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Fleet Electrification Support by a Microgrid

Case Study: Martha's Vineyard Transit Authority

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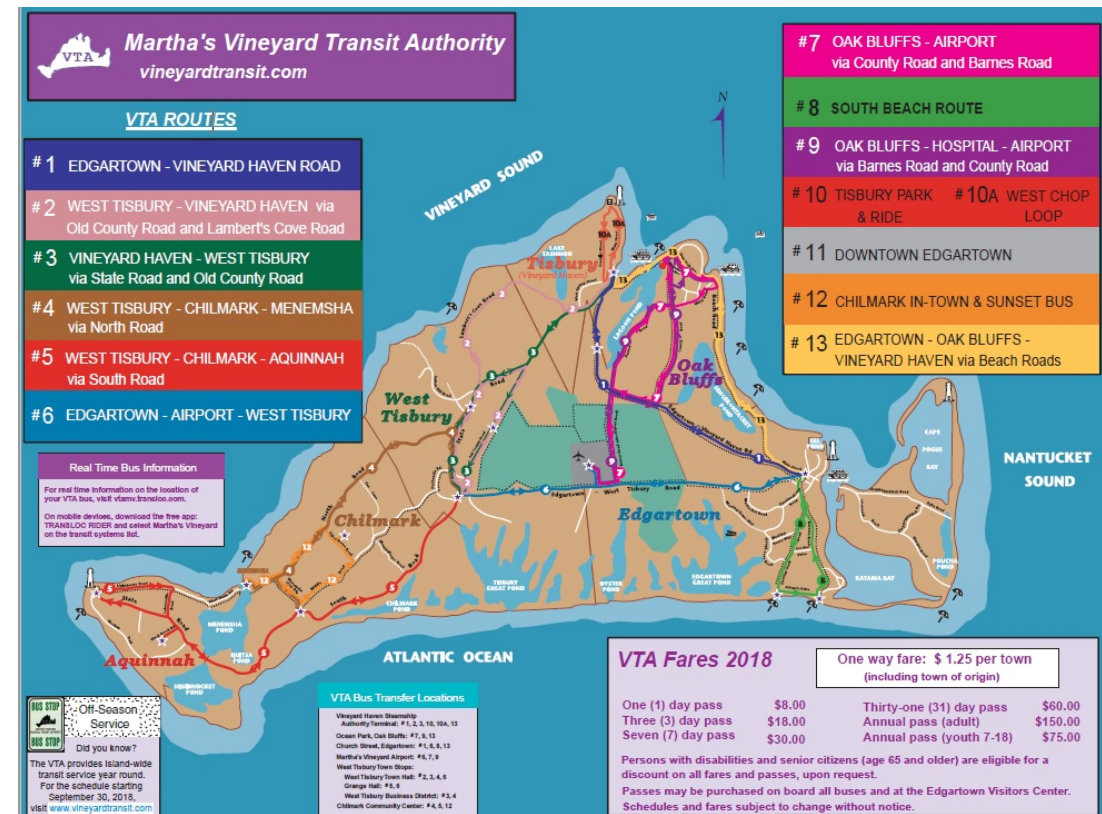


- VTA Project Overview
- Project Planning & Implementation
- Lessons Learned

Agenda

About Martha's Vineyard Transit Authority

- Peak Summer service
- 12 year-round routes + 2 more in summer
- Operating budget \$5.77M
- Capital budget \$3M
- 32 vehicles in the fleet, 70% of which need to be replaced before 2022



VTA Vision: Reliable, Efficient and Clean

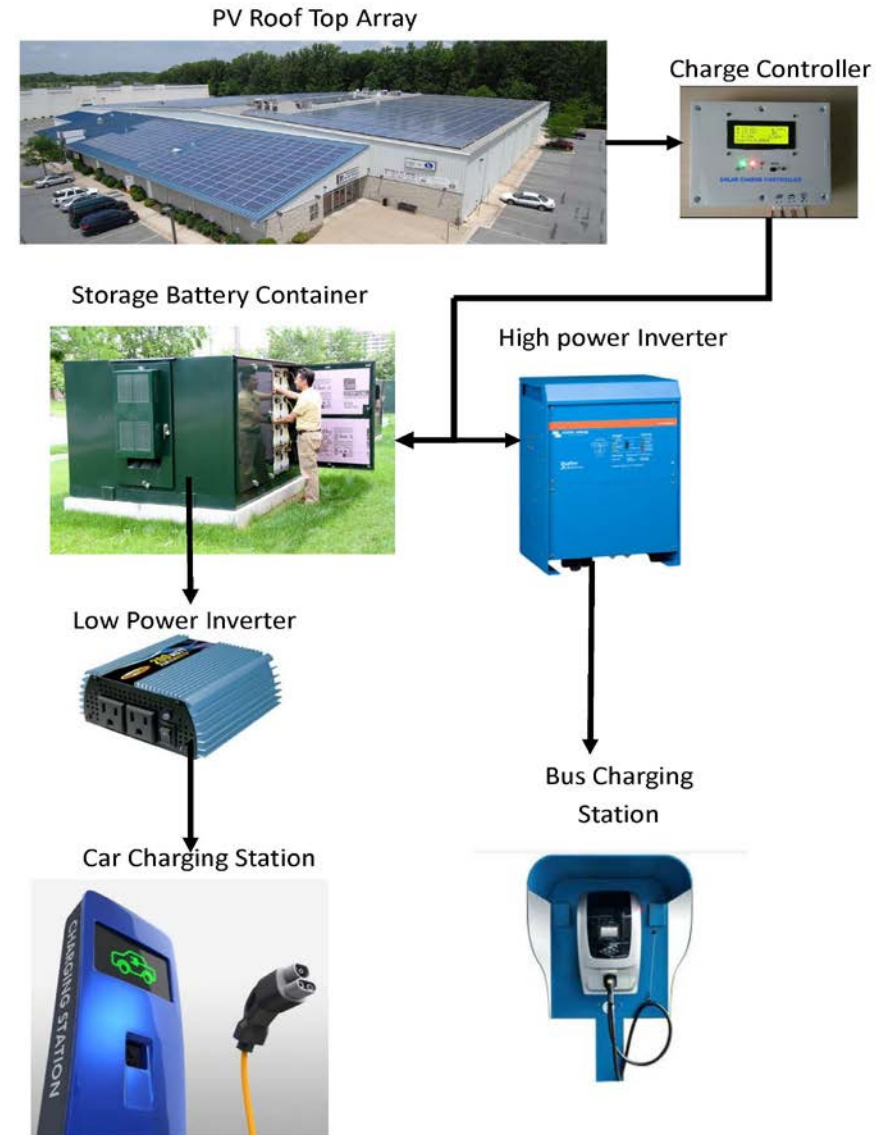
- Focus on Service Reliability
 - Emissions standards impacting reliability of diesel vehicles
 - Electric buses will improve reliability
 - Easier to get and keep in service
 - Lower maintenance costs
- Improved Image and Appeal
 - Cleaner and Greener
 - Quieter
 - Rider perceptions essential to successful transit

Question: Is there a fuel that can better serve the VTA's operational needs?

Answer: Yes, it's electric!
But.....

The Solution:

An electrified transit fleet fueled by a renewable energy micro-grid



Benefits of a Micro Grid in Theory

- Redundant electric charging system
 - Allows charging when the grid is down
 - Reduces electrical demand charges
- Supports fast charging systems to avoid extreme draws of energy off the grid



What Does this Look Like for the VTA?

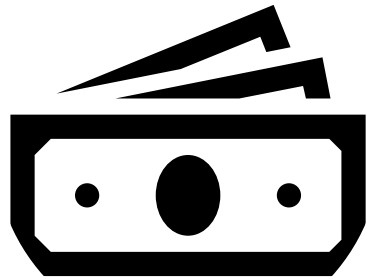
- Depot chargers, solar, and storage installed at maintenance garage.
- Inductive in-route charging planned at three strategic locations on the island.
- Solar and storage installations at inductive sites.



Project Phases



**Planning
and
engagement**



Fundraising



**Fleet
electrification**



**Charging
and
microgrid at
facility**



**On-route
charging
and micro-
grids**

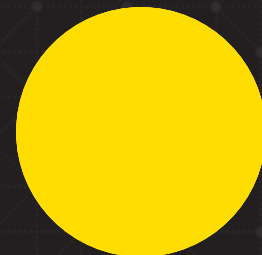
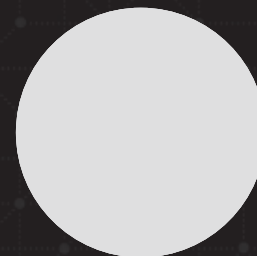
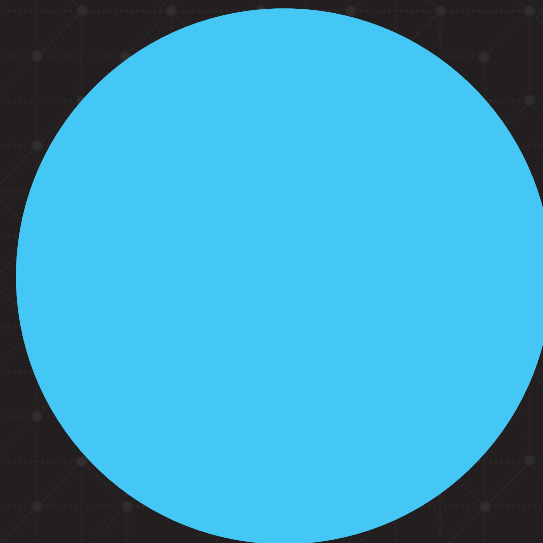
Project Status

- Funding raised from federal and state sources
- ESS RPF out now for maintenance garage and first in-route location
- Maintenance garage infrastructure updated
- 10 buses ordered from BYD, six on site
- 70% of funding raised for one of the inductive charging sites
- 6 depot chargers installed
- Working to finalize solar contract





Lessons Learned to Date



Lessons Learned

- Look at traditional and non-traditional funding sources
- Build a team you trust
- With new and emerging technology not everything is available off-the shelf
- Engage stakeholders early
- Electrical infrastructure requires a lot of process and long built times
- Make sure to future proof!

For more
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Thank
you!