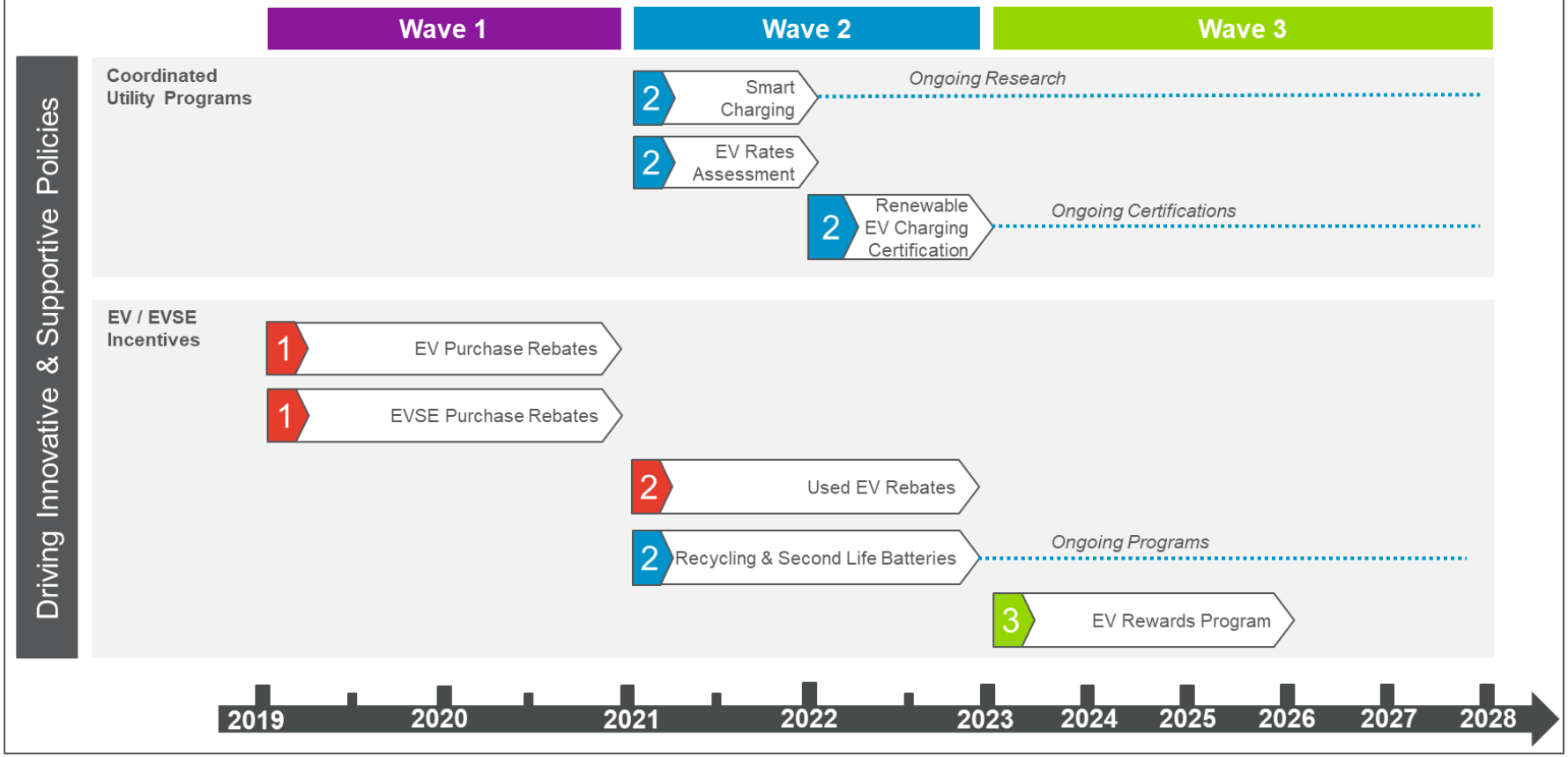
Opportunity Area Roadmap:
Driving Innovative & Supportive Policies

Key: Direct dependency; Recurring or ongoing activity; Critical unmet external need; Project already started

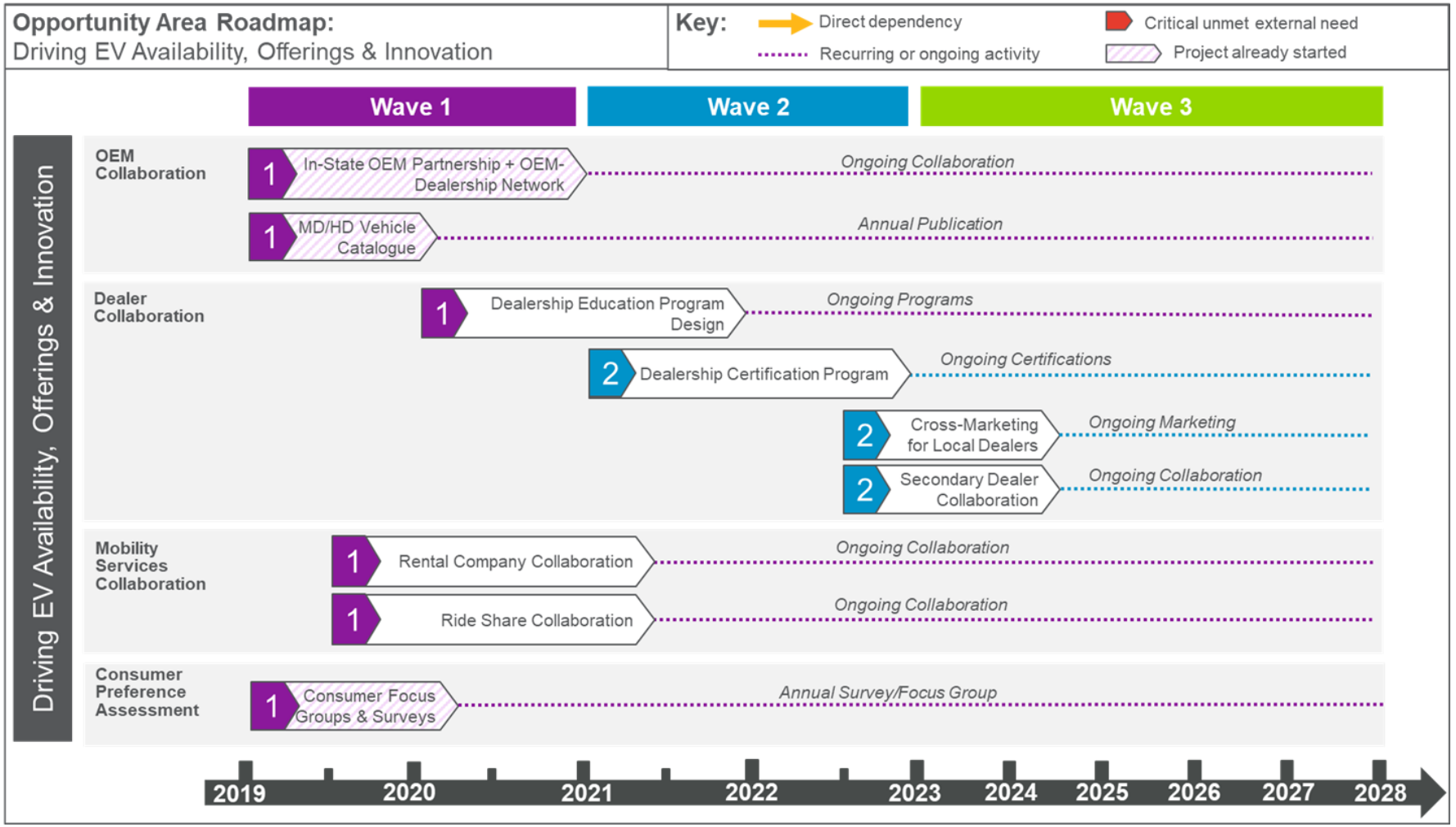


Opportunity Area Roadmap:
Driving Innovative & Supportive Policies

Key:
- Direct dependency
- Recurring or ongoing activity
- Critical unmet external need
- Project already started



Initiative	Project Name	Project Description
State Government Relations	Statewide Policy Plan *(Wave 1)*	Connect and collaborate with appropriate stakeholders to align EV policies and regulations at a state-wide level. Create policy guidelines and advocacy for electric transportation funding from existing funded programs (for example, potentially CMAQ) and enhance the current implementation of HOV access for EVs
	Transportation Demand Management Collaboration *(Wave 3)*	Include EV incentives where applicable in Transportation Demand Management programs
Standardized Local Policies	Local Action Plan *(Wave 1)*	Design a Local EV Policy Guide on how to design EV-specific policies and goals that cities and other local players can enact to encourage EV adoption and provide coordination with other local policy projects
	EVIP Parking *(Wave 1)*	Promote prioritized parking spaces (“VIP” parking) and accessible charging
	EV-Ready Buildings *(Wave 3)*	Update city/county building codes to make buildings “EV ready”
Corporate Policies	Workplace EV Policy Guide *(Wave 1)*	Create a guide for workplace charging and employee incentives related to EVs
	Commuter Benefits Education & Outreach *(Wave 2)*	Design an employer subsidy for costs related to commuting to work with EVs
	EV 100 *(Wave 2)*	Solicit corporate commitments to 100% EV fleets
Coordinated Utility Programs	Smart Charging *(Wave 2)*	Investigate smart charging and utility policy/strategy regarding vehicle grid integration (VGI) applications.
	EV Rates Assessment *(Wave 2)*	Investigate specialized TOU rates and demand pricing
	Renewable EV Charging Certification *(Wave 2)*	Develop and certify charging stations powered by renewable energy
EV / EVSE Incentives	EV Purchase Rebates *(Wave 1)*	Identify funding for vehicle purchase rebates
	EVSE Purchase Rebates *(Wave 1)*	Identify funding for EVSE purchase rebates
	Used EV Rebates *(Wave 2)*	Identify funding for a used vehicle rebate program
	Recycling & Second Life Batteries *(Wave 2)*	Design a used battery rebate program and/or secondary battery use case development
	EV Rewards Program *(Wave 3)*	Design a reward program for riding in or driving EVs


Opportunity Area Roadmap:
Driving EV Availability, Offerings & Innovation
Key:
Direct dependency
Critical unmet external need
Recurring or ongoing activity
Project already started
Wave 1
Wave 2
Wave 3
Driving EV Availability, Offerings & Innovation
OEM Collaboration
1 In-State OEM Partnership + OEM-Dealership Network
Ongoing Collaboration
1 MD/HD Vehicle Catalogue
Annual Publication
Dealer Collaboration
1 Dealership Education Program Design
Ongoing Programs
2 Dealership Certification Program
Ongoing Certifications
2 Cross-Marketing for Local Dealers
Ongoing Marketing
2 Secondary Dealer Collaboration
Ongoing Collaboration
Mobility Services Collaboration
1 Rental Company Collaboration
Ongoing Collaboration
1 Ride Share Collaboration
Ongoing Collaboration
Consumer Preference Assessment
1 Consumer Focus Groups & Surveys
Annual Survey/Focus Group
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028

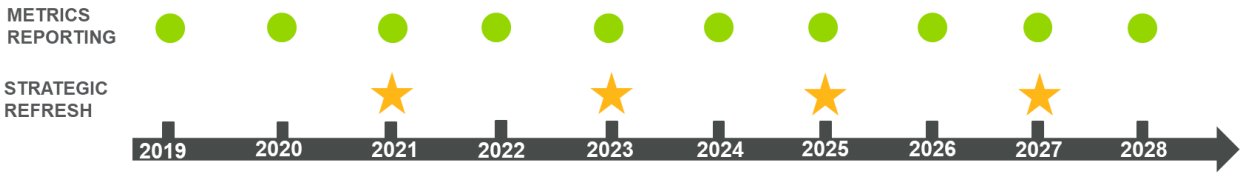
Initiative	Project Name	Project Description
OEM Collaboration	In-State OEM Partnership + OEM-Dealership Network *(Wave 1)*	Establish a communication program with OEMs to align their plans/needs for dealerships and EV model availability in TN
	MDV/HDV Catalogue *(Wave 1)*	Create a catalogue of electric bus/truck options and sales contacts, to provide to transit agencies and other fleet owners
Dealer Collaboration & Incentives	Dealership Education Program Design *(Wave 1)*	Design an EV educational program for dealership managers and salespeople
	Dealership Certification Program *(Wave 2)*	Design a program to certify and potentially incentivize “Lighthouse” dealers for EVs (i.e., dealers recognized for their expertise in EV sales and willingness to stock and sell EVs)
	Cross-Marketing for Local Dealers *(Wave 2)*	Advertise EVs from local dealerships through existing partner marketing channels
	Secondary Dealer Collaboration *(Wave 2)*	Establish a communication program with used car dealerships/platforms to promote deals for low-cost, used EVs in a Drive Electric TN “Used EV Spotlight”
Mobility Services Collaboration	Rental Company Collaboration *(Wave 1)*	Establish a communication program with rental car companies to identify opportunities to increase and communicate EV rental options
	Ride Share Collaboration *(Wave 1)*	Establish a communication program with ride share providers to identify opportunities to support the EVs participating in ride sharing
Consumer Preference Assessment	Consumer Focus Groups & Surveys *(Wave 1)*	Perform surveys with a standard set of EV-related questions to collect TN consumer data and conduct interviews/focus groups with transit agencies and other fleet owners

5. OUR PROGRESS

Through continuing collaboration under an operational model designed to allow interested partners and stakeholders to pursue the initiatives and projects outlined in this roadmap, Drive Electric TN will monitor project lifecycle progress under the following high-level process:

Drive Electric TN will also review the roadmap on a regular basis, refresh projects, re-think the timeline, address new challenges, and report on our accomplishments. We will report annually to show progress against the roadmap project metrics and our overall goals.

Over the 10-year planning horizon, some significant changes are expected as the industry continues to grow and evolve. This roadmap positions Tennessee to meet these challenges, and it will be adapted to address the changing environment through a strategic refresh process every two years. The timeline, including the project waves, will be revised accordingly. The strategic refresh process will include similar but abbreviated stakeholder engagement activities—such as workshops, forums, and webinars—that were undertaken to produce the initial roadmap.



Drive Electric TN is excited to share our progress and future successes with you and welcomes your participation!

Drive Electric TENNESSEE

APPENDIX A. PROJECT CHARACTERISITCS

A.1 Driving Charging Infrastructure Availability

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
EV Infrastructure Coordination & Planning	**Statewide EVSE Plan**	Develop a strategic plan for the deployment of EVSE across the state, including a Light-Duty EVSE Needs Assessment to evaluate coverage and usage of the current charging infrastructure and an EVSE Benchmarking study to benchmark current charging infrastructure against other regions	**Wave 1** • 2019 start • 1.5-year project duration • Regular plan updates (i.e., biennial publication)	Prerequisite for Repair & Replace, Equal Access Charging for Workplace, Multi-Family and Limited Income, Interstate & Highway Charging Network and Metro Area Charging Network	TDEC responded to Electrify America's cycle 1 and 2 solicitation.
EV Infrastructure Coordination & Planning	**MD/HD Charging Market Assessment**	Evaluate the infrastructure needs for fleet or transit agency medium-duty/heavy-duty vehicles	**Wave 3**	None	Stakeholders may have done some work with MD/HD highway EVSE (confirm this) and/or service station providers, but a coordinated state-level is needed.
EV Infrastructure Build-Out	**Repair & Replace**	Repair/replace underperforming chargers to maintain the functionality and accessibility of public EVSE investments to date	**Wave 1** • 2019 start • 2-year project duration • Ongoing Repairs & Replacement	Dependent on Statewide EVSE Plan	Limited repair and replace effort in TN to date.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
EV Infrastructure Build-Out	**Charging for Workplace**	Expand workplace charging infrastructure	**Wave 2** • 2021 start • 2-year project duration	Dependent on Statewide EVSE Plan	Public and private entities in TN participated in the US DOE Workplace Charging Challenge.
EV Infrastructure Build-Out	**Interstate & Highway Charging Network**	Expand standardized public charging infrastructure across TN driving corridors	**Wave 2** • 2021 start 2-year project duration	Dependent on Statewide EVSE Plan	Sections of TN interstates I-24, I-40, I-65, and I-75 are designated as FHWA alternative fuel corridors.
EV Infrastructure Build-Out	**Metro Area Charging Networks**	Expand standardized public charging infrastructure across TN metro areas	**Wave 2** • 2021 start • 2-year project duration	Dependent on Statewide EVSE Plan	Standardized public charging infrastructure in Tennessee's metro areas has experienced moderate growth.
EV Infrastructure Build-Out	**Charging for Multi-Family & Limited Income**	Expand charging infrastructure for multi-family and limited income communities	**Wave 2** • 2022 start • 3-year project duration	Dependent on Statewide EVSE Plan and Equal Access Charging for Workplace	Limited traction in TN to date.
EV Infrastructure Coordination & Planning	**Site Host & Maintenance Guide**	Develop a “How to be an EVSE Site Host” guide and provide recommended maintenance specifications and best practices for keeping EVSE operating properly	**Wave 1** • 2019 start • 1.5-year project duration • Annual publication	None	Limited TN-specific material.

A.2 Driving Awareness

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
EV Ride & Drive Promotion	**Ride & Drive Event Guide**	Organize EV ride & drive events across the state, based on a Drive Electric TN event guide	**Wave 1** • 2019 start • 1-year project duration • Ride & drive events in TN	None	EV marketing at the individual organization level, but not coordinated state-wide.
EV Ride & Drive Promotion	**EV Owners Club**	Establish an organized Tennessee EV Owners Club (or clubs)	**Wave 1** • Already started • 2-year project duration • Ongoing club activities	None	Established EV owners clubs: Knoxville Electric Vehicle Association, Tesla Knoxville, Drive Electric Nashville, Nashville EV Owners Club.
EV Ride & Drive Promotion	**Statewide EV Car Share Program Design**	Establish an EV car share program for Tennessee users	**Wave 2** • 2022 start • 2-year project duration • Ongoing programs	None	Green Commuter in Chattanooga is a membership-based EV car share platform, allowing members to rent EVs by the hour or day.
EV Ride & Drive Promotion	**Extended Test Drive Program Design**	Establish a program to take an EV home for a few days or week, using company fleet cars or dealership test cars	**Wave 3** • 2024 start • 2-year project duration • Ongoing programs	None	BMW of Chattanooga offers an Extended Test Drive Program, allowing customers to test drive the i3 for 3 days.
Fleet Education	**Fleet Case Studies**	Develop a case study report with examples of successful fleet conversions to EVs	**Wave 1** • Already started • 1-year project duration	Prerequisite for Corporate EV Education, Transit and Government Fleet Education, and Freight Fleet Education	Some case study type material exists for Chattanooga and Nashville's electric transit fleets.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
Fleet Education	**Transit and Government Fleet Education**	Partner with state/local governments for bus fleet replacement to electric buses and conversion of EV LDV fleets	**Wave 1** • 2020 start • 1-year project duration • Ongoing education	Dependent on Fleet Case Studies	Public agencies in TN are pursuing fleet conversion. Chattanooga first implemented electric buses on its downtown route in the early 1990s and recently added three electric buses from BYD to its transit fleet. Nashville adopted nine electric buses from Proterra in 2017.
Fleet Education	**Corporate EV Education**	Partner with key corporate accounts to raise awareness about the benefits of EVs and increase the adoption of corporate EV fleets	**Wave 1** • 2020 start • 1-year project duration • Ongoing education	Dependent on Fleet Case Studies	Although some companies located in Tennessee are committed to the transition to EVs, a coordinated corporate campaign has not been established.
Fleet Education	**Freight Fleet Education**	Partner with shipping service companies to convert local freight fleets to electric trucks	**Wave 2** • 2021 start • 1-year project duration • Ongoing education	Dependent on Fleet Case Studies	TennSmart identified freight efficiency as one of the group's 5 focus topics for research. FedEx is a founding member of TennSmart.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
EV Consumer Education	**EV Charging Station Signage**	Improve public knowledge of charging stations, including location and availability, via additional and optimized signage	**Wave 1** • Already started • 1.5-year project duration	None	In response to the cycle 2 Electrify America (EA) solicitation, TDEC worked with TDOT to determine that EA could qualify to advertise EVSE on highway exit signs next to the current gas directional signs in TN. University of TN Knoxville has installed custom EV Charger Signage at each charging station location on its campus.
EV Consumer Education	**Consumer Marketing & Sales Materials**	Develop and conduct a broad-based consumer awareness campaign to improve education about EVs	**Wave 1** • 2019 start • 2-year project duration • Refresh materials	None	EV marketing at the individual organization level, but not coordinated state-wide.
EV Consumer Education	**Educator Training Program**	"Train the trainer" to create EV ambassadors by educating local power company representatives (and others) who can spread a consistent message to customers	**Wave 1** • 2020 start • 2-year project duration • Refresh training materials	None	No training program for TN LPCs has been implemented to date.
EV Consumer Education	**EV Marketing Channels**	Develop a single online portal for information on projects, events, incentives, etc., including material developed under other Drive Electric TN projects	**Wave 1** • 2020 start • 2-year project duration • Ongoing marketing	None	The Drive Electric TN website has the domain name and some relevant info on TN EV projects, but further development is critical.

A.3 Driving Innovative and Supportive Policies

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
State Government Relations	**Statewide Policy Plan**	Connect and collaborate with appropriate stakeholders to align EV policies and regulations at a state-wide level. Create policy guidelines and advocacy for electric transportation funding from programs (e.g., CMAQ) and enhance the current implementation of HOV access for EVs	**Wave 1** • 2019 start • 1.5-year project duration • Funding applications	None	TennSmart, TN Clean Fuels Coalition, and Drive Electric TN all include communication and participation from TN governments. Drive Electric TN members have experience with securing CMAQ funding for TN transportation projects. Tennessee has the HOV Smart Pass for EVs, but enforcement is an issue.
State Government Relations	**Transportation Demand Management Collaboration**	Include EV incentives where applicable in Transportation Demand Management (TDM) programs	**Wave 3** • 2023 start • 3-year project duration	None	TDOT previously conducted a state-wide TDM report.
Standardized Local Policies	**Local Action Plan**	Design a Local EV Policy Guide on how to design EV-specific policies and goals that cities and other local players can enact to encourage EV adoption and provides coordination with other local policy projects	**Wave 1** • 2019 start • 1.5-year project duration • Regular plan updates	Provides coordination with EVIP Parking, EV-Ready Buildings, and Workplace EV Policy Guide	Coordinated effort for local action throughout the state has not been established.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
Standardized Local Policies	**EVIP Parking Promotion**	Promote prioritized parking spaces ("VIP" parking) and accessible charging	**Wave 1** • 2020 start • 2-year project duration	Dependent on Local Action Plan	Nashville offers residents that drive a "clean technology vehicle" the option to purchase a Green Parking Permit, which grants them free parking in metered spots located in the downtown central business improvement district. The University of TN Knoxville requires a special EV permit to use on-campus charging stations and enforces the strict use of charging station spots by EVs.
Standardized Local Policies	**EV-Ready Buildings**	Update city/county building codes to make buildings "EV ready"	**Wave 3** • 2023 start • 2-year project duration • Periodic code updates	Dependent on Local Action Plan	None to date in TN.
Corporate Policies	**Workplace EV Policy Guide**	Create a guide for workplace charging and employee incentives related to EVs	**Wave 1** • 2020 start • 2-year project duration	Dependent on Local Action Plan	Public and private entities in TN participated in the U.S. DOE Workplace Charging Challenge.
Corporate Policies	**Commuter Benefits Education & Outreach**	Design an employer subsidy for costs related to commuting to work with EVs	**Wave 2** • 2022 start • 2-year project duration • Ongoing outreach	Dependent on Local Action Plan and Workplace EV Policy Guide	Bank of America is a national leader in commuter benefits tied to EVs and has operations in TN. Likely offered by other companies in TN.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
Corporate Policies	**EV 100**	Solicit corporate commitments to transition to 100% EV fleets	**Wave 2** • 2022 start • 2-year project duration • Ongoing advocacy and marketing	None	Some EV 100 members have operations in TN. A TN specific coalition of companies committed to 100% electric fleets has not been established.
Coordinated Utility Programs	**Smart Charging**	Investigate smart charging and utility policy/strategy regarding vehicle grid integration (VGI) applications.	**Wave 2** • 2021 start • 1-year project duration • Ongoing research and development	None	Individual utilities may be conducting research in this space, but no coordinated state-wide effort to date.
Coordinated Utility Programs	**EV Rates Assessment**	Investigate specialized TOU rates and demand pricing	**Wave 2** • 2021 start • 1-year project duration	None	Utilities have potentially done internal assessments of EV rates, but a state-wide public assessment has not been conducted to date.
Coordinated Utility Programs	**Renewable EV Charging Certification**	Develop and certify charging stations with green power (renewable energy)	**Wave 2** • 2022 start • 1-year project duration • Ongoing charging station certifications	None	TVA Smart Modal Area Recharge Terminal (SMART) Stations

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
EV / EVSE Incentives	**EV Purchase Rebates**	Identify funding for vehicle purchase rebates	**Wave 1** • TBD • Critical unmet external need (funding)	None	Purchase rebate program exhausted in TN. TDEC recently released its first solicitation for the VW settlement funds, offering grants for the purchase of new electric school buses (new diesel and alternative fuel buses are also eligible for funding).
EV / EVSE Incentives	**EVSE Purchase Rebates**	Identify funding for EVSE purchase rebates	**Wave 1** • TBD • Critical unmet external need (funding)	None	None for LDV to date in TN.
EV / EVSE Incentives	**Used EV Rebates**	Identify funding for a used EV rebate program	**Wave 2** • TBD • Critical unmet external need (funding)	None	None to date in TN.
EV / EVSE Incentives	**Recycling & Second Life Batteries**	Design a used battery rebate program and/or secondary battery use case development	**Wave 2** • 2021 start • 2-year project duration • Ongoing programs	None	TVA has been involved in some research focused on recycling vehicle batteries, but a state-wide effort has not been established to date.
EV / EVSE Incentives	**EV Rewards Program**	Design a reward program for riding in or driving EVs	**Wave 3** • 2023 start • 2-year project duration	None	Nothing specific to EVs, but the Green Trips Program in Chattanooga offers rewards for members that take alternative forms of transportation. A program like this can be augmented to include EVs an incentivized activity.

A.4 Driving EV Availability, Offerings, and Innovation

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
OEM Collaboration	**In-State OEM Partnership + OEM-Dealership Network**	Establish a communication program with OEMs to align their plans/needs for dealerships and EV model availability in TN	**Wave 1** • Already started • 2-year project duration • Ongoing collaboration effort	None	Nissan, VW, and GM have participated in Drive Electric TN discussions and events.
OEM Collaboration	**MDV/HDV Catalogue**	Create a catalogue of electric bus/truck options and sales contacts, to provide to transit agencies and other fleet owners	**Wave 1** • Already started • 1-year project duration • Annual publication	None	Nothing specific to TN to date, but the US DOE's Alternative Fuels Data Center catalogue can be leveraged within TN.
Dealer Collaboration & Incentives	**Dealership Education Program Design**	Design an educational program for dealership managers and salespeople	**Wave 1** • 2020 start • 2-year project duration • Ongoing programs	None	Limited to OEM in-house training.
Dealer Collaboration & Incentives	**Dealership Certification Program**	Design a program to certify and potentially incentivize "Lighthouse" dealers for EVs	**Wave 2** • 2021 start • 2-year project duration • Ongoing certifications	None	Limited in TN to date.
Dealer Collaboration & Incentives	**Cross-Marketing for Local Dealers**	Advertise EVs from local dealerships through existing partner marketing channels	**Wave 2** • 2022 start • 2-year project duration • Ongoing marketing	None	Limited in TN to date.

Initiative	Project Name	Project Description	Timing	Direct Dependencies	TN Market Traction
Dealer Collaboration & Incentives	**Secondary Dealer Collaboration**	Establish a communication program with used car dealerships/platforms to promote deals for low-cost used EVs in a Drive Electric TN "Used EV Spotlight"	**Wave 2** • 2022 start • 2-year project duration	None	Limited in TN to date.
Mobility Services Collaboration	**Rental Company Collaboration**	Establish a communication program with rental car companies	**Wave 1** • 2019 start • 2-year project duration • Ongoing collaboration	None	Green Commuter in Chattanooga is a membership-based EV car share platform, allowing members to rent EVs by the hour or day. Limited traction with traditional rental car companies.
Mobility Services Collaboration	**Ride Share Collaboration**	Establish a communication program with ride share providers	**Wave 1** • 2019 start • 2-year project duration • Ongoing collaboration	None	Nashville is home to a luxury EV ride share service called Nashville Electric Transportation (NET).
Consumer Preference Assessment	**Consumer Focus Groups & Surveys**	Perform surveys with a standard set of EV-related questions to collect TN consumer data and conduct interviews/focus groups with transit agencies and other fleet owners	**Wave 1** • Already started • 1-year project duration • Annual survey/focus group	None	EPRI conducted the 'TVA Electric Vehicle Survey' in 2012 to gain insights on how TVA customers perceive EVs. Limited traction to date for EV specific consumer focus groups.

Drive Electric TENNESSEE

Prepared by Navigant Consulting, Inc. on behalf of Drive Electric Tennessee

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