Transit Priority

Mobility Committee

April 6, 2016

Why Transit Priority?

- Increases person throughput

- Reduces time buses are stuck in traffic

- Results in a more efficient transportation system

- Leads to faster and more reliable service

- Increases ridership

Why Transit Priority?

One Example of Transit Priority

Route Type	Freq. of Service	Travel Time Per Trip	# of Trips	Daily Service Hours	Cost Per Hour	Daily Cost
Without Priority	15	120	50	600	$75	$45,000
With Priority	15	105	50	525	$75	$39,375
Diff.		(15)		(75)		($5,625)

For a single route in the system, transit priority can yield:

- **Annual reduction in operation costs: $1.7M-$2M**

- **Capital cost savings: $600,000**

What is Transit Priority?

- "Priority bus treatments are modifications of either the operations or the environment in which buses operate that improve speeds, reduce delays or otherwise benefit bus operations by improving reliability or attractiveness to patrons."
  - National Capital Region Transportation Planning Board (April 2011)

- There are a variety of tools in the toolbox to achieve transit priority

Top Transit Priority Treatments

✓ • Exclusive or Priority Bus Lanes

✓ • Transit Signal Priority (TSP)

✓ • Queue Jumps/Bottleneck Bypasses

✓ • Bus Stop Placement

Transit Priority Lanes Coming to Downtown Austin

Transit Priority Lanes are specially striped lanes in high-traffic areas that help transit vehicles maintain an efficient and reliable schedule in congested areas. Transit vehicles can carry an average of 50 people in one vehicle and provide for a more efficient use of congested travel lanes.

Exclusive or Priority Bus Lanes

- Provides highest level of priority but with most trade-offs

- Most appropriate where bus volumes are highest

- Can operate at designated hours (e.g. peak times) or 24/7

- Designation, signage, striping and enforcement important to success
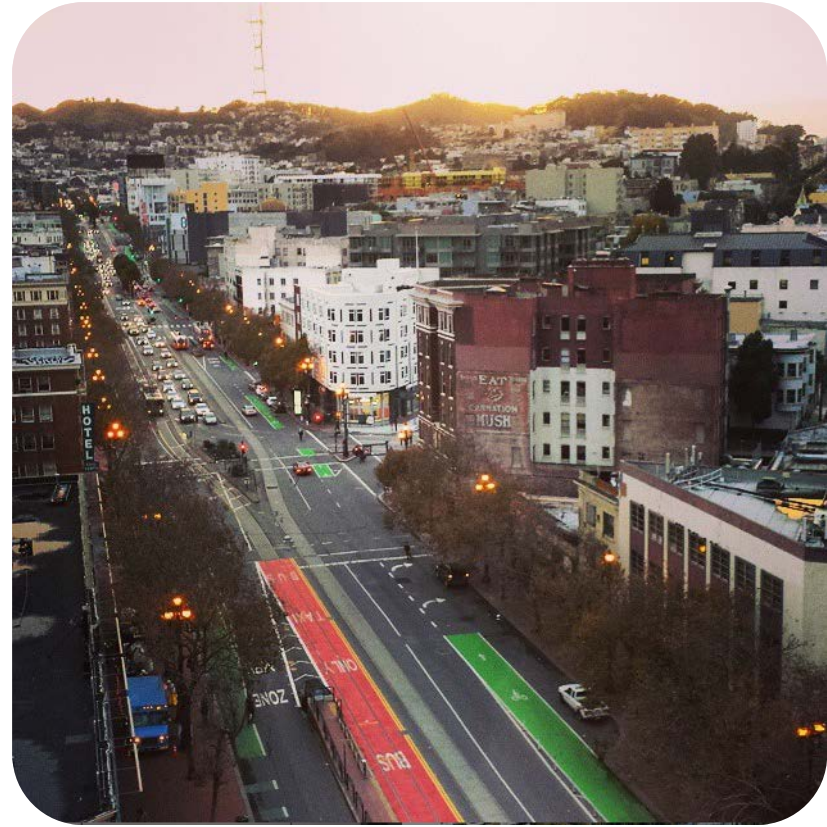
San Francisco: Market Street Transit & Bike Lanes (Market & S. Van Ness)
Photo: Louis Alcorn, March 2015

Transit Signal Priority (TSP)

- Extending green time for approaching bus or advancing green time for buses waiting at intersection

- Can be applied all day, at peak hours, etc.

Kamila Widulinski and Matthew Lapointe (2013)

- Can be applied conditionally, only giving priority when a bus is behind schedule

- Limited negative impacts to traffic

- Typically far-side stops are preferred
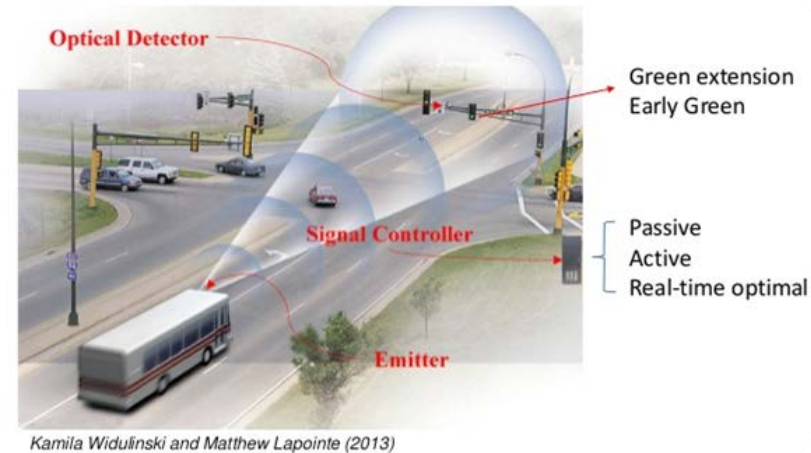
Queue Jumps / Bottleneck Bypasses

- Separate signal gives bus ability to "jump" ahead of traffic

- Requires right of way extended back from intersection to allow for bus access

- Cost depends on ROW availability (Actual signal and TSP enhancements for a queue jump are minimal)

- Bus pullouts in general make bus-reentry to general lanes difficult when traffic is flowing freely

Painted Arrow
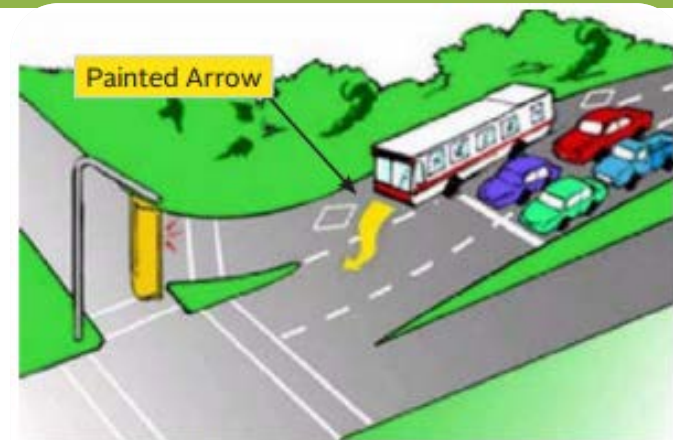
A queue jump with advanced stop bar allows buses to re-enter traffic and jump ahead of other traffic.
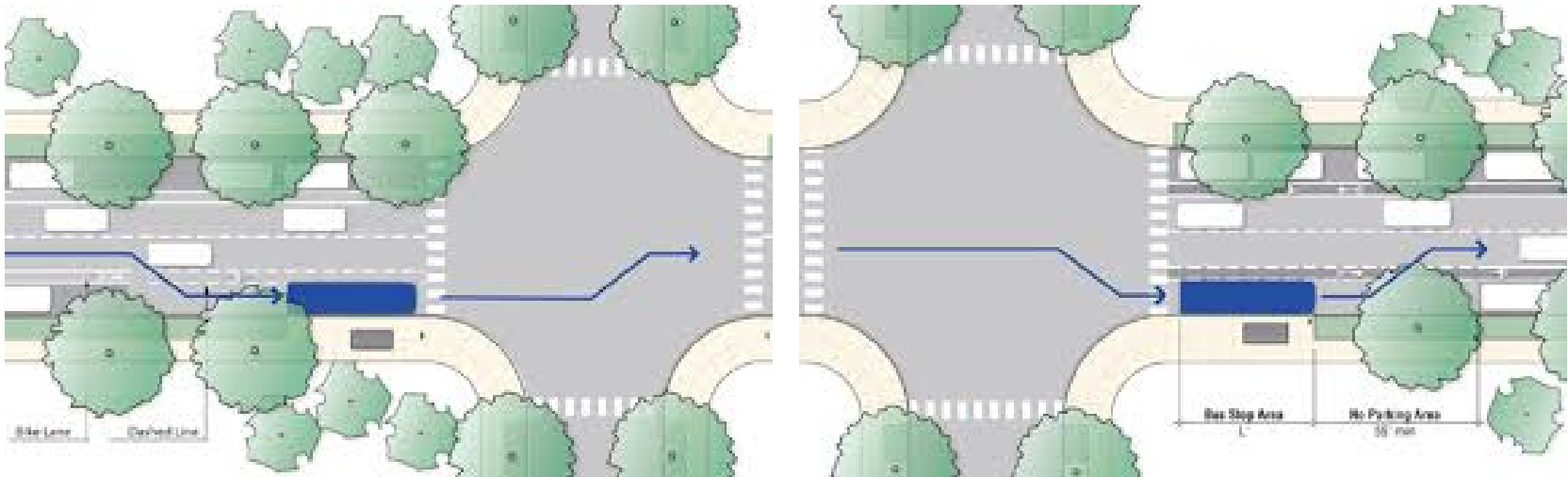
Source: City of Ottawa
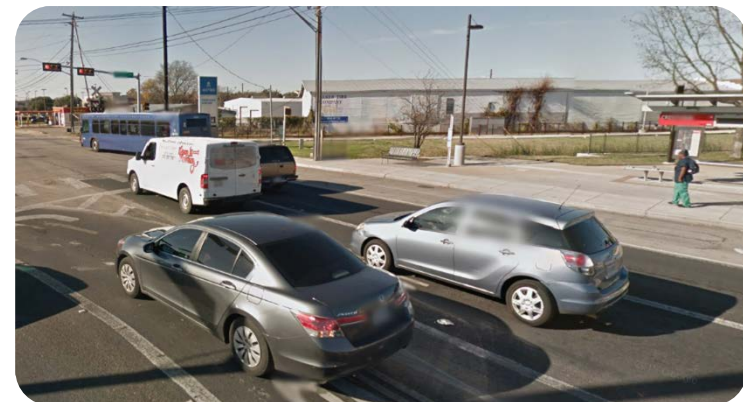
Crestview Station Queue Jump. (Google Streetview, Dec. 2014)

Bus Stop Placement

- Three basic options: near-side, far-side or mid-block

- Placement can be complex and is coordinated between Capital Metro and the City of Austin

- Location can significantly impact transit performance

Capital Metro Summary

- Transit Priority yields multiple benefits for the city, the transit agency and the community

- One of the most effective ways to improve mobility in urban environments

- Partnership with City of Austin has been productive and appreciated

- Many opportunities exist to do more and increase benefits

Austin Transportation Department

Balancing mobility needs for all modes of travel

Multimodal

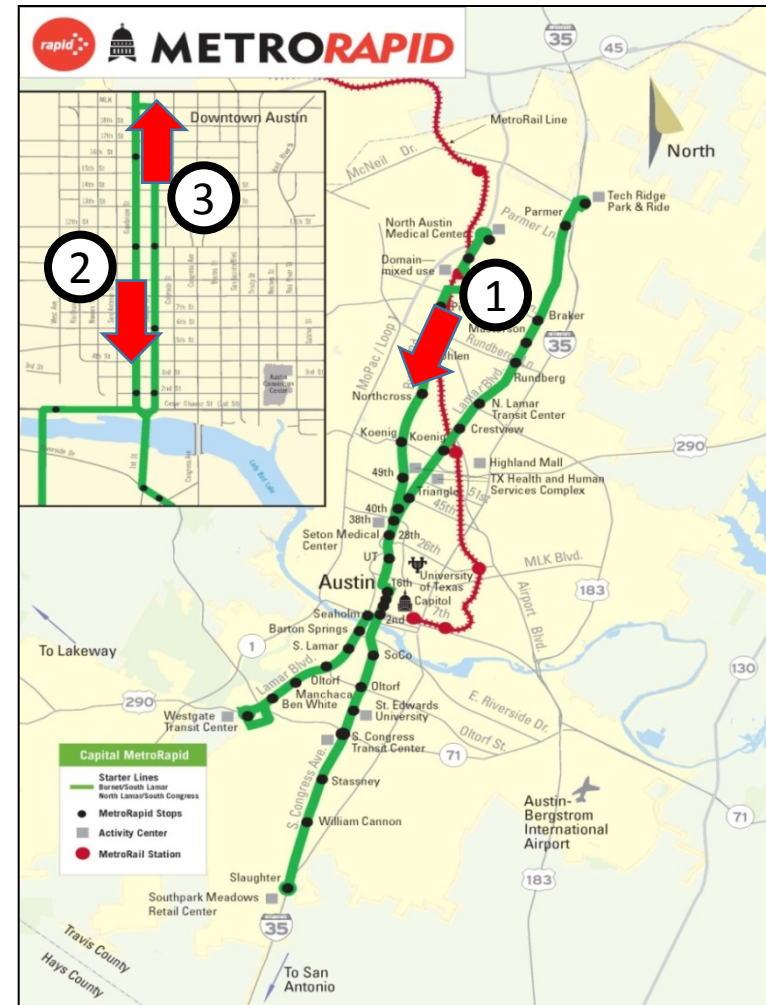**Collaborative**
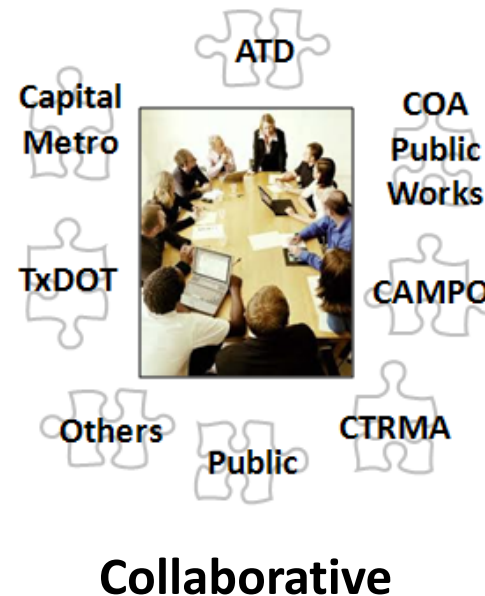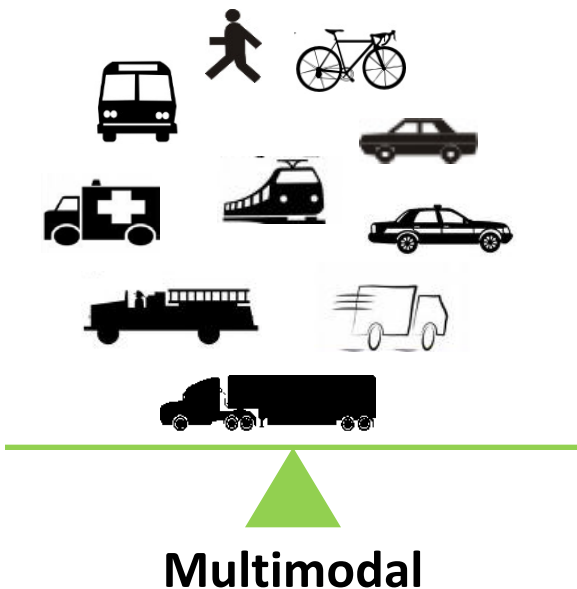
Transit Lanes

- Guadalupe/Lavaca Streets
- Cesar Chavez St. to MLK Blvd.
- All buses can use transit lanes

Transit Queue Jumps

- All buses can use queue jumps

- 3 Locations
    1. Lamar Blvd. at Airport Blvd.
    2. Guadalupe St. at 4th St.
    3. Lavaca St. at MLK Blvd.

Transit Queue Jumps

- How Queue Jumps Work

Lamar at Airport (southbound)

Transit Queue Jumps

- How Queue Jumps Work

Before

After

Lavaca at MLK (northbound)

Transit Queue Jumps

- ## How Queue Jumps Work *(video)*

Lavaca at MLK (northbound)

Transit Signal Priority (TSP)

- MetroRapid Routes (only today)
  - 801
  - 803
- 130 signals with TSP
- Green extension (only today)
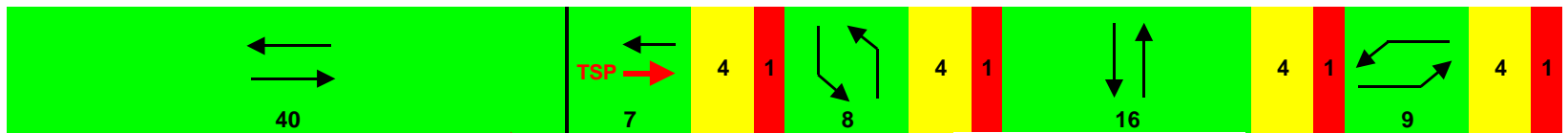- TSP when bus is late
- 13% of late buses receive TSP

Transit Signal Priority (TSP)
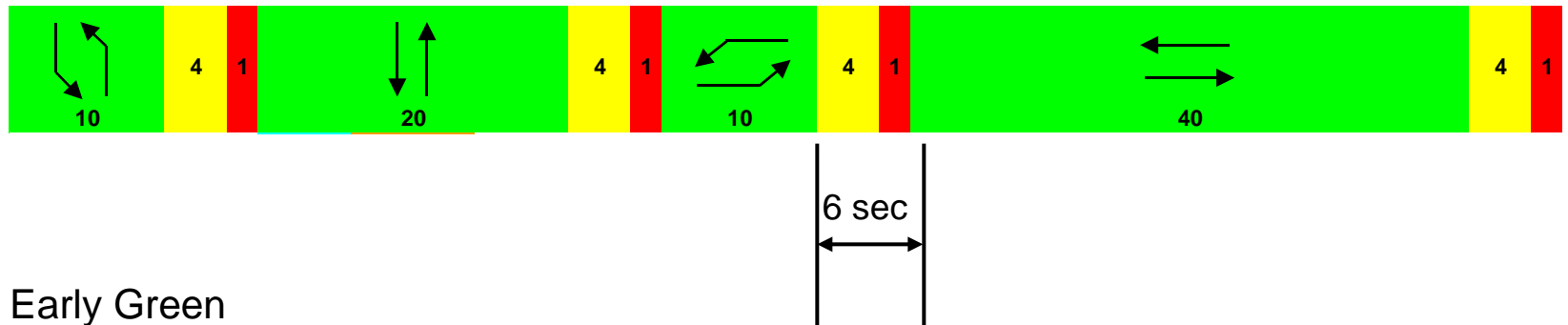
- How TSP Works: Green Extension

Transit Signal Priority (TSP)

- How TSP Works: Early Green

Normal Signal Operation

Early Green

6 sec

TSP

Bus Arrives
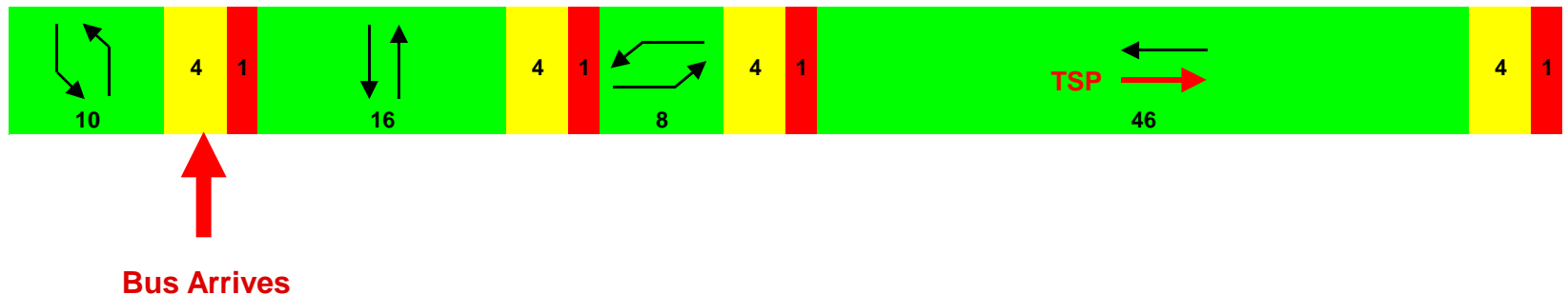
Transit Signal Priority (TSP)

- How Buses "Talk" to Signals

Capital Metro

Austin Transportation Department
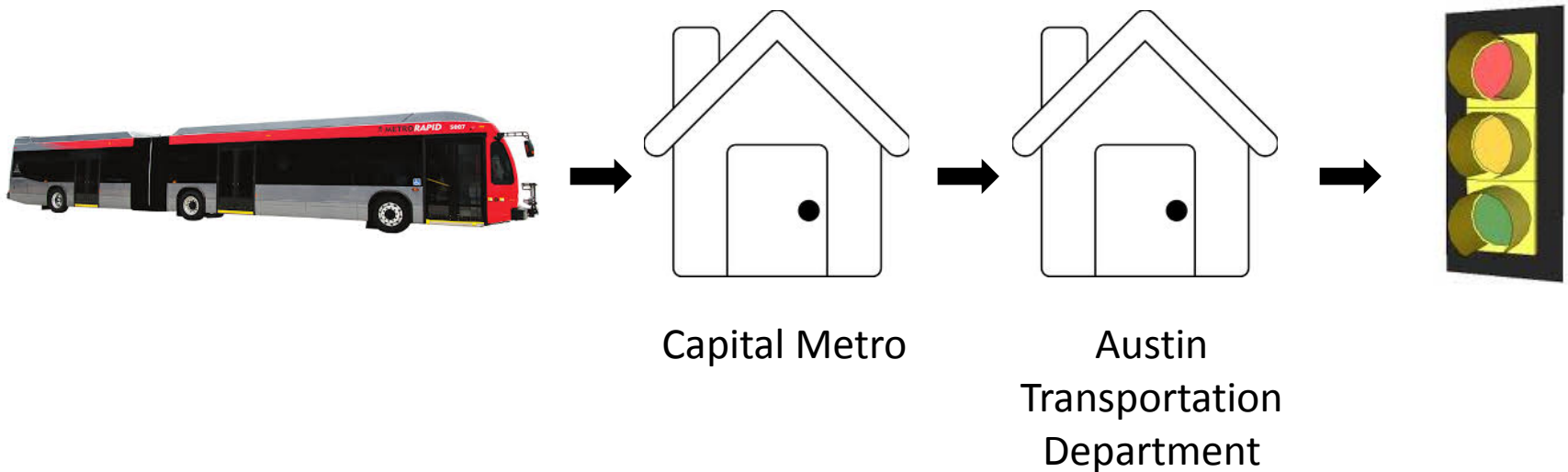
Continued Cooperation

- Transit Priority Working Group
  - Austin Transportation Department + Capital Metro
  - Meets every 2 weeks
  - Develop and implement transit preferential treatments to address problematic locations for transit

- Transit Lanes
  - Increase transit lanes where appropriate
  - Every potential location is different
  - Analysis: (a) benefits to transit riders; (b) impacts on traffic, parking…

Continued Cooperation

- Transit Queue Jumps

    - Increase queue jump applications where appropriate

    - Analysis needed

- Transit Signal Priority (TSP)

    - Optimize TSP

        - Assign signal engineer transit, bikes, peds (FY17 ATD budget ask)

        - Capital Metro possible support from UT Ctr. for Trans. Research

Continued Cooperation

- Transit Signal Priority (TSP) *continued*
  - Expand TSP where appropriate
    - New signal controller software needed to expand TSP **($1.5M funding needed**)
    - Additional analysis tools needed to optimize TSP **($150,000 funding needed**)
    - Use existing ATD staff to implement TSP
- Establish prioritization criteria for moving people (e.g., people throughput, delay)

Thank you