Barbados Transport Board E-Bus Project

CCREEEE Regional Electric Vehicle Strategy Seminar

June 16th, 2020

Antonio Sealy – Systems Engineer (Customer Solutions)

ELECTRICITY ...POWERING OUR NATION’S PROGRESS SINCE 1911
Summary of Project

• Biggest Public Transit Electric Bus Project in Caribbean
• 33 x BYD K8 Electric Buses (+ 2 Buses from MEWR Smart Energy Fund)
• 3 x Electric Depots
  o 18 Buses
  o 10 Buses
  o 5 Buses (+ 2 buses)
• Driving Range: ≈ 240 km (with AC)
• Charging Philosophy
  o Overnight Charging Only
  o No Opportunity Charging
  o Power Capacity to charge 50% of buses at each depot simultaneously
  o 80 KW chargers per bus (≈ 3 hours for a full charge)
• Electronic Load Management System
• Fleet Management and Monitoring
• Electric Vehicle Training
• Solar PV
Proposed E-bus Charging Profile

High Demand, Low Load Factor Energy Consumption!!
Improving the Transport Sector Through Electrifying Public Transportation

1. Reduced Operational Costs
   - Fueling Costs
     • $0.78/km to $0.96/km in electricity for Electric Buses
     • $1.41/km to $1.80/km in Diesel for ICE Buses (*very conservative*)
     • *Savings of $2M+/year for 33 Buses*
   - Maintenance Costs
     • Much reduced maintenance costs expected
     • Increased bus availability expected

2. Improved Comfort and Commuter Experience
   - Air Conditioning
   - USB Charging Ports
   - Wi-Fi
   - Wheel Chair Access Ramps

3. Improve Environmental Impact
   - Reduction in CO2 and particulate emissions

4. Improved Air Quality

5. Reduction in Noise
Leveraging Technology to Improve Transportation Planning and Operation

1. Load Management and “Smart Charging”
   - Fully maximize the variation in costs of electricity at different times of the day
     * i.e. Charging during off-peak period and maximizing lower electricity rates
   - Further optimize and reduce charging costs by managing the number of buses simultaneously charging and hence Demand Charges

2. Investment in Solar PV to further offset expenses
   - Transit Authorities can invest in renewable energy to further offset their fueling costs

3. Fleet Management and Tracking
   - Understanding how driver styles, routes, passenger loading, environmental conditions and other variables affect your costs for providing transportation service
   - With the additional data you can effectively plan how you dispatch buses for continuous improvement