

Transit Signal Priority

March 2022 Study and Project Update

Arlington's 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, Metrobuses 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

Transit Signal Priority - Overview

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.

Transit Signal Priority - Overview

What is NOT TSP?

- Transit Signal Priority (TSP) is not designed as a standalone solution to increase frequency of service or reduce the number of buses operating on corridors.

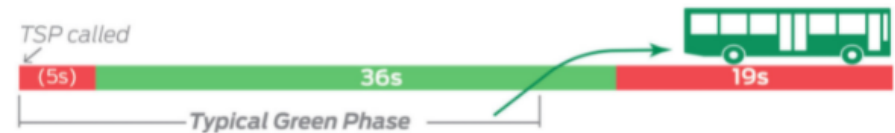
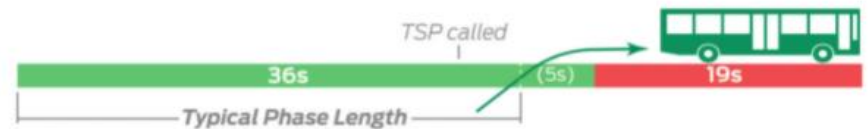
TSP is one tool that can work well with other measures to improve bus speeds, such as:

- **all-door boarding**
- **dedicated bus lanes**

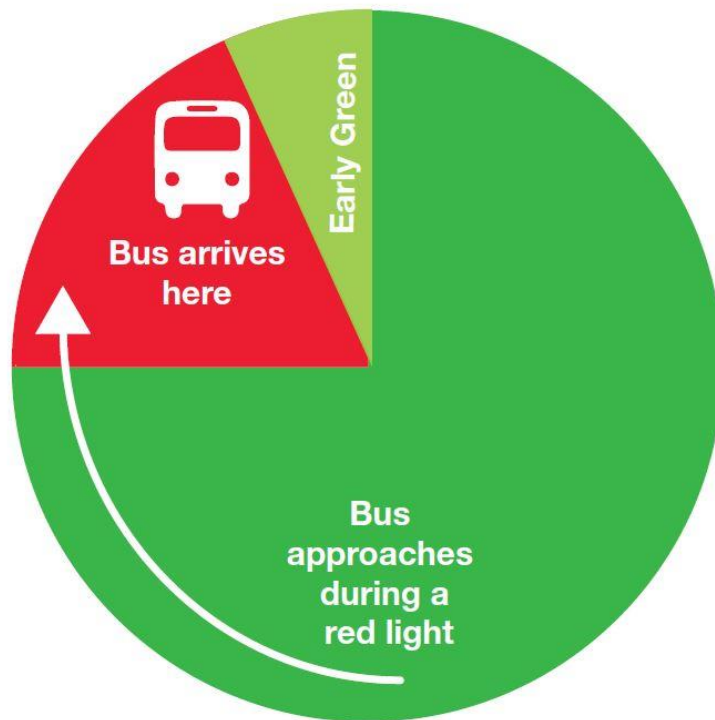
While these tools can be applied individually, in many cases they provide the most benefit when applied together

Transit Signal Priority Treatment Types

- Green Extension – provides extra time for a detected transit vehicle to clear an intersection
- Green Reallocation – shifts when in the signal cycle the green phase occurs, Requires AVL Tech
- Red Truncation – provides a green phase earlier than otherwise programmed, clearing an intersection approach with a waiting transit vehicle sooner than otherwise.



Treatments Being Considered



EARLY GREEN

When the light turns green a bit early as the bus approaches the intersection where Signal Priority is applied.



EXTENDED GREEN

- When the light turns green a bit early as the bus approaches the intersection where Signal Priority is applied.

Transit Signal Priority Feasibility Study

- Feasibility Study began in the summer of 2021
- Study Team with consultant reviewed current signal operations on several corridors
- Determined how best to accommodate bus travel while maintain traffic flows
- Determined if bus stop locations need adjustment to support TSP
- Determine which intersections within each of the corridors are eligible for TSP

Corridors Evaluated

| Corridor | Corridor Extent | Bus Routes Served | Number of Signalized Intersections |
|--|---|---|------------------------------------|
| Langston Blvd | full length within Arlington County | Metrobus 3Y ART 55 | 31 |
| Glebe Road | between I-66 and Walter Reed Drive | Metrobus 10B, 23A, 23B, 23T ART 41 | 17 |
| Washington Blvd | between I-66 and Arlington Blvd | Metrobus 2A, 38B ART 42, 77 | 11 |
| Crystal City – Pentagon City Corridor | Crystal Drive between 33rd Street S and 12th Street S | Metroway Metrobus 23A, 23B ART 43 | 6 |
| Columbia Pike | full length within Arlington County | Metrobus 16 Line Services ART 41, 42, 45, and 74 | 24 |

Evaluation Criteria Used

Transit Operations

- Service Demand (frequency and passenger activity)
- Effectiveness (schedule variability and runtime)
- Stop Locations

Traffic Operations

- Volume to Capacity
- Slack Time
- Pedestrian Phase Timings (auto)

Study Findings and Recommendations

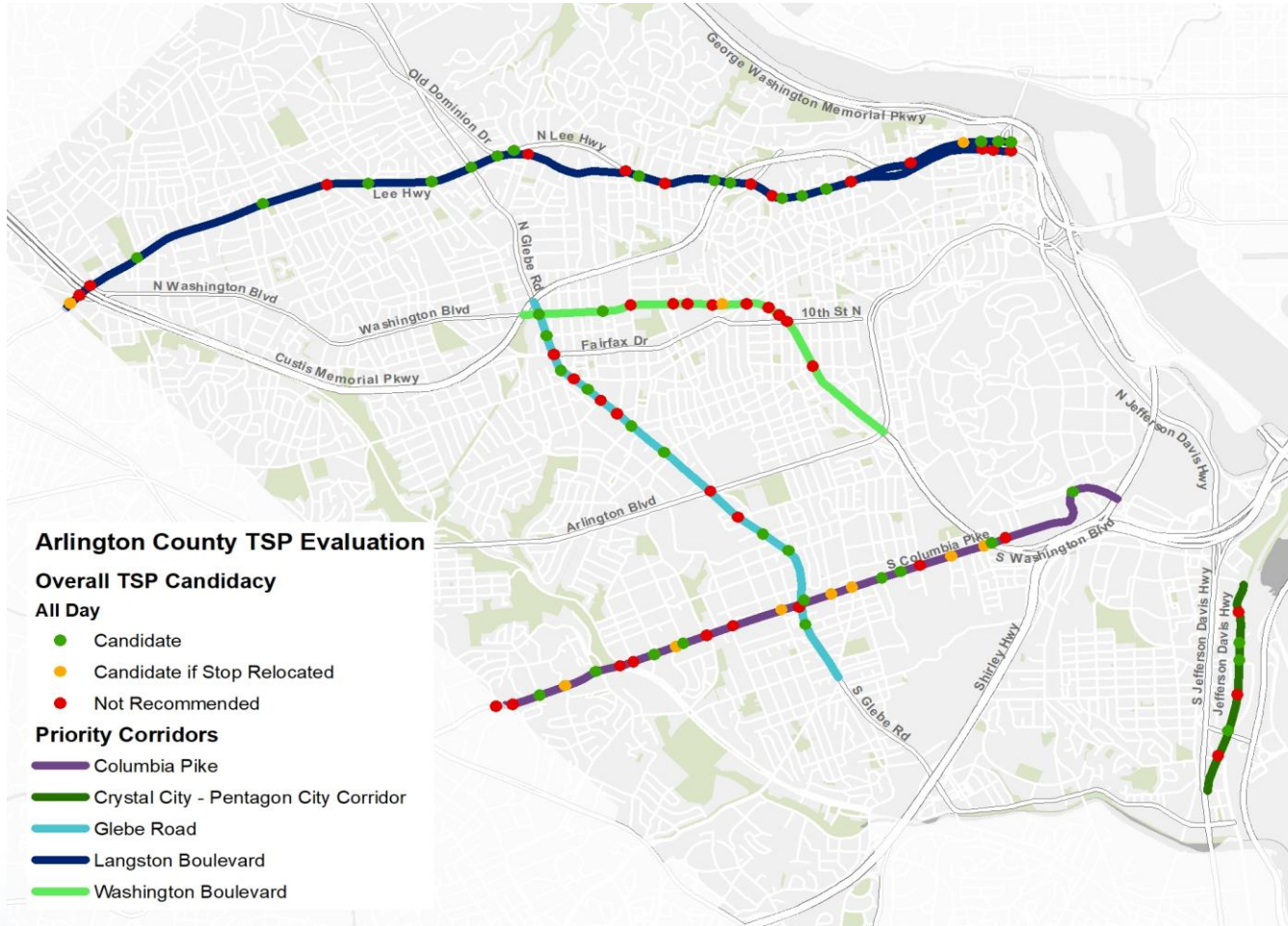
Corridors Moving Forward

1. Langston Blvd
2. Columbia Pike
3. N/S Glebe Road
4. Crystal Drive Corridor

Study Recommendations Moving Forward

- Establish Technical Team (Transit, TE&O, Metrobus Planning/Transportation staff)
- Plan Development for Design and Implementation Phases

Study Findings and Recommendations



**Overall
Candidate
Locations**

Project Schedule

| | |
|--|------------------|
| Design Phase Begins | Late spring 2022 |
| Equipment Installation Phase Begins (ART) | summer 2022 |
| Testing and Acceptance Phase Begins (Langston Blvd Corridor) | fall-winter 2022 |
| Signal Prioritization – In Service (Langston Blvd Corridor) | winter 2022 |
| Testing and Acceptance Phase Begins (Columbia Pike Corridor) | TBD 2023 |
| Signal Prioritization – In Service (Columbia Pike Corridor: S. Jefferson to S. Buchanan) | TBD 2023 |
| Signal Prioritization – In Service (Columbia Pike Corridor: S. Monroe St – S. Courthouse Rd) | TBD 2023 |