Zero Emission Electric Buses

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Ride On Transit Services

Where the Electric Buses will be placed and the charging infrastructure installed.

- Ride On currently has 4 electric buses in-house. Service is planned for Fall 2020
- The Electric Buses and Charging Infrastructure is stored at the Silver Spring Depot. Currently, there aren't any plans to do in-route charging however the County is prepared to revisit charging as its transportation needs and battery technology change.
- The Electric Buses will be on the Route 18 and Route 25 in Takoma Park. These Routes are run during the AM and PM peak hours and are less than 100 miles for each route.
- This goes hand and hand with Takoma Park going Green as much as possible.

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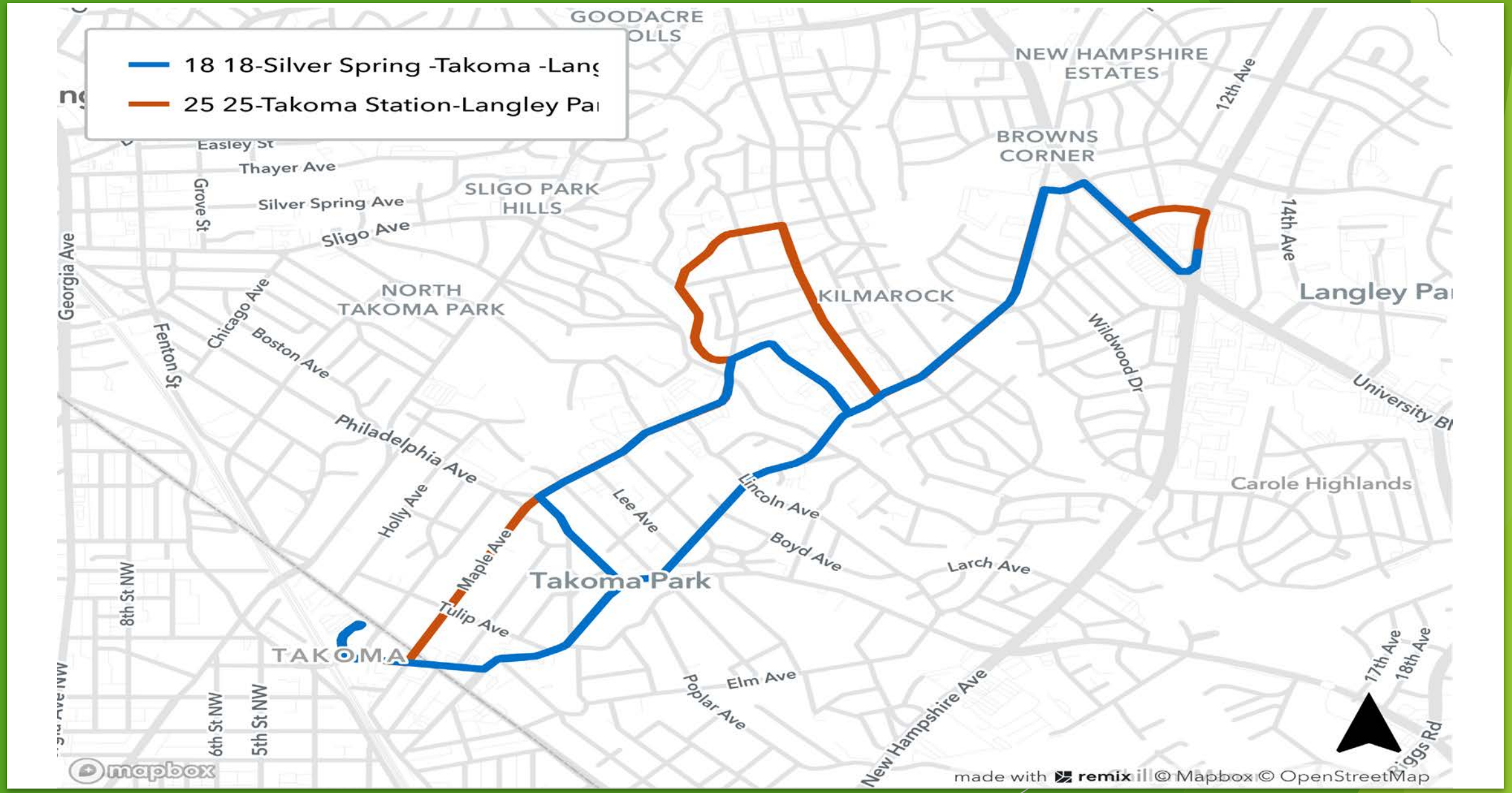
18 18-Silver Spring -Takoma -Lang
25 25-Takoma Station-Langley Par
GOODACRE
OLLS
NEW HAMPSHIRE
ESTATES
12th Ave
BROWNS
CORNER
Easley St
Thayer Ave
Grove St
Silver Spring Ave
SLIGO PARK
HILLS
Sligo Ave
14th Ave
Georgia Ave
NORTH
TAKOMA PARK
KILMAROCK
Langley Par
Chicago Ave
Fenton St
Boston Ave
Wildwood Dr
University Bl
Philadelphia Ave
Carole Highlands
Holly Ave
Lee Ave
Lincoln Ave
Maple Ave
Boyd Ave
Takoma Park
Larch Ave
Tulip Ave
8th St NW
TAKOMA
Elm Ave
Poplar Ave
New Hampshire Ave
17th Ave
18th Ave
6th St NW
5th St NW
Riggs Rd
mapbox
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Plans for Procuring buses and Charging infrastructure:

- Montgomery County currently has an open procurement for 10 additional buses awarded as FTA's Bus and Bus Facilities grant. Montgomery County is also in the process of developing a bus specification for long-term bus procurement that will include electric buses.

- Montgomery County is also in the process of developing a microgrid project for its Silver Spring Depot that will include charging infrastructure for up to 70 electric buses. The contract has been awarded to AlphaStructure and is currently in the developmental phase with a projected completion date of late 2021. The project is currently planned to use solar, battery storage, and natural gas power generation to produce 100% of the electricity to power buses.

- The project is a P3. AlphaStructure will purchase, operate, and maintain the microgrid and charging infrastructure and the County will pay for it on a throughput basis over 20 years.

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What performance criteria are being considered for evaluating the deployment of the Electric Buses?

- ✓ Warm weather and Cold weather range
- ✓ Durability
- ✓ Maintenance impact
- ✓ Battery condition and lifecycle
- ✓ Battery SOC
- ✓ Battery electrical throughput
- ✓ Operating cost
- ✓ Charging time
- ✓ Electric load share
- ✓ Infrastructure management
- ✓ Route modeling for electric bus expansion.

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Human Resources or Technology Issues/ Such as training mechanics on the Electric Buses. Getting contracted support from the manufacture for some time.

- While these buses are different Montgomery County has drawn from its experiences with its CNG and Hybrid fleets. Many of the initial vehicle challenges like range and infrastructure demands mirror some of the early challenges with CNG. Additionally, Montgomery County has worked some of the challenges with vehicle electrification and battery technology with its hybrid fleet. While there are some distinct differences in those technologies our experiences allow us to take pieces from each to help us prepare. Additionally, we've worked with partners like CTE as well as visited transit properties like DC Circulator, SEPTA and Foothill Transit to get their feedback as we worked through the vehicle specification, route modeling and charging plans.

- We've been working with the vehicle manufacturer for training. We're conducting basic level e-Bus training for all of the technicians at the Silver Spring Depot with advanced level training for our lead technicians.

- Currently, the vehicle manufacturer has been responsive to the County's needs however the project is very new and the vehicles are still under warranty.

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- A breakdown of the most common issues with Electric Buses.
- Sharing of range data with SOC and average ambient temperature.
- Battery degradation modeling- The effects of battery aging and range.
- Lifecycle cost data comparing Electric Buses with other bus types.
- Feedback on newer Electric Bus systems- The electrical propulsion systems, battery storage systems and electric operating systems are evolving with each bus order.

What questions would you have of systems with more experience or at the same stage?

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What could the region do: share lessons learned? Joint Procurements? Shared Parts Facility?

- Work with organizations like APTA and ZEBRA (Zero Emissions Bus Alliance) to put together an Electric Bus group on the East Coast.
- Modeled after the TIGGER teams used by DOE during the early implementation of CNG.
- These groups worked like technical teams that met annually to discuss technical challenges.
- The group often invited manufacturers to the meeting to discuss challenges and fixes with the manufacturers directly.
- Provided early feedback to manufacturers so that challenges could be addressed prior to manufacturing.

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