

2021 WIPTA Conference

Battery Electric Buses: Lessons Learned

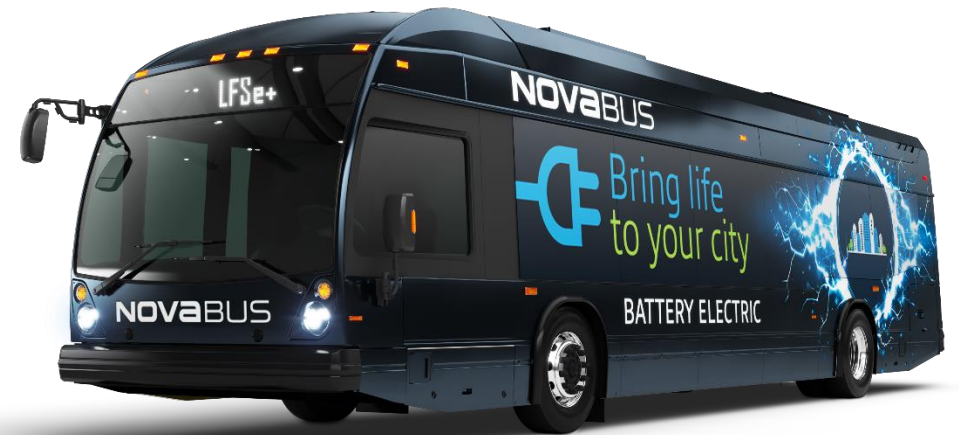
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“The Talk” – Preparing for Battery Electric Buses



- **Step One: Denial (Why ME!?)**
- **Step Two: Reality sinks in. (Do I have a problem? Where do I start??)**
- **Step Three: Ask for help. (How are the BEB going to be used?)**
- **Step Four: (Write or approve a BEB RFP for buses and charging infrastructure.)**
- **Step Five: Are we ready for BEB?**
- **Step Six: Reach freedom and stay there.**



Design Phase



Try, Try, Again!



Step Two: Where do I start?



Reality sinks in. Where do I start? Do I have a problem?

- Get Help!
- Call other Transits Properties for their ideas and lessons learned.
- Speak with bus builders.
- Ask for references.
- Trust, but verify.



Step Three: Ask for Help



- Hire additional internal staff.
- Because you will have a **REAL PROBLEM**, ask for professional assistance.
- Hire a professional engineering firm.
- For example, MCTS and Milwaukee County hired:
 - HNTB
 - AECOM
 - M.J. Bradley & Associates
 - Allume Architects

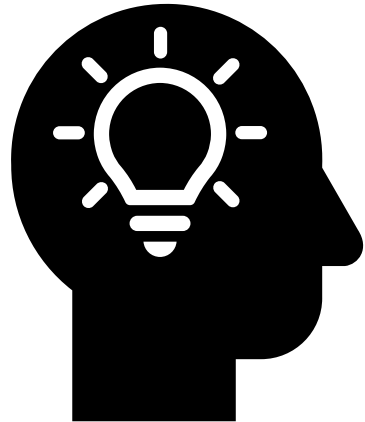
Step Four: Write or approve BEB/Charging RFP



- Do you have a bus RFP that you can use?
- Can you obtain a copy of a BEB RFP from another Transit Property?
- Always remember the "Three Rs of Maintenance."
 - Review, Review, Review.
- Trust, but verify.



Step Five: Are you ready for BEB?



- Measure once, check twice?
- What new systems or equipment are required to support BEB?
- In addition to the costs of the BEB vehicles and BRT platforms, did you plan for additional and unforeseen costs?
 - Examples:
 - New Electrical Infrastructure for Depot and or In-Route Charging
 - New bus lifts, new doors, new HVAC system
 - New Training Requirements for staff and First Responders
 - New PPE and testing Requirements for said PPE

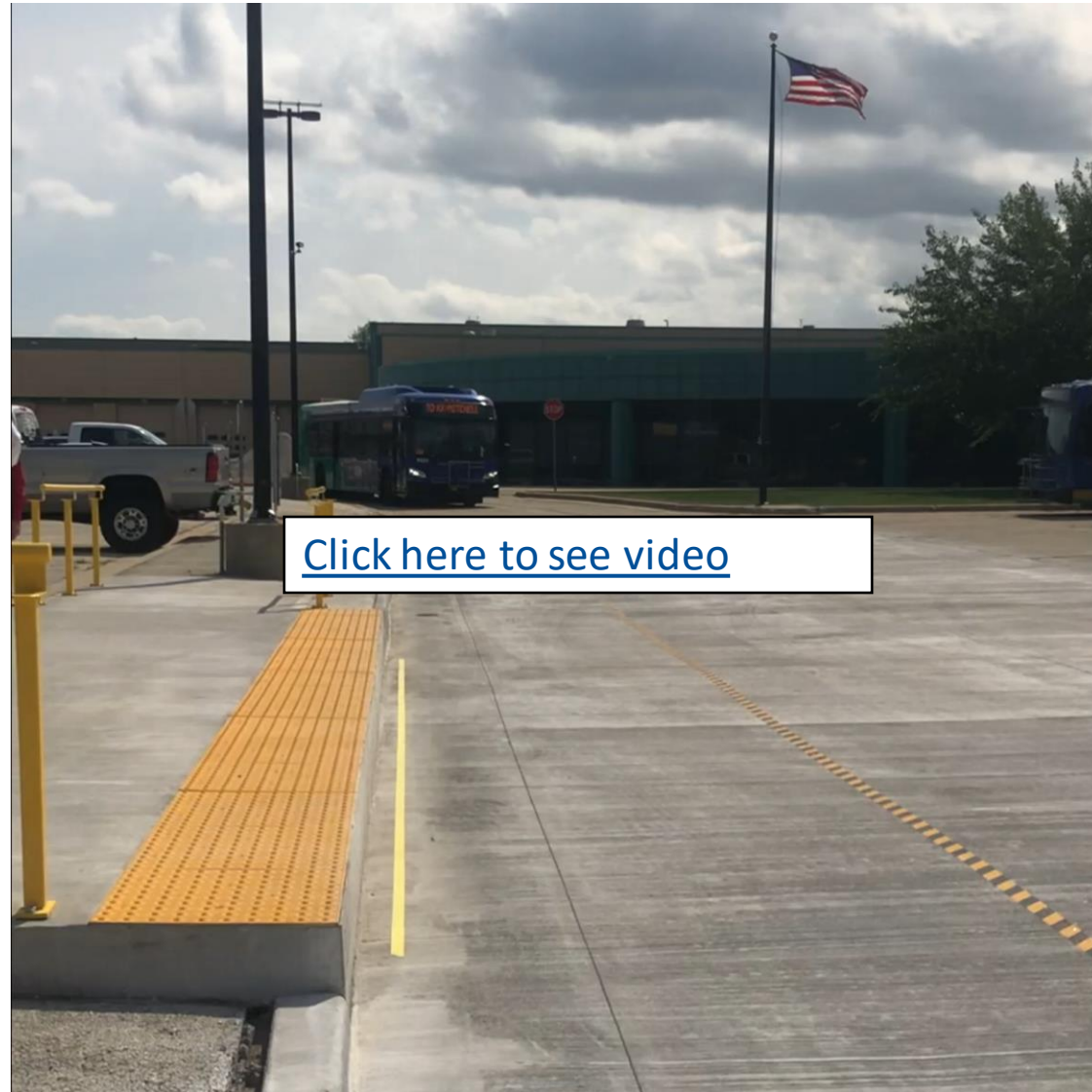
Step Six: Reach Freedom and stay there



- Continue to review, remeasure, and test as the BEB plan develops.
- You may know the dimensions, features and end use of the bus. Do not assume anyone retained to assist will have that knowledge or end use.
- Continued communication with the BEB vendors from the RFP award through the actual delivery and final testing.
- Finally: Always have a contingency plan for success!



BRT Training Platform



Depot and in-route chargers



Coming Soon to Milwaukee!



Nova Bus LFSE+ (driven by BAE Systems)



NOVABUS

BAE SYSTEMS

Thank you!

