Transportation System Management & Operations (TSMO) Project Overview

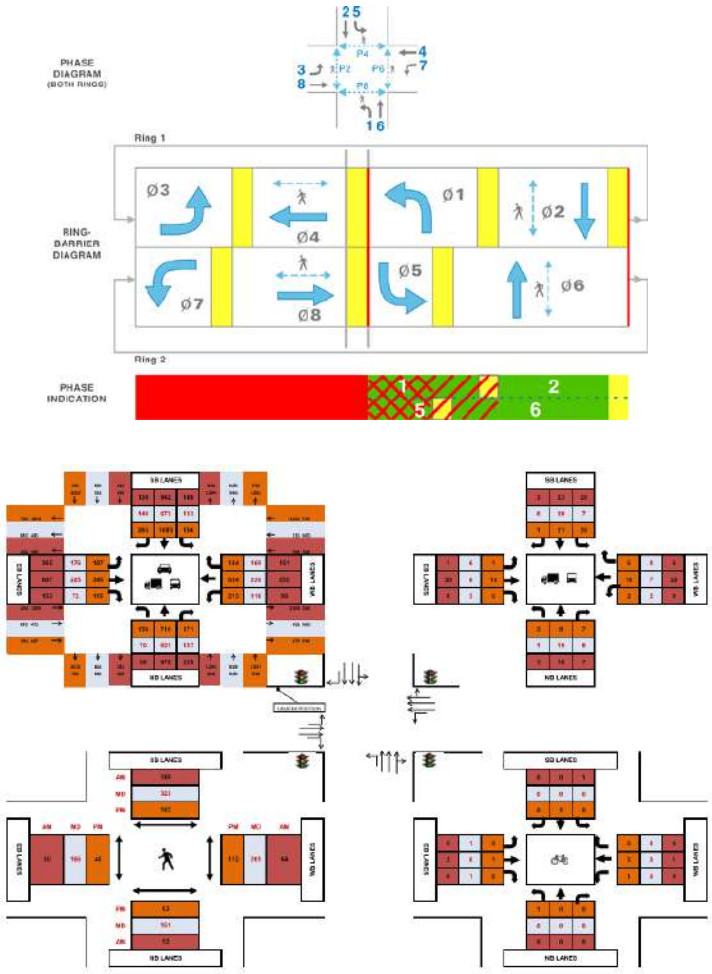
Recent Projects: Fiber Infrastructure and Signal Optimization

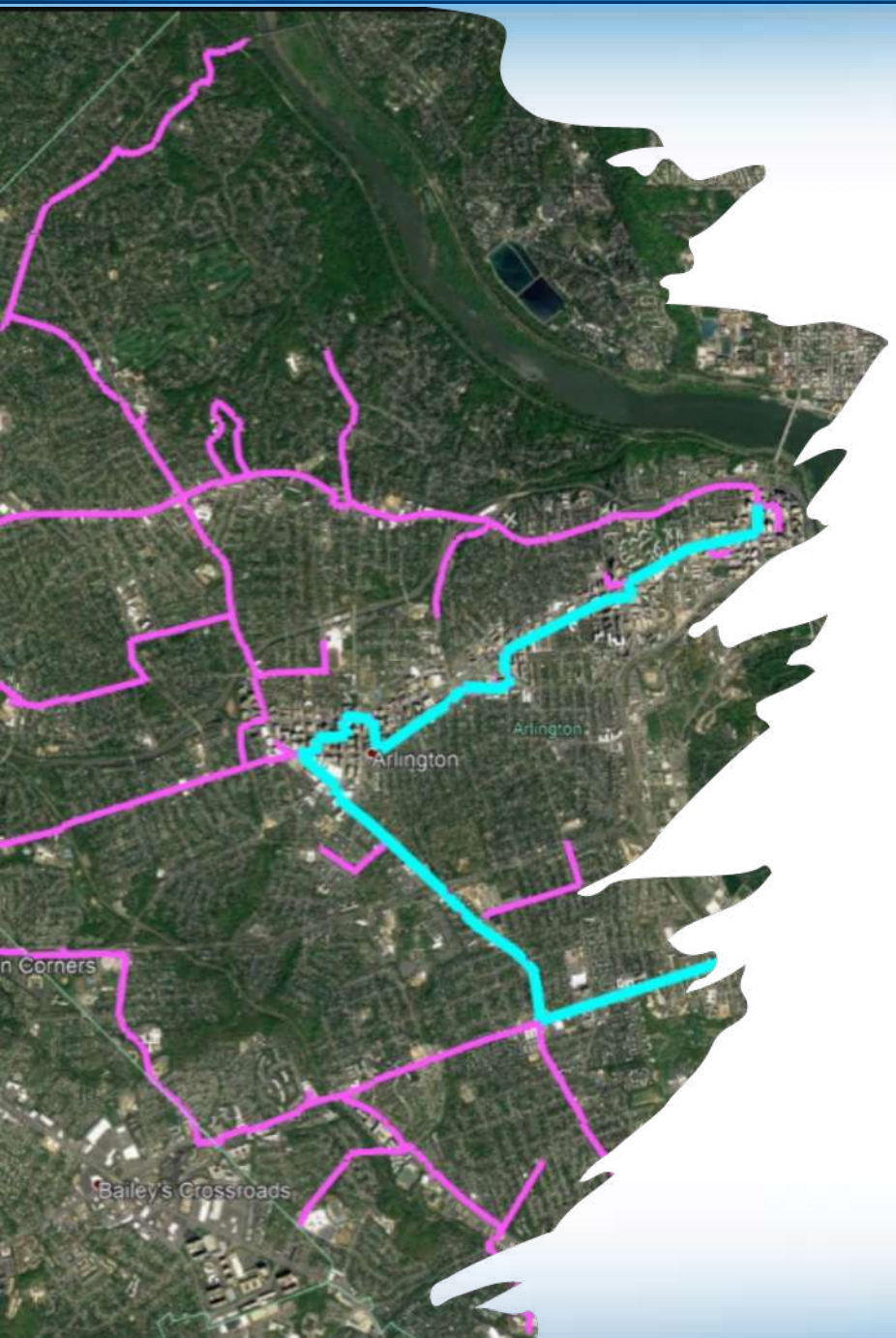
ARLINGTON
VIRGINIA

DES-Transportation Engineering and Operations
01/27/2022

Background

- TSMO projects look to maximize the efficiency and benefits of existing roadway infrastructure and typically do not include roadway capacity improvements.
  - Two recent examples include: TSM& Communications Upgrade (completed in late 2018) and the ongoing Signal Optimization program
- Regional Surface Transportation Program (RSTP) & Congestion Mitigation and Air Quality (CMAQ) funds historically utilized for these projects
  - Subject to state/federal oversight





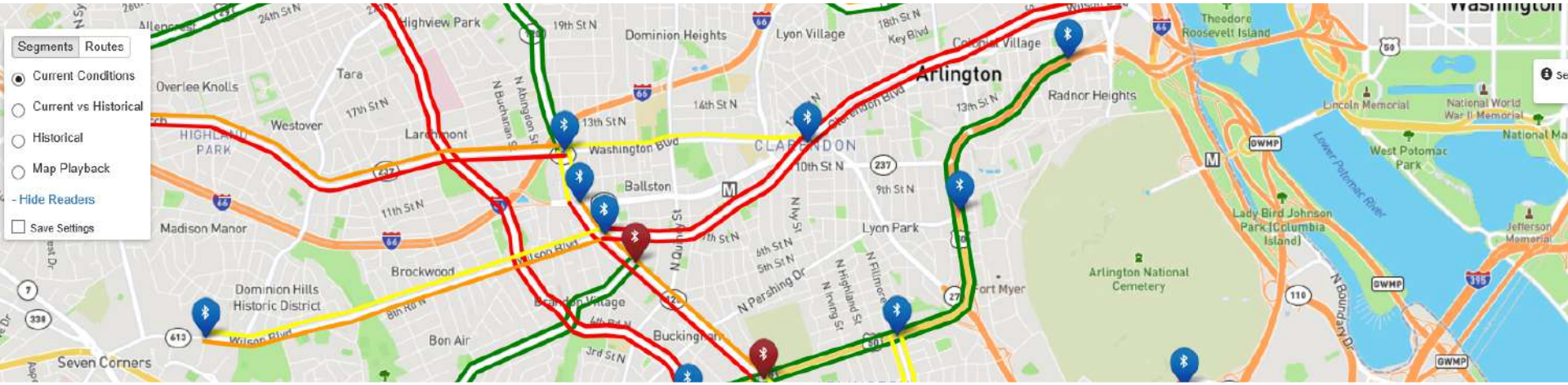
TSM & Communications Upgrades (Fiber)

- Project replaced copper signal communications infrastructure with a redundant fiber network

  (original ITS grants became first portions of ConnectArlington initiative)
- Fiber communications enables low latency communication resulting in:
  - –Improved monitoring (CCTV, alarms, configuration, data collection, etc)
  - –Improved reliability
  - –Improved capabilities for future applications such as Connected Vehicles, Automated Traffic Signal Performance Metrics, etc.

TSM & Communications Upgrades (Continued)

- Final phase of the project was completed in 2017 for less than the original estimated cost
- All traffic signal controllers now connected via fiber, CCTV capabilities greatly expanded, equipment configuration and status available real-time



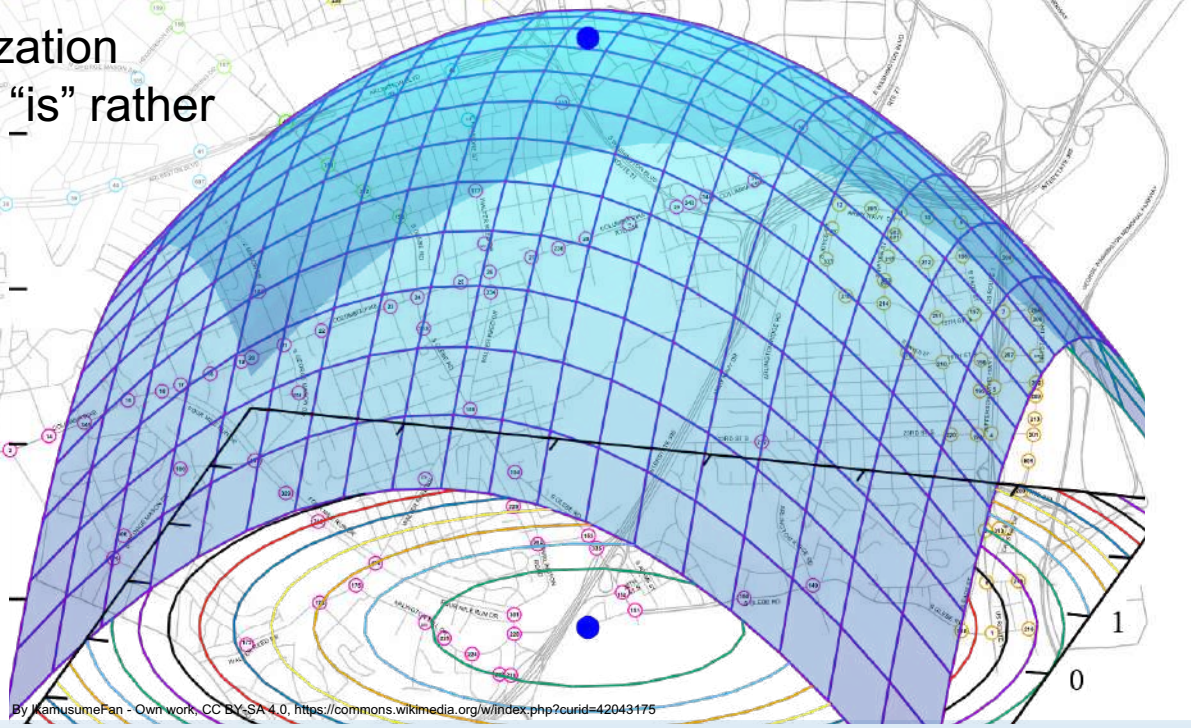
Signal Optimization

- Data intensive process for retiming signals with the *traditional* goal of improving air quality through traffic congestion mitigation
- County typically completes a cycle of the optimization every **three years** with the County divided into six “corridors”.
- Many factors go into optimization selection.
- Because it is ongoing, optimization strategies are based on what “is” rather than what “will be”

Project was on pause for last two years due to inconsistent travel patterns. Signal timing changes have been ad hoc in meantime.

Project has restarted in 2022.

- ❑ Multimodal Traffic Data
- ❑ Roadway Geometry
- ❑ Speed Data
- ❑ Turning Restrictions
- ❑ Transit Data
- ❑ Signal Timing Data
- ❑ Safety



Questions?

- Useful Links
  - TSMO Information from FHWA https://ops.fhwa.dot.gov/tsmo/
  - Signal Timing Manual https://ops.fhwa.dot.gov/publications/fhwahop08024/index.htm
  - http://www.signaltiming.com/resources.html
  - NACTO info on Coordinated Signals https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/traffic-signals/coordinated-signal-timing/