



Joint Office of
**Energy and
Transportation**

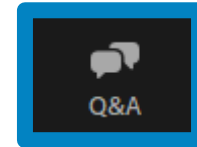
Bridging Transportation and Energy Through Regional Coordination

2/28/2023

driveelectric.gov

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- Controls are located at the bottom of your screen. If they aren't appearing, move your cursor to the bottom edge.
- Submit questions using the “Q&A” window



Disclaimer

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If you speak during the webinar or use video, you are presumed to consent to recording and use of your voice or image.

Agenda

Introduction from the Joint Office

Case Study from Chattanooga, TN

Facilitated Discussion



Panelists



Mina Sartipi
*University of
Tennessee at
Chattanooga*



Melissa Taylor
*City of
Chattanooga*



Rich Davies
*Oak Ridge
National
Laboratory*



James Corless
*Sacramento Area
Council of
Governments*



**Brandi
Whetstone**
*Mid-Ohio Regional
Planning
Commission*



Chattanooga, TN Case Study

CHATTANOOGA CASE STUDY



Joint Office of Energy & Transportation Webinar
February 28, 2023

Melissa Taylor

Chattanooga-Hamilton
County/N. GA Transportation
Planning Organization (TPO)
*with support from Modern Mobility
Partners, LLC*

Rich Davies

Oak Ridge National Laboratory
(ORNL)

Mina Sartipi

Center for Urban Informatics
and Progress (CUIP)
University of Tennessee at
Chattanooga

WHY ARE MPOs AN IMPORTANT BRIDGE?

Driverless Vehicles

Electric Vehicles

Economic
Downturn

Teleworking

Climate
Change/
Resilience

Rural
Development

Increased Share of
Cargo on Rail

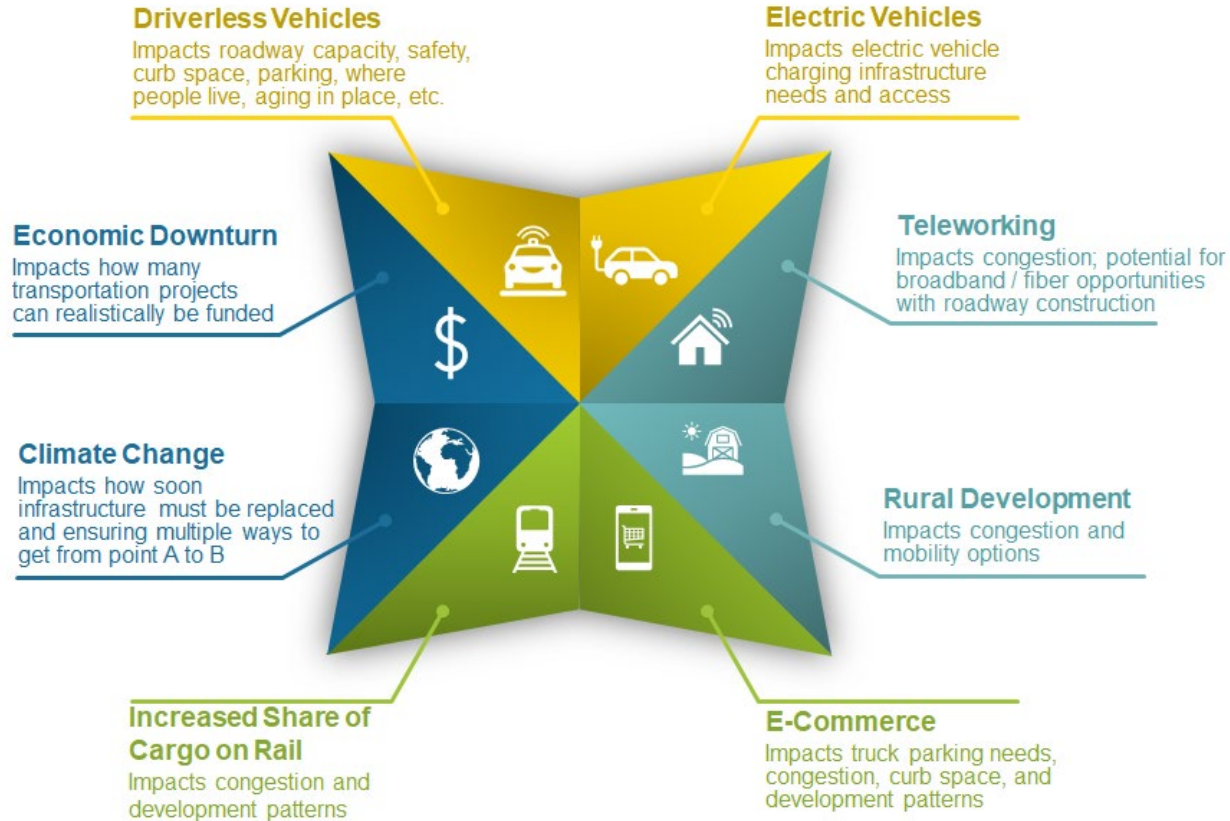
E-Commerce



REGIONAL TRANSPORTATION PLAN (RTP)

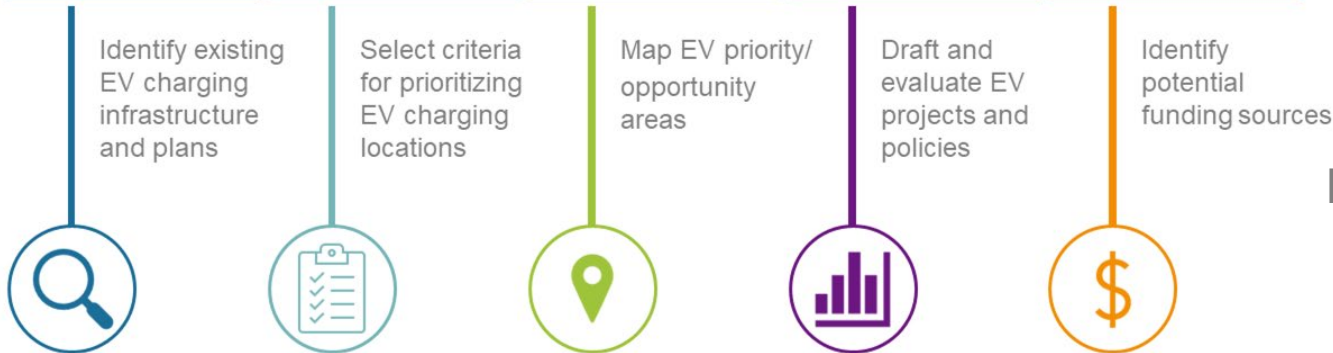
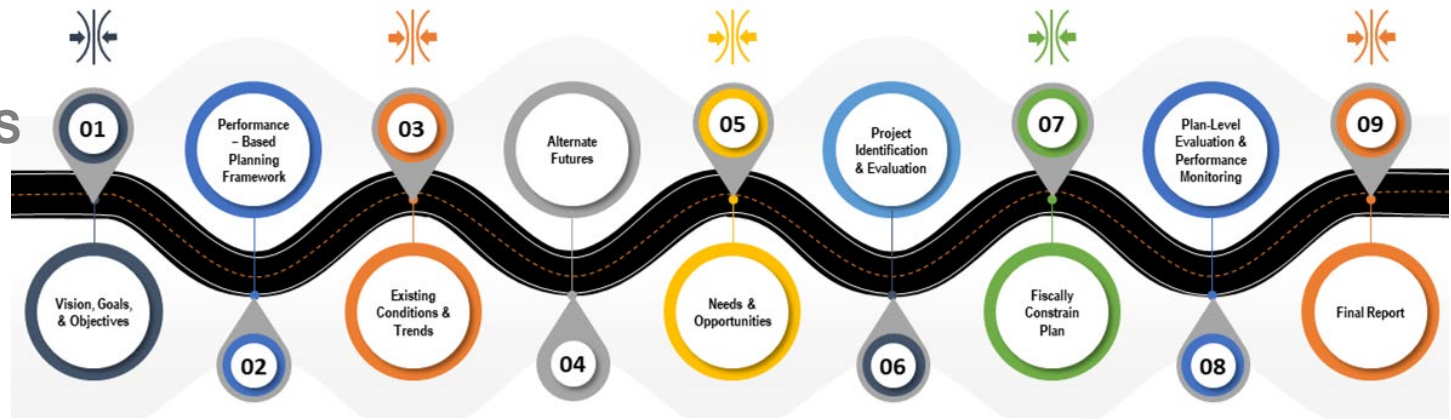
PLANNING FOR THE UNKNOWN IN 2050

- “We don’t know what we don’t know”
- Be open and objective
- Be rooted in data and science
- Consider impacts and benefits
- Listen to Stakeholders/public
- Determine overarching themes/priorities



REGIONAL TRANSPORTATION PLAN: Commitment & Assurance

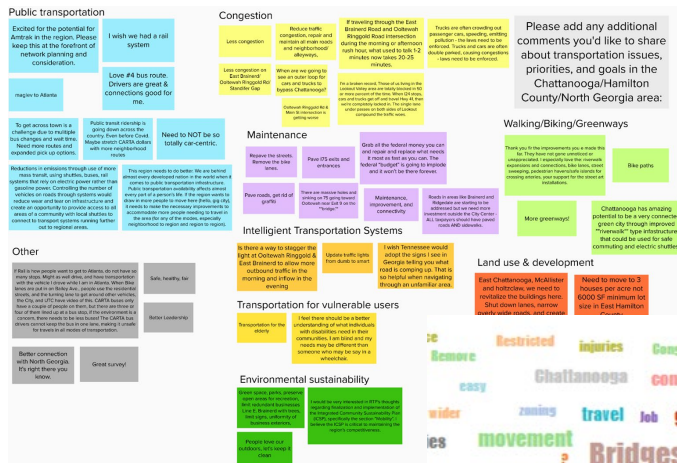
SMART TECHNOLOGIES



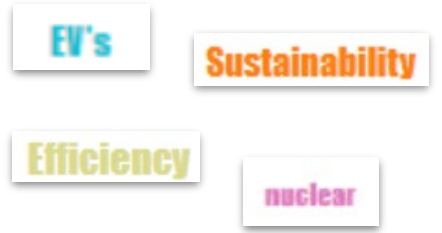
ELECTRIFICATION

REGIONAL TRANSPORTATION PLAN: Community Interest

ELECTRIFICATION AMONG PUBLIC/STAKEHOLDER PRIORITIES



“Integrated Community Sustainability Plan”



Importance of Environmental sustainability

Environmental sustainability (emissions reduction, expanded set of non-motorized travel opti... Column Bar Pie Map



REGIONAL TRANSPORTATION PLAN: Vision & Outcomes



Preserve, Protect, Provide, **Propel**, and **Pioneer** Transportation

- Propel the region's economic vitality and growth through an efficient, connected, and sustainable intermodal transportation network.
- Pioneer innovative technologies that put the transportation system ahead of the curve in an ever-changing world.

Website: <https://2050rtp-chcrpa.hub.arcgis.com/>

REGIONAL TRANSPORTATION PLAN: “Open” Data & Analysis

Technology & Electric Vehicle Infrastructure

67%

Of the 476 traffic signals in TPO region, 319 (67%) have “known” communication abilities



69

69 traffic signals have signal pre-emption for emergency vehicles



53%

Of the 66 publicly accessible EV charging locations in the TPO area, 35 (53%) are in Equity Emphasis Areas



EV Charging Stations: <https://arcg.is/m9r9i>
EV Opportunity Areas Methodology: <https://arcg.is/189nzm0>

Why EV Charging is Important

Existing Inventory Maps

Types of EV Charging

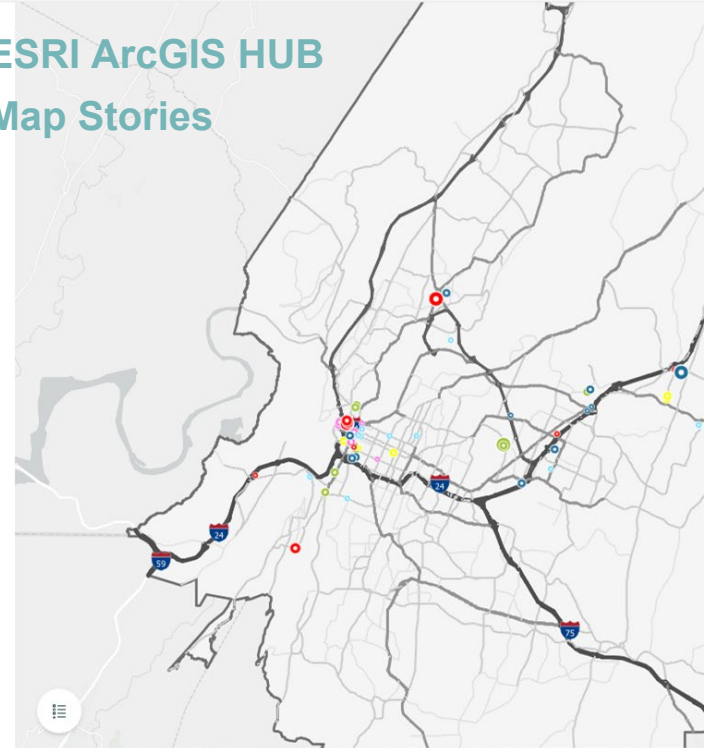
Expanding EV Charging Map

EV Charging Stations by Land Use Type

Based on the land use types of the places where the EV charging stations are located, the charging stations are categorized into six groups: parking lots (shown in **green** on the map), residential (shown in **yellow** on the map), office (shown in **pink** on the map), community centers (shown in **light blue** on the map), hotels (shown in **red** on the map), and shopping centers (shown in **dark blue** on the map).



ESRI ArcGIS HUB Map Stories









REGIONAL TRANSPORTATION PLAN: Collaboration

THE 2022 LEADERS SUMMIT SESSION #2: EV + Sustainability + Resilience

<p>AGENDA</p> <p>9 AM - 4 PM Chattanooga Hotel & Conference Center</p> <p>9:00 Elected Officials' Welcome</p> <p>9:10 Our Transportation Future</p> <p>10:00 Safety+Vision Zero Panel</p> <p>11:00 EV+Sustainability+Resilience Presentation & Discussion</p> <p>12:00 Keynote Luncheon</p> <p>1:00 Mobility+Equity+Equity Presentation & Discussion</p> <p>2:15 Funding+Project Delivery Work Session w/ APA</p> <p>3:45 Summation</p>	<p>2050 Transportation Summit October 20, 2022</p> <p>JOHAN DE NYSSCHEN Chief Operating Officer Volkswagen Group North American Region (Retired)</p> <p>TIM KELLY Mayor, City of Chattanooga</p> <p>PAMELA KORDENBROCK TN Division, Federal Highway Administration</p> <p>JASON JORDAN Director Public Affairs American Planning Association</p>	<p>The Vision</p> <p>Our transportation systems are rapidly evolving and it is time to come together to strengthen relationships, learn from each other, and discuss the challenges and opportunities which lie ahead.</p> <p>This region is fortunate enough to have a diverse and growing population supported by an array of transportation-related manufacturers, suppliers, technology experts, and logistical and operational services. It is critical that we plan for adequate transportation infrastructure to ensure safe, resilient, and equitable options for the movement of people and goods.</p> <p>The Chattanooga-Hamilton County/North Georgia transportation VISION is to:</p> <ul style="list-style-type: none"> • Preserve sensitive natural resources and maintain existing transportation assets to reflect a state of repair that is reliable and resilient. • Protect communities by making the safe movement of people and goods a top priority. • Provide equitable options, access, and freedom of mobility to everyone. • Propel the region's economic vitality and growth through an efficient, connected, and sustainable intermodal transportation network. • Pioneer innovative technologies that put the transportation system ahead of the curve in an ever-changing world.
<p>Hosted by:</p>   		

This publication funded in part by the U.S. Department of Transportation, Federal Highway Administration, and the Tennessee and Georgia Departments of Transportation

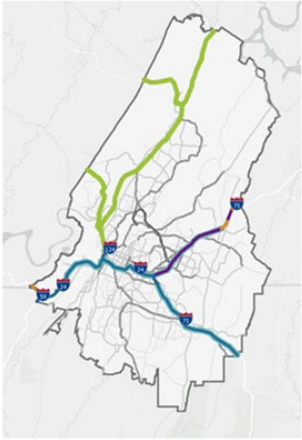
- Extreme Weather
 - Climate Action Plan
 - EV Status in TN
 - New EV Programs
 - Innovative Transit
 - Smart & Connected City Test Bed
 - RTP Draft
- Recommendations & Polling Exercise:**
- “Most important plan elements to consider when planning for an unknown future”*

	TN Advisory Commission on Intergovernmental Relations Director of Research, Dr. Mark McAdoo
	City of Chattanooga Sustainability Director, Erik Schmidt
	EPB Director of Residential Energy & Environmental Solutions, Elizabeth Hammitt
	University of TN Chattanooga Center for Urban Informatics & Progress, Dr. Mina Sartipi
	CARTA General Manager, Philip Pugliese
	RTP Consultant Modern Mobility Partners CEO, Keli Kemp

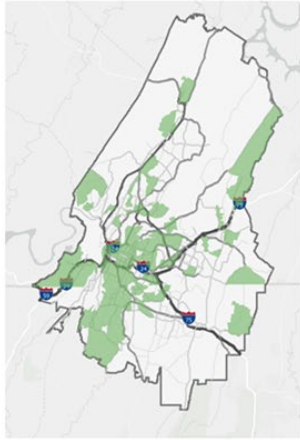
REGIONAL TRANSPORTATION PLAN: Collaboration

EV OPPORTUNITY AREA PRIORITIZATION CRITERIA

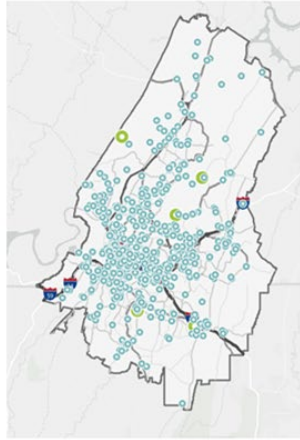
SESSION #3: Mobility+ Equity + Economy



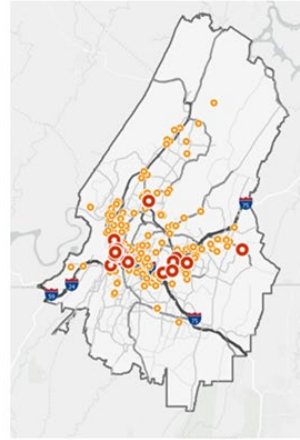
Location of
Alternative fuel
corridors



Location of
Equity Emphasis
Areas/Justice40
Disadvantaged
Communities



Proximity to
community
resources



Location of
multifamily and
office buildings



GDOT Assistant Office Head for
Policy & Freight Planning, **Kelly
Gwin**



University of Tennessee Knoxville
Transportation Research Center
Director, **Dr. Kevin Heaslip**



Chattanooga Area Chamber of
Commerce Vice President of
Public Policy, **Justin Groenert**



CARTA Board Member & City of
Chattanooga Chief Equity Officer,
Tamara Steward



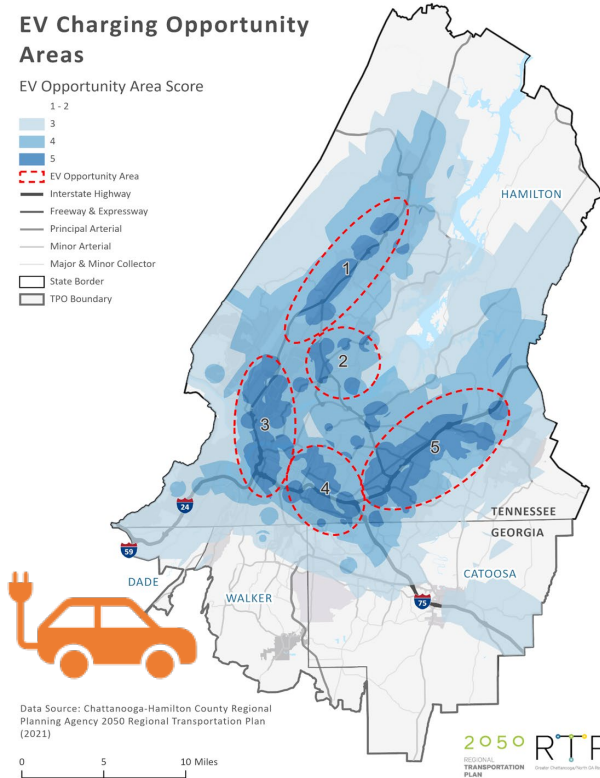
TPO RTP Consultant Modern
Mobility Partners, **Julia Billings**

REGIONAL TRANSPORTATION PLAN: Policies & Projects

EV Opportunity Areas

EV Charging Opportunity Areas

EV Opportunity Area Score



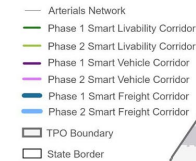
Data Source: Chattanooga-Hamilton County Regional Planning Agency 2050 Regional Transportation Plan (2021)

Recommendations

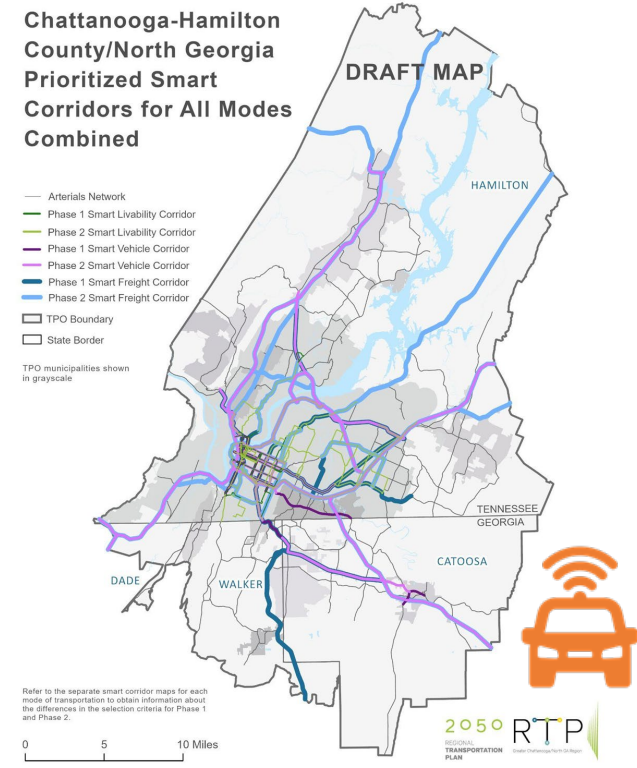
- Project location-specific or “lump sum” funding for EV charging infrastructure
- EV charging in zoning code (for new development)
 - Allow/require EV charging, preferential parking spaces
 - Minimum number of charging spaces/ports
 - Level (1, 2, DC Fast)
- Incentives for EV charging
 - Ex: Density bonuses, reduced parking space requirements, City and/or County tax incentives, preferred parking locations, and/or expedited permit processing

Smart Corridor Network

Chattanooga-Hamilton County/North Georgia Prioritized Smart Corridors for All Modes Combined



TPO municipalities shown in grayscale



Refer to the separate smart corridor maps for each mode of transportation to obtain information about the differences in the selection criteria for Phase 1 and Phase 2.

NEXT STEPS

- Project website: <https://2050rtp-chcrpa.hub.arcgis.com/>
- Approval of Fiscally-constrained Investment Package: Summer 2023
- Plan Adoption: December 2023
- Final Publication of Investments: January 2024
- Contact Melissa Taylor or Anne Welch:
mdtaylor@chattanooga.gov
kawelch@chattanooga.gov



2050 RTP
REGIONAL
TRANSPORTATION
PLAN
Greater Chattanooga/North GA Region

Movement of people
Movement of goods



View the [information from the final 2050 RTP Public Open House](#) and the video below for a recap of the 2022 Transportation Summit.

The information from the in-person open house gives you the opportunity to view the project evaluation results, and learn more about the alternative futures analysis. Please reach out to rtp@chattanooga.gov if you would like to meet with the team but could not attend this event.

Click here to visit the 2050 RTP Universe of Projects Story Map ranked by performance.



EXCITING NEWS...



“U.S. Department of Transportation Awards \$4.57 Million to Chattanooga’s Transportation Management System for Electric Vehicles”



“New Command Takes Over At CARTA; New Chairman Focuses On Autonomous Vehicles”



Electric Power Board initiates EV Leadership Forum and CO.LAB set to launch new sustainability program focused on mobility”



“Argonne and Oak Ridge national laboratories collaborate with Wabtec on hydrogen-powered trains to decarbonize rail industry”



Tennessee’s EV fast-charging network plan one of first to get federal approval, funds [Part of the National Electric Vehicle Infrastructure “NEVI” Program]

Rich Davies

Oak Ridge National Laboratories (ORNL)



Overview

TennSMART Mission

Bring together leaders from the public and private sector to accelerate the development and deployment of new intelligent mobility innovations that improve safety, accessibility, emissions reduction, and system operations.



Why do we need TennSMART?

A forum for organizations to share knowledge and resources and identify and understand:

- How to build and interact with supporting infrastructure
- How to manage big data
- How to take advantage of efficiency gains from intelligent mobility

Engage policymakers about the importance of investment in smart mobility technologies and their role in job creation

Position Tennessee as a leader and model for other states

TennSMART Focus Areas

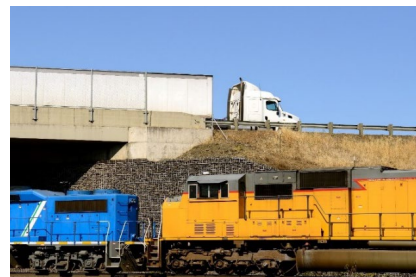
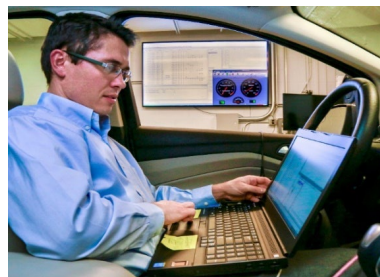
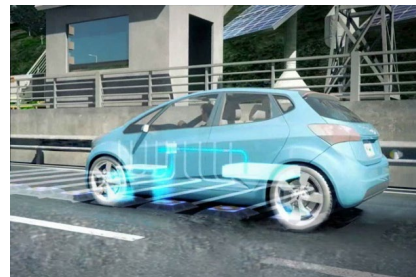
Connected and automated vehicles

Heavy duty trucking and freight efficiency

Cybersecurity

Electric vehicles and electrification

Multimodal commuting



2022 Members



Mina Sartipi

Center for Urban Informatics and Progress (CUIP) at
University of Tennessee at Chattanooga

Joint Faculty Appointment at ORNL



Scenic City



Gig City

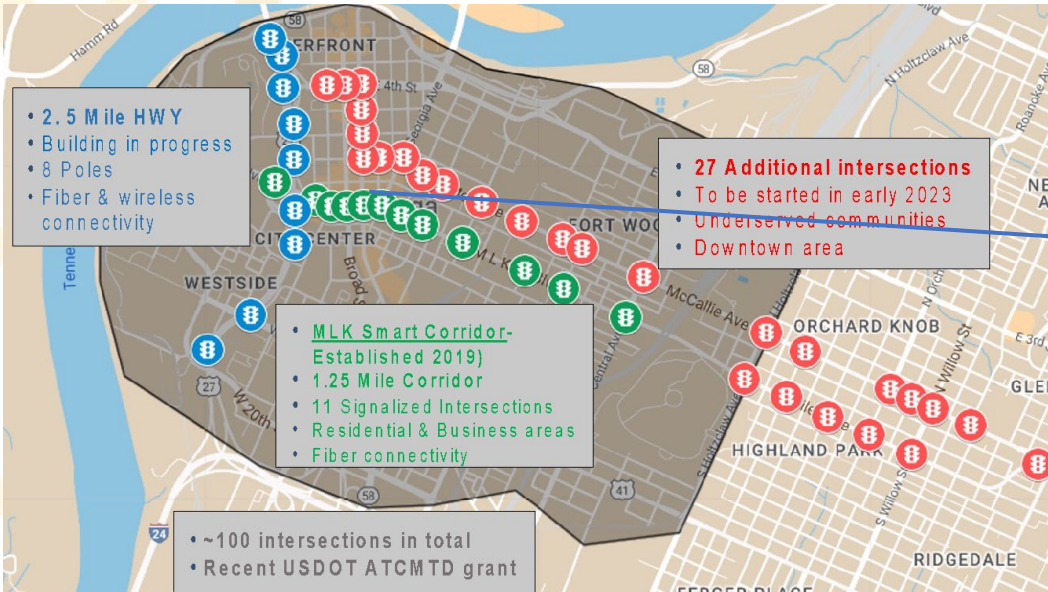


Smart and Connected City

Vision: Chattanooga be the city-wide testbed to next-generation transportation (electric, connected, and automated vehicles)



Testbed-As-A-Service



Data Infrastructure

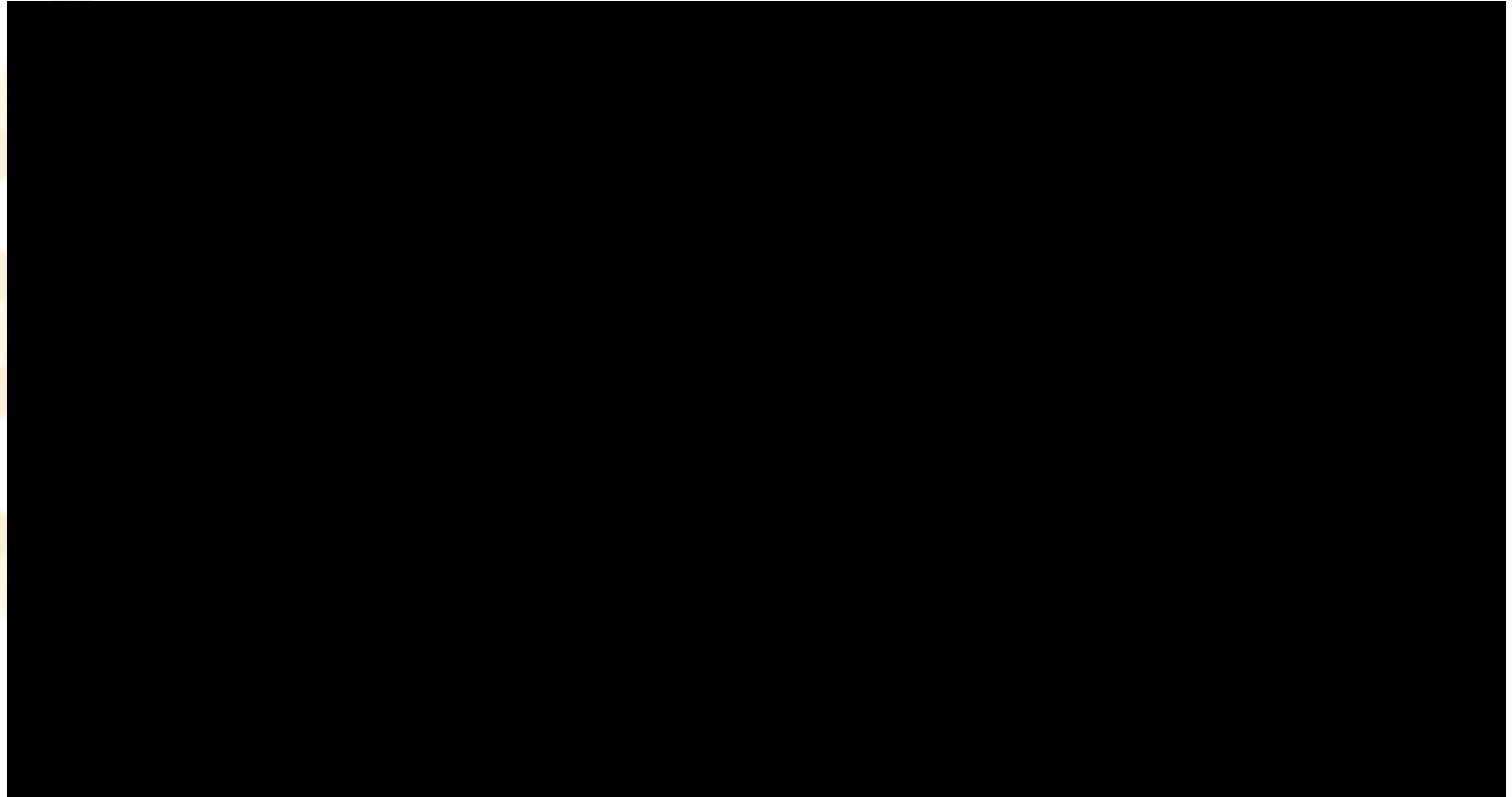
- Automated data cleaning and formatting
- Daily ingestion
 - ~ 10,000,000+ event messages /day
 - Includes 2,000,000,000+ data points /day

- Data sources
 - Signal Phasing & Timing (SPaT)
 - High Resolution Lidar events, Cameras, and other IoT devices

Digital Twin - MLK Smart Corridor

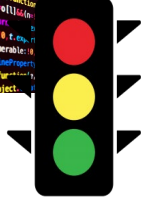
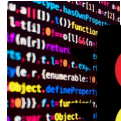


Digital Twin - City of Chattanooga



Eco-Adaptive Traffic Control

22 23 24 25 26
32 33 34 35
42 43 44
52 53 54
62 63 64 65
72 73



Fixed-Time Control

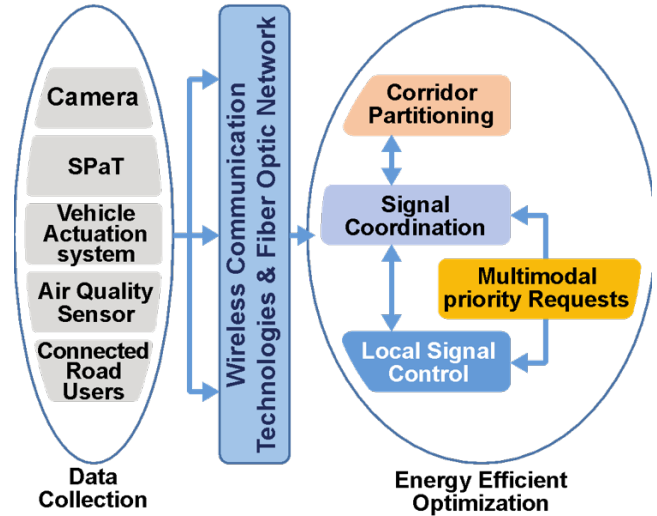
- Historical Data
- Periodic Adjustments
- Not Efficient
- Not Responsive

Actuated Control

- Detects Traffic
- Variable Patterns
- Real-Time Control
- Not Responsive

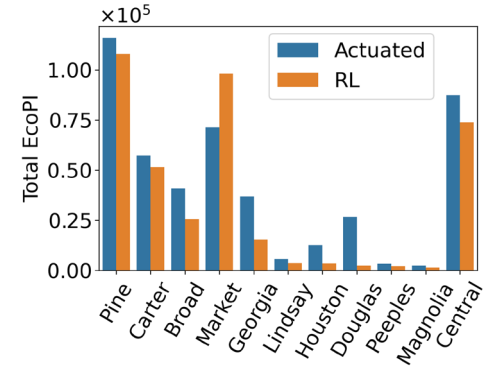
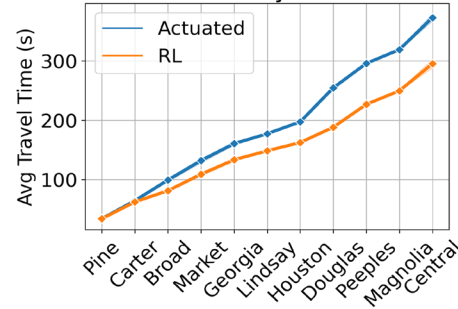
Adaptive Control

- Detects Traffic
- Optimize in RT
- Responsive
- Efficient



Only 3% of the nation's signals are adaptive

Avg travel time from Pine to Central reduced by 20.81%

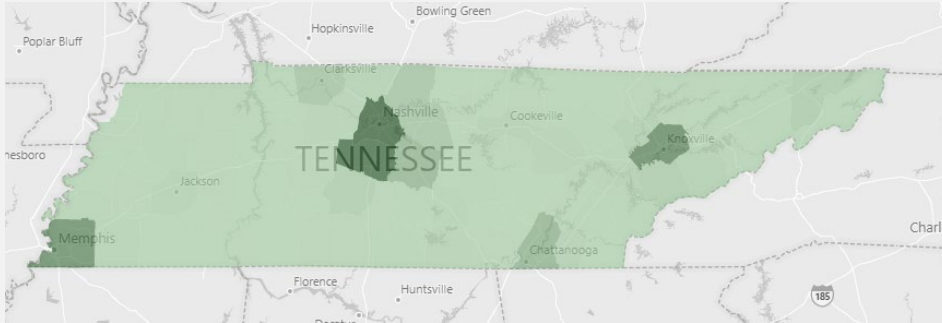




EV Summary

Industry Trend: Tennessee

25,955 EV on the road; ~4EVs/ 1,000 people



Number of EVs/ 1,000 people:

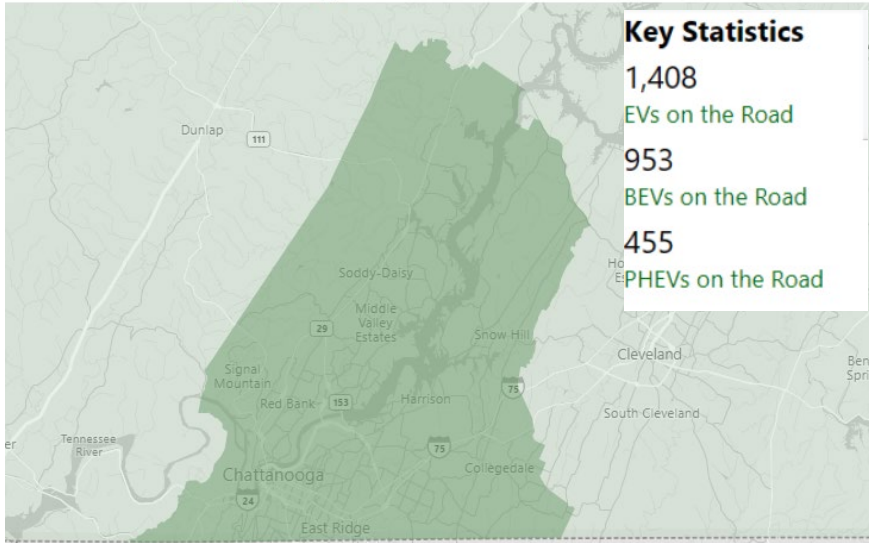
- Williamson: 14
- Knox: 5
- Davidson: 5
- Hamilton: 4
- Rutherford: 3
- Shelby: 2

Metro centers have the highest concentration of EVs and public charging.



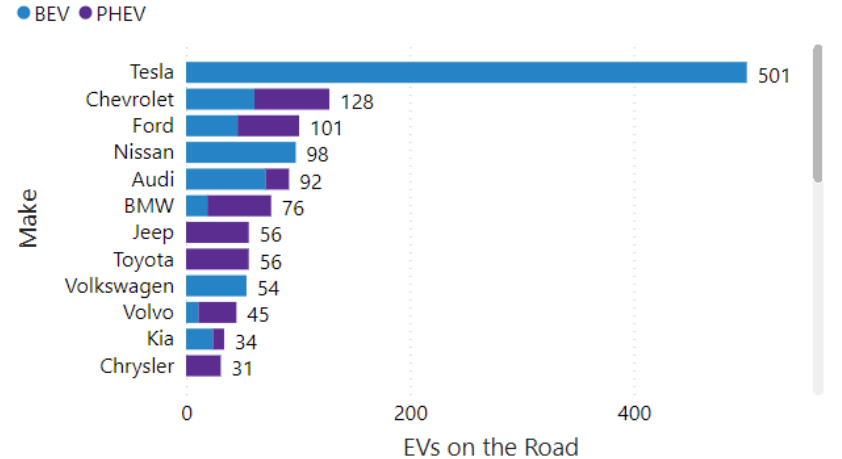
Hamilton County Trends

EVs on the Road by County and ZIP Code



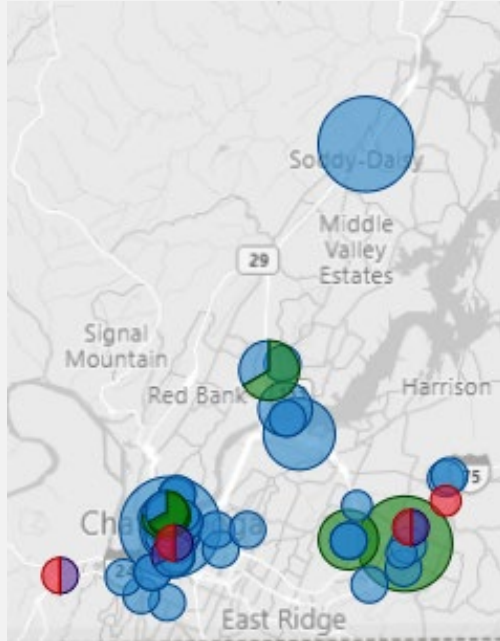
1,408 total EVs in Hamilton County

EVs on the Road by Vehicle Make and Model

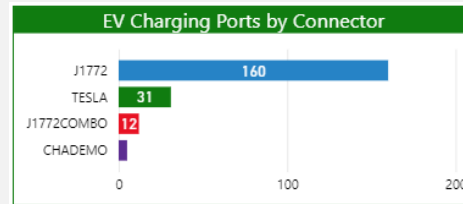


Over 90 Vehicle Makes in Hamilton County

Hamilton County Trends



Source: Mike Pare, Timesfreepress.com Electric vehicle chargers are shown in Collegedale outside a Walmart. [Tennessee awards \\$5.2M for electric vehicle charging network](#)



208 public charging ports in Hamilton County
35 Fast Charging ports at 8 locations; 173 Level 2 ports at 66 locations



Launched: New Programs in 22



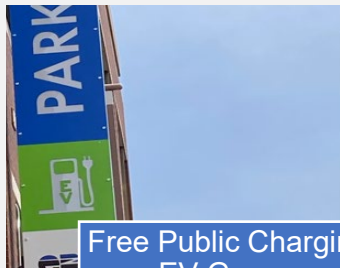
EV Growth Credit



Commercial Charger Incentive



Commercial EV Rate

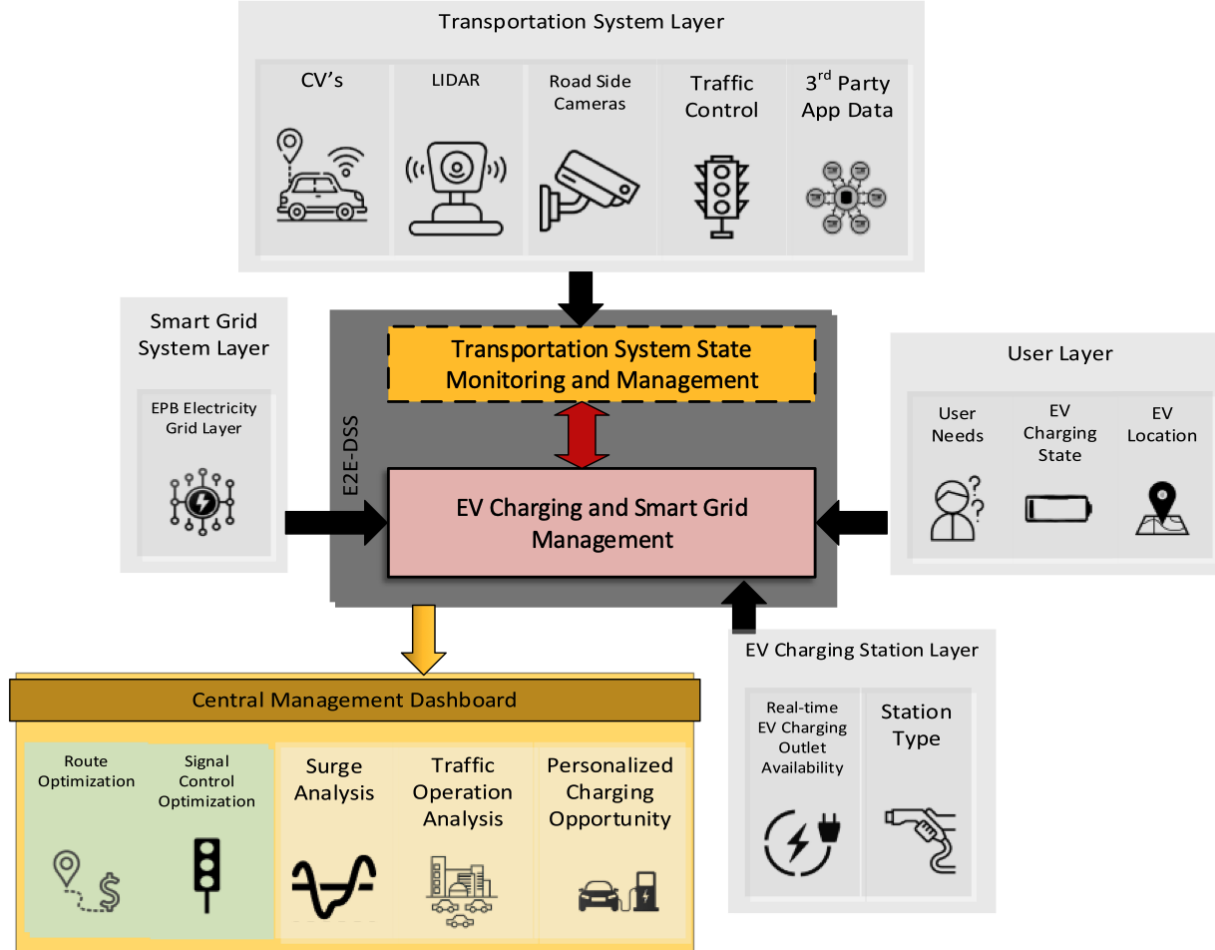
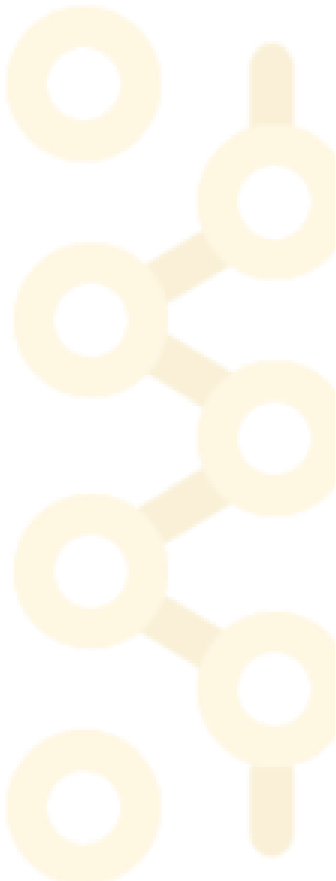


Free Public Charging:
EV Garage



Nexus of Transportation, Energy, and People





Smart City Division

THE UNIVERSITY OF TENNESSEE
CHATTANOOGA



Center for Urban Informatics & Progress



Questions and Answers

Thank you!

Today's Presentation:
Bridging Transportation and Energy
Through Regional Coordination

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be posted within a few weeks here:
driveelectric.gov/webinars