SHARING 28 YEARS OF ELECTRIC VEHICLE EXPERIENCES-FAILURES; VICTORIES AND LESSONS LEARNED
Information:

- 17 Fixed Bus Routes
- 3 Neighborhood Routes
- Downtown/North Shore Electric Shuttle
- Care-A-Van
- Incline Railway
- Parking Management (CPA)
- 10 Park and Ride Locations
• Eight (8) of our oldest vehicles came from other transit agencies and were transferred to CARTA. 3 of those were part of research efforts conducted by a local university.

• Six (6) vehicles of our downtown electric shuttle fleet were purchased through discretionary Bus and Bus Facilities funds (5339).

• CARTA was able to leverage its all electric shuttle program, including prior research into inductive charging, in its successful application for TIGGER funds. This grant funded the purchase of CARTA’s first 3 all electric vehicles for its fixed route service, which included inductive charging infrastructure.
CARTA has utilized a variety of funding sources:
- FTA-5339/TIGGER
- TDEC-Tennessee Department of Environmental Conservation
- VW-Volkswagen
- Parking Authority revenue supports operational costs
- CARTA produces 44%-48% of its own revenue
• CARTA owns and operates three (3) parking garages-1,350 spaces-net revenue utilized for all transit operations

• CARTA manages and enforces Downtown On Street parking-2,100 spaces-net revenue is utilized for Shuttle expenses

• Total of Parking Lots-854 spaces-net revenue utilized for Shuttle expenses
SHUTTLE PARK
SOUTH TRANSFER,
MAINTENANCE
AND PARKING
GARAGE
1996 AVS SHUTTLE BUS
ELECTRIC VEHICLES

• Five (5)-1996-AVS Vehicles-lead acid
• Three (3)-2004 AVS Vehicles-Lead Acid
• Six (6)-2013-EBUS Vehicles-Lithium Ion
• Three (3)-BYD-35ft-transit-Lithium Ion
• Eight (8)-Gillig-35ft-Hybrids-Lithium Ion
• BYD-30ft-96 in wide vehicles-Lithium Ion-looking to use for replacement of AVS vehicles
• Operator and maintenance personnel training is essential
• Empower operators to recognize differences in vehicle performance and ensure a platform to report them
• On-going training for maintenance personnel is essential for a sustainable program—have a champion trainer who can share his/her knowledge with others
• Training and field support is a major weakness in the electric vehicle industry
• CARTA has experienced this for 28 years
• CARTA has been successful due to the maintenance team’s knowledge, dedication and willingness to experiment with different solutions to issues
• Need frequent on-site visits from technical support and training teams, not just sales team
• Never shortcut battery maintenance-more is better!
• Monitor buses while charging
• Frequent Preventative Maintenance (PM) is your friend-we do PM’s every 2,000 miles
• Confirm that the component is really the issue, don’t just assume (trust but verify)
• As vehicles age, diagnostic procedures need to adapt
• Newer vehicles with higher traction battery voltage are presenting a whole new set of maintenance & safety procedures
Thank you for your time-stay safe!

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