Transit Signal Priority Pilot Update

Transit Advisory Committee

Department of Environmental Services
Transportation Engineering and Operations Bureau
Arlington Transit

November 12, 2024

ARLINGTON
VIRGINIA

What is TSP?

- Transit Signal Priority (TSP) is a technology that can enhance traditional transit services by facilitating bus movements through intersections controlled by traffic signals.

- Goal of TSP To coordinate transit buses and traffic signals to reduce the time buses are stopped at traffic lights along a corridor; therefore, improve bus travel times.

Goals and Regional Context

Arlington's Goals

- Maintain reliable transit service and increase on-time performance.
- Achieve overall corridor transit travel time savings and reduce delay and emissions at intersections.

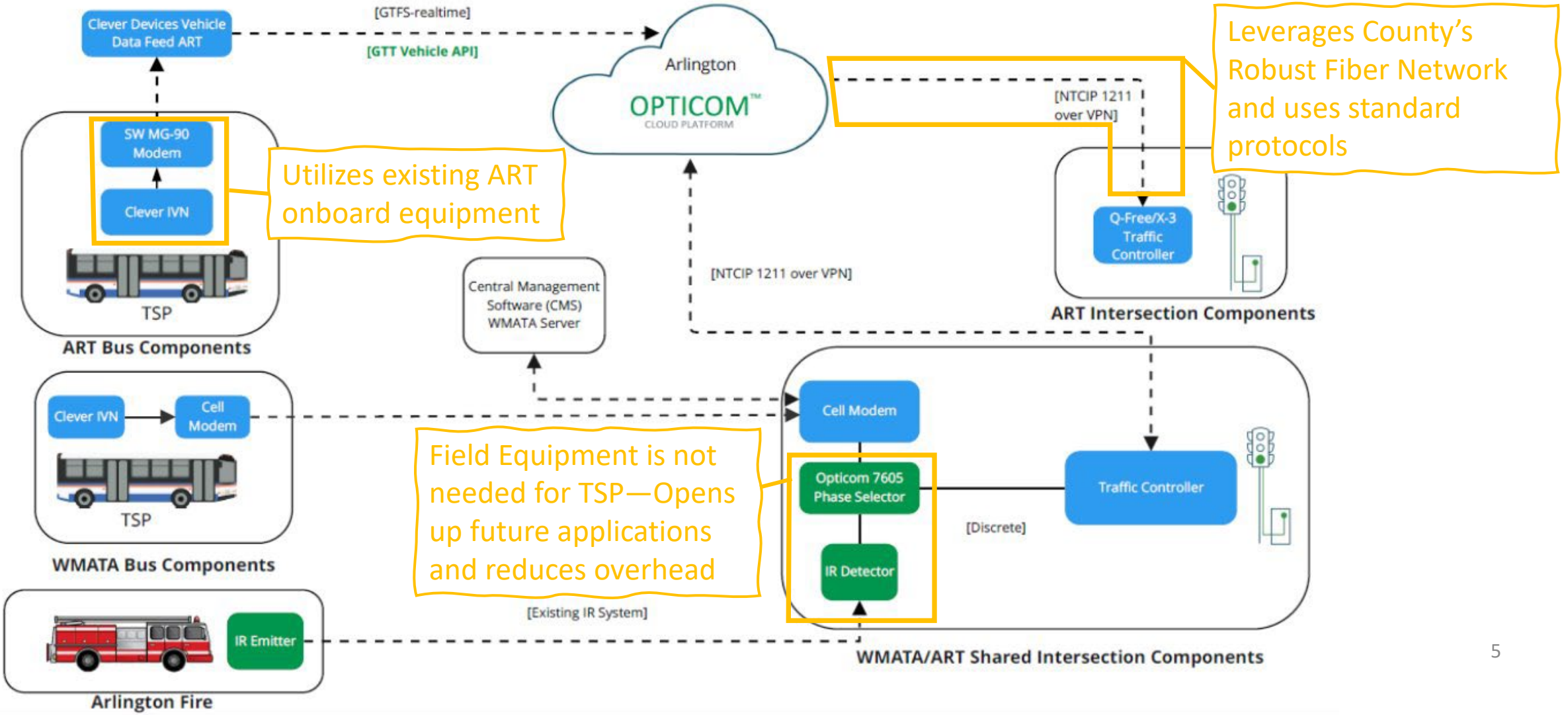
Regional Context

- On busy corridors in NOVA, buses spend about approximately 18% of time stopped at traffic lights, which is one factor to slow bus service.
- New & infill development brings construction and increased density = additional travel time delays for buses.

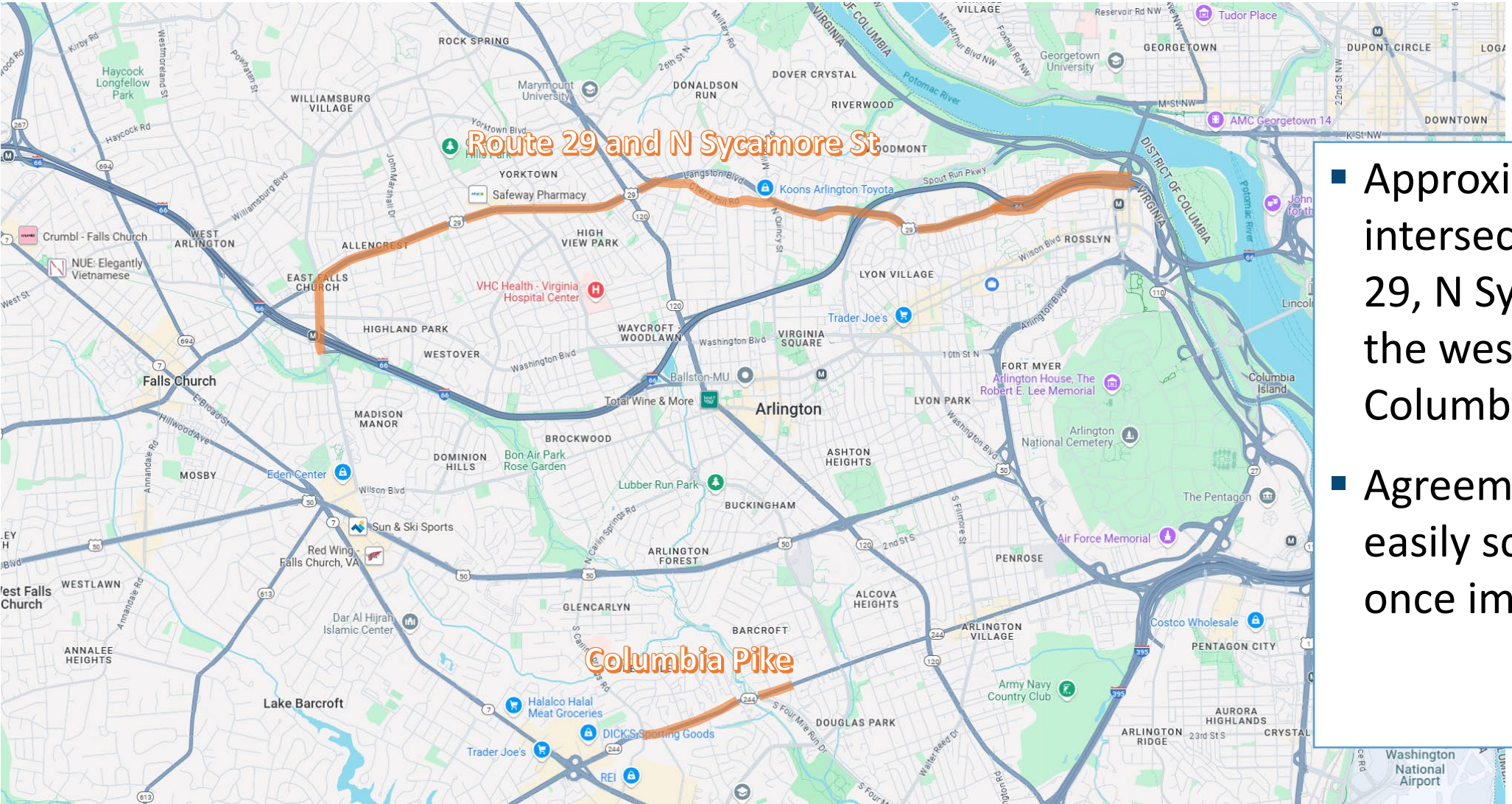
Overview of the System

Choosing an Appropriate Architecture

System Architecture (2024)



Pilot Project Area



- Approximately 39 intersections along Route 29, N Sycamore St, and the western portion of Columbia Pike
- Agreement provides an easily scalable solution once implemented

Challenges to Starting Implementation

- Procurement of the system was difficult due to the unique nature of the solution
  - Requires an approach that works well with the equipment deployed in the field and the various systems in place at the intersection and on the vehicles
  - Must be compatible with WMATA current and planned architecture as well as current emergency vehicle pre-emption
- Large Networking and Security Effort needed to open the pathways of communication between external servers and secured networks
  - Between GTT Cloud and Traffic signal controllers
  - Between GTT Cloud and Transit Data streams
- Configuration of hardware on the Transit Fleet was difficult to edit and plan updates for due to maintenance provided by Clever Devices

Pilot Project Status

Update on Progress and Schedule

Project Milestones and Progress

- Traffic Engineering and Controller Programming
  - Programming is completed, field cabinet configuration in progress
  - Timing strategies selected and programmed
- Proof of Concept (Virtual Bench Testing)
  - Communications established between GTT Cloud and test controller on County network
  - GTT is still trying to figure out how to append the data from the buses to not require a change to the onboard equipment
- Field Testing (60 days) will begin after the virtual testing is completed
- Evaluation of Effectiveness (to be studied following Field Testing)

Remaining Project Activities

- Complete Pilot Testing (Bench Test Virtually)
  - Currently dependent on transit data side of the solution which is still pending
- Field Implementation
  - Only 1-2 weeks depending on timing of Pilot Test Completion
  - Schedule Adherence Values must be confirmed prior to implementation
- Field Acceptance Testing (60 days) – **Expected Completion in February 2025**
  - System will be running in field using adherence values
  - County will observe and testing the active system
- Assessment of effectiveness and determination of which corridor to implement TSP along next
  - Currently, top candidates are Columbia Pike and Glebe Rd

Questions?