NC Municipal Transportation Electrification Roundtable: Ready for 100 Community Commitment to Clean Energy

October 29, 2020
2:00 -- 3:15 PM

NC CLEAN ENERGY TECHNOLOGY CENTER

SIERRA CLUB

Rick Sapienza
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Phone: 919-515-2788

- **Clean Transportation Program Director NC Clean Energy Technology Center at NC State University**
- **8 years with NC State**
- **30+ years experience including General Motors, Draper Lab and Great Lakes Pulp & Fibre in both engineering and business management roles**

Webinar Format:

- Q & A at end
- Submit questions to “Panelists”
- Scheduled for 1 hour, 15 min
- Slide handout available
- Recording being made

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Agenda:

- **Rick Sapienza, NC Clean Technology Center--Welcome & Introduction**
- **Stan Cross, Southern Alliance for Clean Energy (SACE)—Comprehensive Planning is Key to Electrification Success**
- **Rick Sapienza, NC Clean Energy Technology Center—Electrification Funding Sources**
- **Steve Gucciardi, City of Charlotte—Lessons Learned and Best Practices**
- **George Linney, City of Greensboro—Lessons Learned & Best Practices**
- **Cassie Gavin, Sierra Club—Resources: EV Toolkits**

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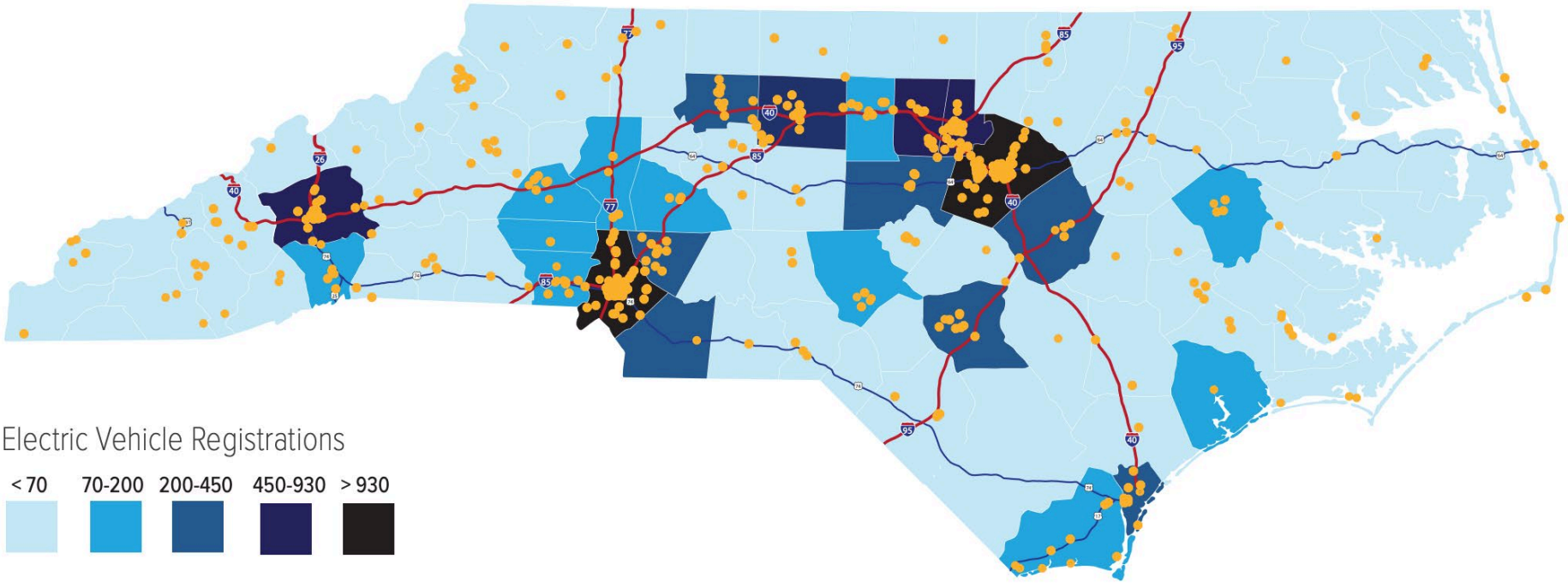
Stan Cross
stan@cleanenergy.org
828-335-1539

- Electric Transportation Policy Director for the Southern Alliance for Clean Energy
- Focused is on accelerating America's electric transportation and clean energy transitions
- Co-Founder of Brightfield Transportation Solutions 2010
- Electric transportation consultant working with States and Cities in the southeast on electric mobility and transportation electrification planning

Stan Cross, stan@cleanenergy.org

NC EV registrations and charger locations



Source: Plug In NC

City of Raleigh Transportation Electrification Study

City of Raleigh Municipal Fleet

Strategy / Action	Description
1.1 STRATEGY	Develop municipal fleet targets and timelines for replacing a majority of the light-duty municipal fleet with electric vehicles by a reasonable but aggressive date based on expected light-duty fleet turnover.
1.2 ACTION	Based on existing telematics, begin replacing th EVs when the use case aligns with the performa
1.3 ACTION	Install required charging infrastructure to meet an infrastructure strategy to support fleet electri
1.4 ACTION	Develop and implement a strategic approach to conversion decisions.
1.5 STRATEGY	Develop a municipal fleet conversion strategy th conversion to scale.
1.6 ACTION	Explore vehicle lease-to-own programs that may capture the value of tax credits to reduce overal
1.7 STRATEGY	Develop an internal City strategy to require City gas cars whenever applicable.
1.8 ACTION	Conduct internal City education and training on
1.9 STRATEGY	Recognizing the City's plans to convert 75% of it wastewater methane capture, develop a strateg alternative fuels, including electric buses, on a r fleet turnover and expansion.
1.10 ACTION	Leverage potential funding, such as Volkswagen Administration bus electrification funds, and po initial number of electric buses and charging inf
1.11 ACTION	Equip City departments with electric mowers an Explore partnership with North Carolina State Ur the direct and indirect benefits to converting law future Raleigh investment.
1.12 ACTION	Expand research and piloting of hybrid bucket tr

Charging Infrastructure

Strategy / Action	Description
2.1 STRATEGY	Advance EV-readiness in new and existing private commercial and multi-family buildings by: • 2.1A: Exploring incentives and education to encourage develop family parking lots or structures to dedicate a certain percentag new development of residential homes be equipped with the inf charging stations, such as conduit, wiring, and electrical capaci • 2.1B: Streamlining and simplifying the permitting process for co to install charging infrastructure on existing commercial or mul
2.2 ACTION	Lead by example by making all new and upgraded City buildings EV- buildings and large renovations of existing buildings equip 20% of p needed to install EV charging stations.
2.3 ACTION	Ensure all City EV charging hardware and software investments are functions needed to effectively manage a network of chargers and p driven decisions about electrification of vehicles and equipment.
2.4 ACTION	Based on an evaluation of current and likely future use, replace exis charging stations with Open Charge Point Protocol (OCPP)-compliar operated on a single best-in-class EV charging network managemen Level-2 chargers in locations of currently recognized need.
2.5 ACTION	Encourage EV adoption and clean mobility through EV charging at C where feasible and integrate with zero-emission shuttles from park-
2.6 STRATEGY	To position Raleigh to be aligned with the growing EV market, create locations for future charging stations. As funds become available to stations, this strategy will enable the capturing and execution of fun
2.7 ACTION	Maximize opportunities to integrate EV charging with Smart Cities te
2.8 ACTION	Build strategic partnerships with nearby municipalities, NGOs, and e Raleigh's transportation electrification infrastructure strategies to re Focus on building the capacity of individuals, communities, institutio systems in Raleigh to adapt to chronic stresses and acute shocks.
2.9 ACTION	Advance workplace charging through collaborative efforts with large recognition, branding, and competition.
2.10 ACTION	Explore partnerships with industry, utility, and rideshare companies charging "hubs" of multiple chargers. The hubs should provide rapid transportation uses, including private EVs, ridesharing, transportatic vehicles, and delivery vehicles and could be located to encourage co of mobility, including transit.

Equity and Access

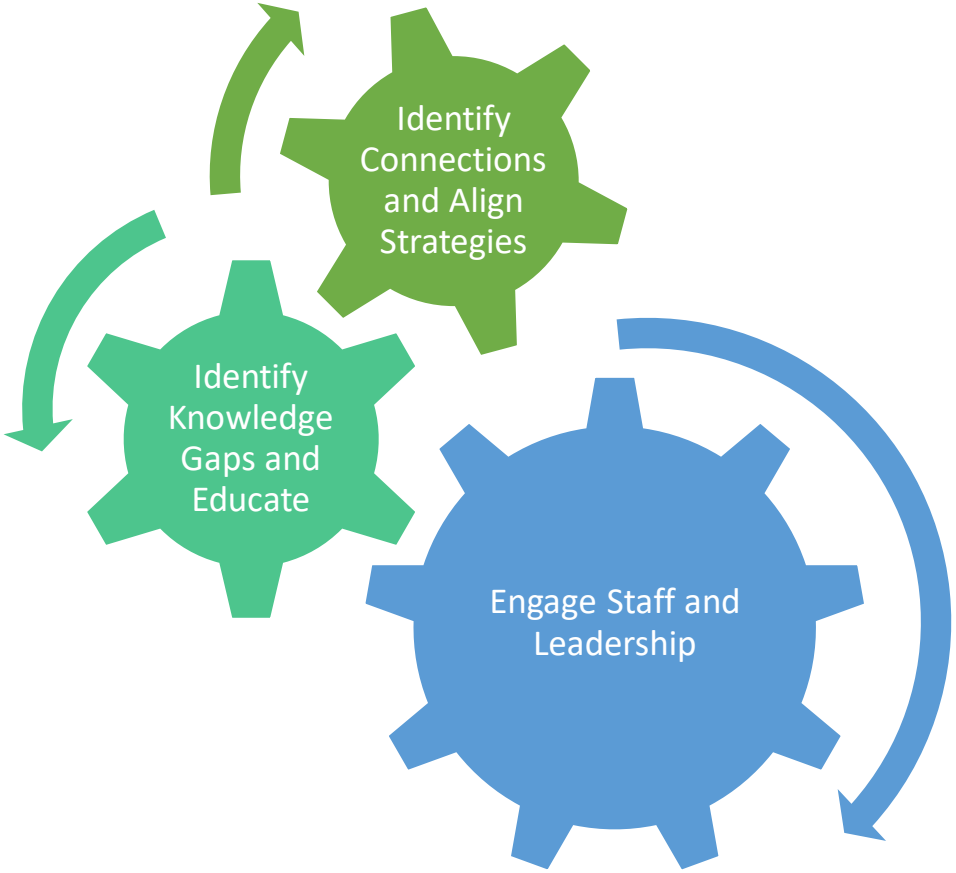
Strategy / Action	Description	
3.1 ACTION	Partner with public health researchers and organizations to better understand the localized air quality issues impacting citizens and specific transportation options that can improve health in these areas.	
3.2 ACTION	Explore opportunities to build partnerships with Wake County and other strategic stakeholders to advance equity and access benefits derived from vehicle electrification.	
3.3 ACTION	Work with transportation network companies to increase equity, access, and opportunity for low-income residents to participate in the lower-cost and higher-margin electric rideshare economy.	
3.4 STRATEGY	Help ensure that residents without access to off-street charging can charge an EV by: • 3.4A: Creating a right-of-way ordinance to allow curbside charging. • 3.4B: Encouraging charging in multi-family building parking facilities.	
3.5 STRATEGY	Work with others to create an EV charging station installation handicap parking standard.	

Equitable Economic Development and Public Engagement

Strategy / Action	Description	
4.1 ACTION	Engage in strategic partnerships to advance workforce development initiatives related to transportation electrification.	
4.2 ACTION	Engage regional businesses and entrepreneurs in the transportation electrification sector to identify demonstration and collaboration opportunities to advance electrification.	
4.3 ACTION	Integrate information into economic development marketing campaigns that showcases Raleigh's innovative electric mobility solutions to reinforce Raleigh's position as an international leader in technology innovation and support business recruitment efforts.	
4.4 ACTION	Create a public education and awareness campaign to increase the community's understanding of the broad benefits of transportation electrification, dispel myths, incorporate outcomes of funding opportunities such as the Volkswagen Settlement, and communicate Raleigh's transportation electrification implementation objectives.	
4.5 ACTION	Begin building relationships with rideshare companies and other partners to explore ways to encourage electrification of transportation network company fleets (e.g., taxis, Uber, and Lyft).	

Raleigh engagement process

1. Established goals and objectives
2. **Met with staff and leadership across City departments**
3. **Identified knowledge gaps and alignment opportunities**
4. **Developed and delivered educational content to level understanding**
5. **Engaged departments in collaborative strategic planning**
6. Identified strategies and actions to realize goals and objectives



Funding Opportunities & Strategies for Electric Vehicles & Infrastructure

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Funding Opportunities/Strategies

- **Federal/State funding and tax credits (currently 31 states)**
- Public private partnerships—Northeast EV Network, the West Coast Electric Highway, Washington State EV Action Plan, . . .
- **Charging as a Service**
- Cooperatives—Sourcewell, National Cooperative Buying Alliance, Fleets for the Future
- Leasing strategies—cash flow, Federal rebate

Grant Opportunities

- Federal:
  - Federal EPA Diesel Emissions Reduction Act (DERA): National, Tribal, School Bus Rebate, State
  - Federal FTA No-Low Grants
  - Federal: FAA VALE and Airport ZEV & Infrastructure Program
  - CARES Act
- State/Local:
  - State NCDEQ DERA
  - NC VW Settlement
  - Congestion Mitigation Air Quality (CMAQ) NCDOT
  - Clean Fuels Advanced Technologies (CFAT)
  - Grants to Replace Aging Diesel Engines (GRADE)
  - Duke Energy Filing

EPA DERA

- EPA DERA: https://www.epa.gov/dera
- National: https://www.epa.gov/dera/national
  - Last Round: RFP 12/09/2019, Application Deadline 02/26/2020, Total funding $44M
- School Bus Rebate: https://www.epa.gov/dera/rebates
  - Current Round: RFP 10/01/20, Application Deadline 10/30/2020, Total funding $10M

EPA DERA

- Eligible vehicle types, engines & equipment:
  - School buses
  - Class 5 – Class 8 heavy-duty highway vehicles
  - Locomotive engines
  - Marine engines
  - Nonroad engines, equipment or vehicles used in construction, handling of cargo (including at ports or airports), agriculture, mining or energy production (including stationary generators and pumps)
- Eligible project types:
  - EPA verified technologies or certified engine configurations
  - California Air Resources Board (CARB) Exit verified technologies or certified engines
  - Idle-reduction technologies that are EPA verified
  - Aerodynamic technologies and low rolling resistance tires that are EPA verified
  - Early engine, vehicle, or equipment replacements with certified engine configurations

EPA DERA

- School Bus Rebate 2020:
  - Total Funding $10M
  - Maximum award $300,000
  - Eligible projects and award amounts:

Table 2: Rebate Amount Based on Fuel Type of Replacement Bus

Fuel Type of Replacement Bus	Rebate Amount
Diesel or Gasoline	$20,000
Propane	$25,000
Natural Gas (CNG/LNG)	$30,000
Battery or Hydrogen Electric	$65,000

FTA No-Low

- https://www.transit.dot.gov/funding/grants/lowno

- Purpose: Provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities. **Funding amount 90% of project costs.**

- No-Low 2020:
  - Total Funding $130M
  - RFP 01/17/2020
  - Application Deadline 02/26/2020

- Local Awards:
  - Charlotte Area Transit $3,723,712 for 2020
  - Greensboro Transit multiple awards

FTA No-Low

- Eligible activities:
  - Purchasing or leasing low- or no-emission buses
  - Acquiring low- or no-emission buses with a leased power source
  - Constructing or leasing facilities and related equipment (including intelligent technology and software) for low- or no-emission buses
  - Constructing new public transportation facilities to accommodate low- or no-emission buses
  - Rehabilitating or improving existing public transportation facilities to accommodate low- or no-emission buses

Federal Aviation Administration

- Voluntary Airport Low Emissions Program (VALE):
  - https://www.faa.gov/airports/environmental/vale/
  - Project types: finance low emission vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements.
  - Pre-application deadline November 1
  - $10M-$30M annually
  - 75% to 90% reimbursement

- ZEV & Infrastructure Program:
  - https://www.faa.gov/airports/environmental/zero_emissions_vehicles/
  - $10M-$30M annually
  - Up to 50% reimbursement
  - 2017 RDU $1,633,300 for 4 electric buses

Federal Coronavirus Aid, Relief, and Economic Security Act (CARES) Act Fund

- CARES includes $25B for public transit to prevent, prepare & respond to COVID-19.
- NC transit agencies to receive $314M
- Funds are primarily for measures to protect the public and transit workers but if there are leftover funds there may be a possibility to use some for EV transit buses

NC State DERA

- https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-air-quality/mobile-source-emissions-reduction-grants
- 2020 Funding amount $616,835
- RFP 07/31/2020, Application deadline (extended) 10/30/2020
- Get on mailing list for announcements send email request to: daq.mscb.ncdaqgrants@ncdenr.gov

NC State VW Settlement

- https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement
- Total funding ~$92M
- 15% allocated for EVSE infrastructure
- Round 1 awards: $25.9M—Vehicles and DC Fast Chargers
- Round 2 RFP expected after January 01, 2021
- Submit email to daq.NC_VWGrants@ncdenr.gov with “Subscribe” in subject line

NC DOT CMAQ Funding

- https://connect.ncdot.gov/projects/planning/Pages/CongestionMitigationAirQualityNC.aspx
- Transportation related projects: Transit & Rail
- Annual funding ~$10M
- Application Instructions: https://www.crtpo.org/PDFs/Resources/NCDOT_Prioritization/Transit_CMAQ(Application_Instructions).pdf

NC CFAT Funding

- FHWA CMAQ Program Administered by NC DOT through the NC Clean Energy Technology Center
- https://nccleantech.ncsu.edu/our-work/center-projects/cfat-project-request-for-proposals-information/
- $1.2M-$3.0M annually
- Next RFP expected Q2-Q3 2021
- Up to 80% reimbursement

NC GRADE Funding

- EPA Program Administered by Mecklenburg County Air Quality
- https://www.mecknc.gov/LUESA/AirQuality/MobileSources/Pages/GRADE.aspx
- Available funding: $2M
- Accepting applications through January 15, 2021
- Subscribe for notifications: https://www.mecknc.gov/LUESA/AirQuality/Pages/Notify.aspx

NC GRADE Funding

- Eligible Counties:
  - NC: Cabarrus County, Gaston County, Iredell County, Lincoln County, Mecklenburg County, Rowan County, Union County,
  - SC: York County, SC

- Project Funding Levels:

Equipment or Vehicle Replacement Projects	Maximum Funding
Diesel to Diesel, Alt. Fuel, Hybrid	Up to 25% of cost of new equipment
Diesel to CARB[2] Optional Low NOx Standard	Up to 35% of cost of new equipment
Diesel to Zero Emissions Vehicle (ZEV), i.e. Electric	Up to 45% of cost of new equipment
Drayage[3] Diesel to Diesel	Up to 50% of cost of new equipment

[2] California Air Resource Board

[3] Drayage Trucks: A "drayage truck" means any Class 8 (≥33,000 lbs) highway vehicle operating on or transgressing through port or intermodal rail yard property for the purpose of loading, unloading or transporting cargo, such as containerized, bulk or break-bulk goods. Additional documentation required.

Duke Energy Filing

- Filing w/ NC Utilities Commission

- $76M for Electric Transportation Program in NC:
  - Critical electric vehicle funding assistance for school buses, public buses and fleet vehicles
  - EV charging installations at home could yield customers $1,000 rebate
  - Proposed program will support about 2,500 new charging stations in NC

DOE Alternative Fuels Data Center

- https://afdc.energy.gov/
- Laws & Incentives: https://afdc.energy.gov/laws
- Alternative Fuel Infrastructure Tax Credit through December 31, 2020—30% of cost up to $30,000

Charging as a Service

- Company or utility assists with equipment cost, potentially other costs and maintenance for a period of time
- Organization commits to a period of time, minimum level of use and cost for fuel/electricity
- OBE Power, Charge Point, EVgo have programs

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Steve Gucciardi
704-577-5587
sgucciardi@ci.charlotte.nc.us

- Sustainability & Environmental Project Manager City of Charlotte NC
- One of the primary project managers for the Charlotte's Strategic Energy Action Plan
- Focused on providing electric vehicle (EV) charging infrastructure for the City fleet and for the public

- Bachelor of Applied Science from UNC Asheville

City of Charlotte Electrification Story & Lessons Learned

- How we started

- Vehicle Planning:
  - Current fleet
  - Future plans
  - Lessons learned
  - Costs & Funding
  - Maintenance

- Charging Infrastructure:
  - Strategy
  - Best Practices
  - Site Selection & Considerations
  - Costs & Funding
  - Maintenance

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CITY OF CHARLOTTE

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George Linney
george.linney@greensboro-nc.gov
336-373-2724

- Transit Systems Planner for City of Greensboro
- Nearly 20 years with Greensboro Transit Authority
- Alumnus of North Carolina A&T

NC Municipal Transportation Electrification Learning Group Roundtable

Subtitle

10/29/2020

Presenter
George Linney

Process of Purchasing Electric Buses

- Issued the RFP for electric buses on May 2, 2017 (Not sure of the award date to Proterra Bus)
- First 4 buses (1 bus and major portion of 2nd bus paid with bond funds, remaining with grant funds)
  - Delivery 1/24/19
  - Purchase price $777,807/bus plus $45,000 per individual lot charger
  - Fast Charger station was ordered ($550,000)
- Next 6 buses (majority grant funded)
  - Delivery 3/22/19
  - Purchase price $783,837/bus plus $75,000 per individual lot charger
- Next 6 buses (majority grant funded)
  - Delivery 6/5/19 (3), 11/25/19 (3)

Operation Challenges

- Overhead Charging
- Fast Charging Window
- APEX Software (Beta Form)

Facility & Mechanic Challenges

- Fast Charger & Over night Chargers
- Technicians

Operator Concerns

- Training of technology
- Fast Charger Docking
- Ergonomic Challenges

Manufacture Support

- Proterra

Cassie Gavin
cassie.gavin@sierraclub.org

- Senior Director of Government Relations for NC Sierra Club
- Represents Sierra Club at the NC General Assembly and works with the media and volunteers
- previously worked in land conservation at the NC Coastal Land Trust in Wilmington
- JD from UNC Law School

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New Resources: EV Toolkits

- **AchiEVe Tool Kit – "Model Policies to Accelerate EV Adoption" -** by Electrification Coalition, Sierra Club, FORTH, Plug In America: https://www.electrificationcoalition.org/achieve/
  - **NC is one of the Electrification Coalition's target states.**
  - Includes examples from local governments where policies are working - such as:
    - EV-Ready Wiring Codes and Ordinances
    - Streetlight and Power Pole Charging Access
    - Using VW Funds for Electric School & Transit Buses
    - Using VW Funds to Grow EV Charging Networks
    - EV Infrastructure at Multi -unit Dwellings
    - Right-of-Way Charging
    - Charging Access in Underserved Communities

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New Resources: EV Toolkits

- **Electrify the South Toolkit "Policies for Local Governments to Accelerate EVs"** by SACE: https://www.electrifythesouth.org/toolkit
  - Living document (updated regularly)
  - Recommendations with policies include:
    - Create a Transportation Electrification Plan (ex. Raleigh)
    - Establish EV Municipal Fleet Goals (ex. Largo, FL)
    - Establish EV Public Transportation Goals
    - Promote EV Charging Access & Infrastructure
    - Establish Education and Outreach Initiatives
    - Promote Economic Development by Investing in Electric Transportation
    - Expand Equity and Access
    - Engage Your Local Utilities

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