

Multimodal Coordination for Bus Priority Hotspots



Presentation to MOITS Policy Task Force
And MOITS Technical Subcommittee

November 8, 2011

Parsons Brinckerhoff

Foursquare ITP

Team Organization

- Coordination - **MWCOG**
- Technical Advisor – **WMATA Office of Long-Range Planning**
- Data and Observations – **Regional Transit Providers**
- Direction & Feedback – **Regional Stakeholders**



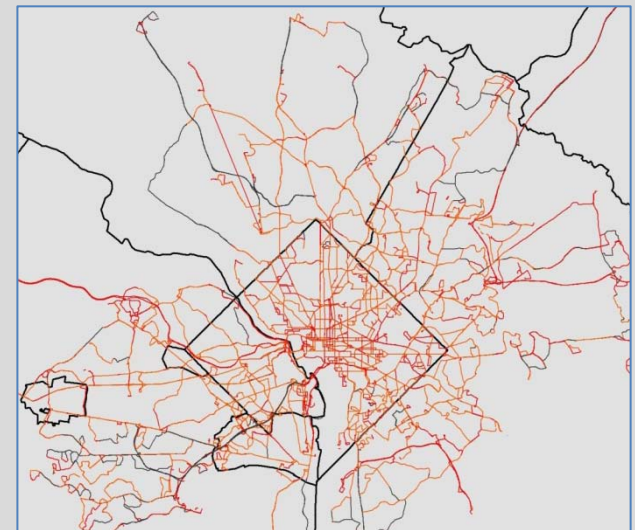
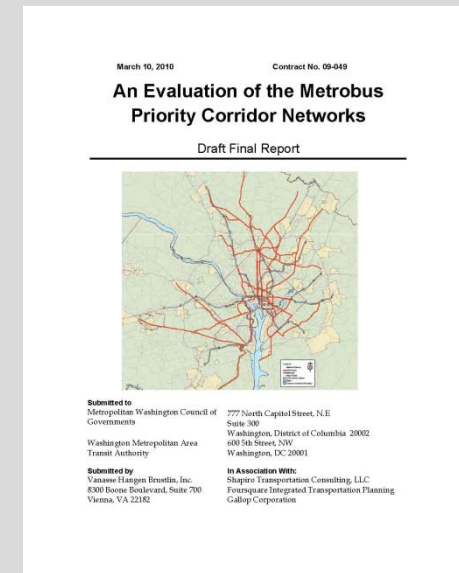
- Data Analysis, Field Verification, Reports – **Consultant Team**

Consultant Team

- **Parsons Brinckerhoff** – Prime, Hot Spots Verification, Design Concepts
- **Foursquare ITP** – Database Development, Hot Spots List
- **Sabra, Wang & Associates** – Traffic Analysis

Background

- Priority Corridor Network (PCN) Running-Way Evaluation Study
 - 20-year Vision
 - Near-Term Implementation Horizon (“Hot Spots”)
- WMATA Hot Spots Study
 - Focus on Metrobus Network
 - Correlation of service frequencies and slow bus speeds to needs

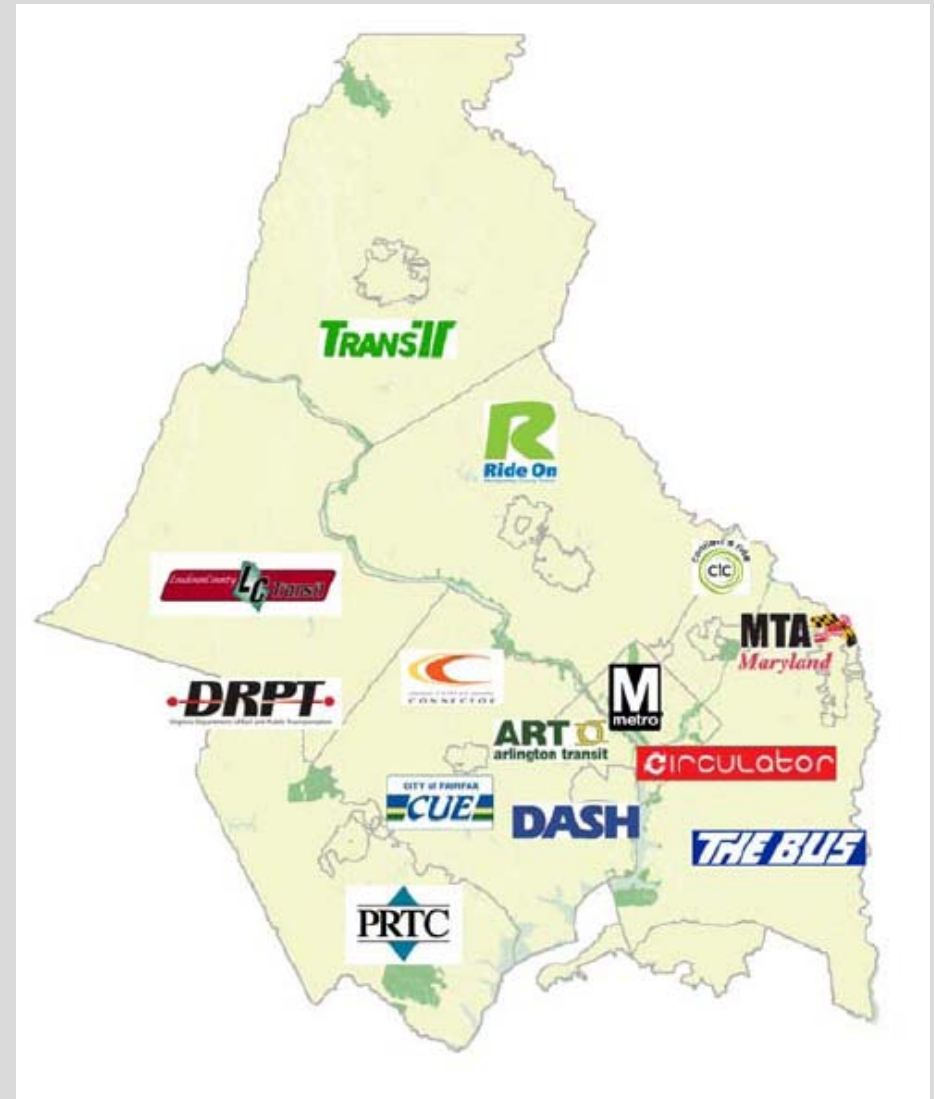


Scope of Work

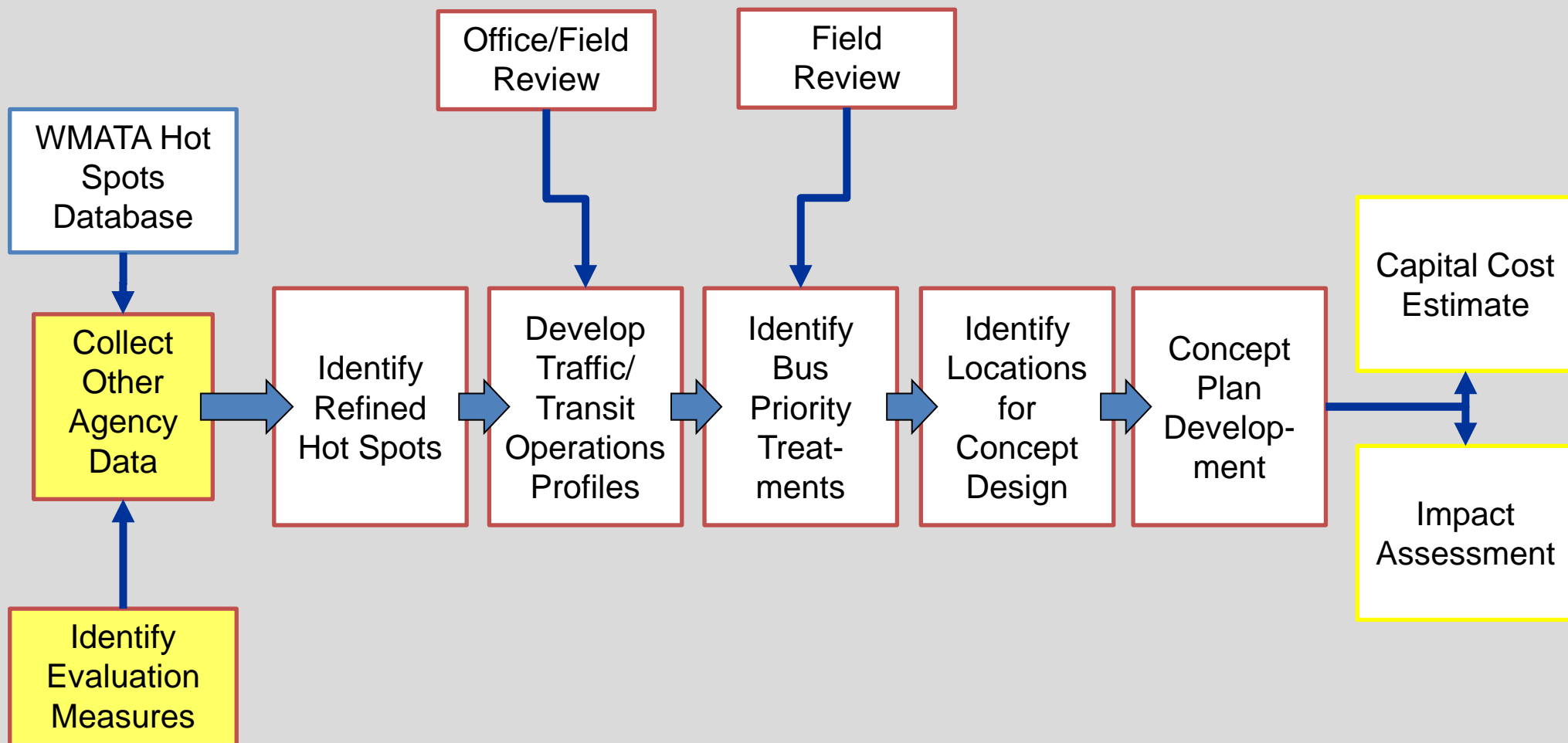
1. Develop hot spot list that reflects all bus transit agencies in the region.
2. Prioritize Top 10 Hot Spots lists for DC, MD, & VA.
3. Recommend and develop preliminary designs for bus priority treatments at the identified Hot Spot locations.
4. Quantify anticipated capital costs and operating cost savings.

Beyond Metrobus – Additional Systems to be Incorporated

- Core Agencies
 - Ride On
 - Fairfax Connector
 - DASH
 - DC Circulator
 - ART
 - CUE
 - The BUS
- Commuter Bus
 - MTA Commuter Bus
 - PRTC (Omni-Ride)
 - Loudoun County Transit
- Non Core Agencies
 - TransIT
 - Connect-a-Ride



Study Approach

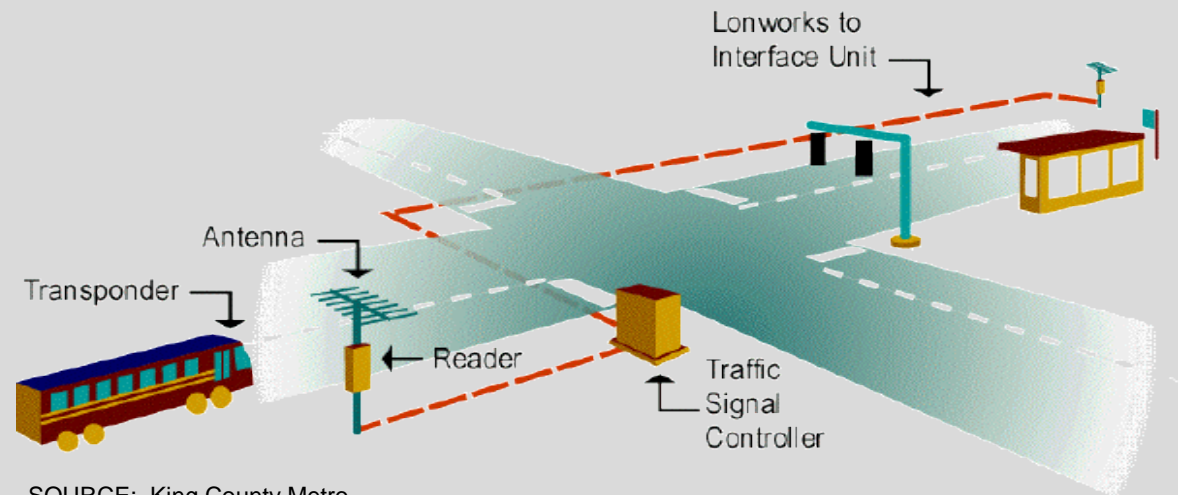


Identify Bus Priority Treatments

- Corridor/Segment-Level
 - Exclusive Lanes
 - Signal priority – system application (TSP)
 - Passive Signal Coordination
 - Stop Consolidation
- Intersection-Level
 - Isolated TSP
 - Queue-jump signal
 - Bypass Lane
 - Curb Extension
 - Stop Relocation



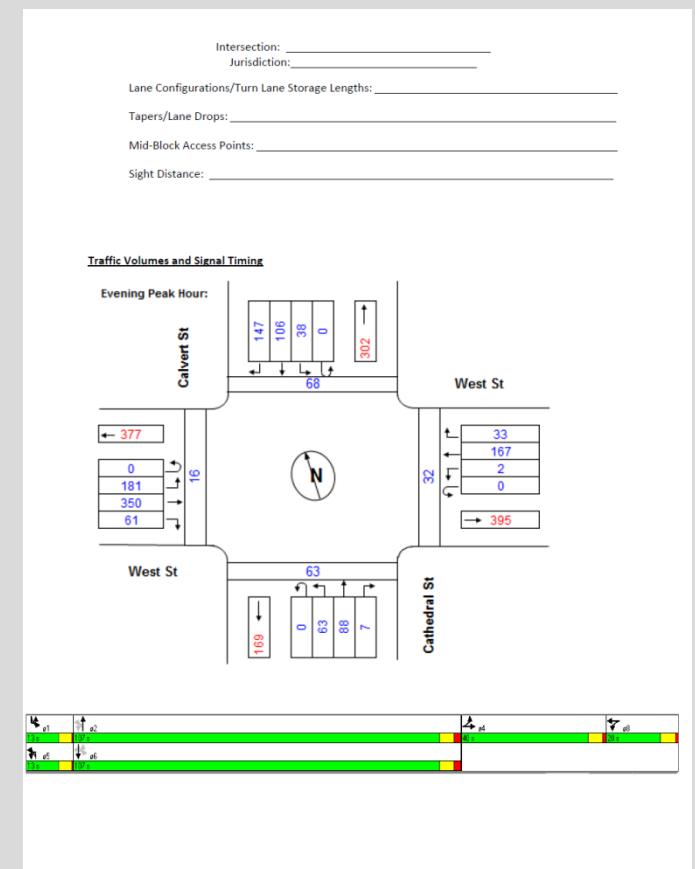
SOURCE: TCRP Report 118 (5)



SOURCE: King County Metro

Initial (Operational) Field Observations

- During critical peak period
- Transit Operations
 - Bus operations in travel lanes
 - Clearance time at stops
- Traffic Operations
 - Cycle Failures
 - Lane Utilization
 - Queues
 - Pedestrian Conflicts
- Output: List of opportunities/constraints for transit priority



Second Phase Field Evaluation

- Focus on identifying transit priority treatments
 - Intersection and/or segment
 - Applicability
 - Associated bus stop modifications
- Two teams of experts
- Build on prior review of operational data and insights on operational deficiencies

Concept Plan Development

- Prioritized list of hot spots requiring infrastructure improvements
 - Minimal or no ROW impact
 - 15% level of design
 - Use of 1"=50' aerial photography
 - Six locations (two each in DC, MD, VA)
- Capital Cost Estimates
 - Limited number of quantities
 - Prior approval of unit costs
 - Could translate to FTA SCC format



Impact Assessment

- Transit Operations
 - Unit travel time savings
 - On-time performance
 - Estimated bus operating cost savings – 5 & 20 years
 - MWCOG PCN Study and TCRP Synthesis 83
- Traffic Operations
 - Intersection LOS
 - Arterial Speeds
 - Queues
- Before and after impact summary

Study Schedule

| | 2011 | | | | 2012 | | | | | |
|---|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
| TASK 1 - PROJECT MANAGEMENT/INVOLVEMENT | [Grey shaded area] | | | | | | | | | |
| 1.3 MOITS Meeting | | | [Red block] | | | | [Red block] | | | [Red block] |
| 1.3 RBS Meetings | | [Red block] | | | | | [Red block] | | | [Red block] |
| TASK 2 - DEVELOP REGIONAL TOP 10 HOT SPOT LISTS | | [Blue block] | [Blue block] | [Blue block] | | | | | | |
| TASK 3 - FIELD VERIFICATION OF DATA | | | | [Blue block] | [Blue block] | [Blue block] | [Blue block] | | | |
| TASK 4 - DESIGN DEVELOPMENT | | | | | | | [Blue block] | [Blue block] | [Blue block] | [Blue block] |

Data Collection

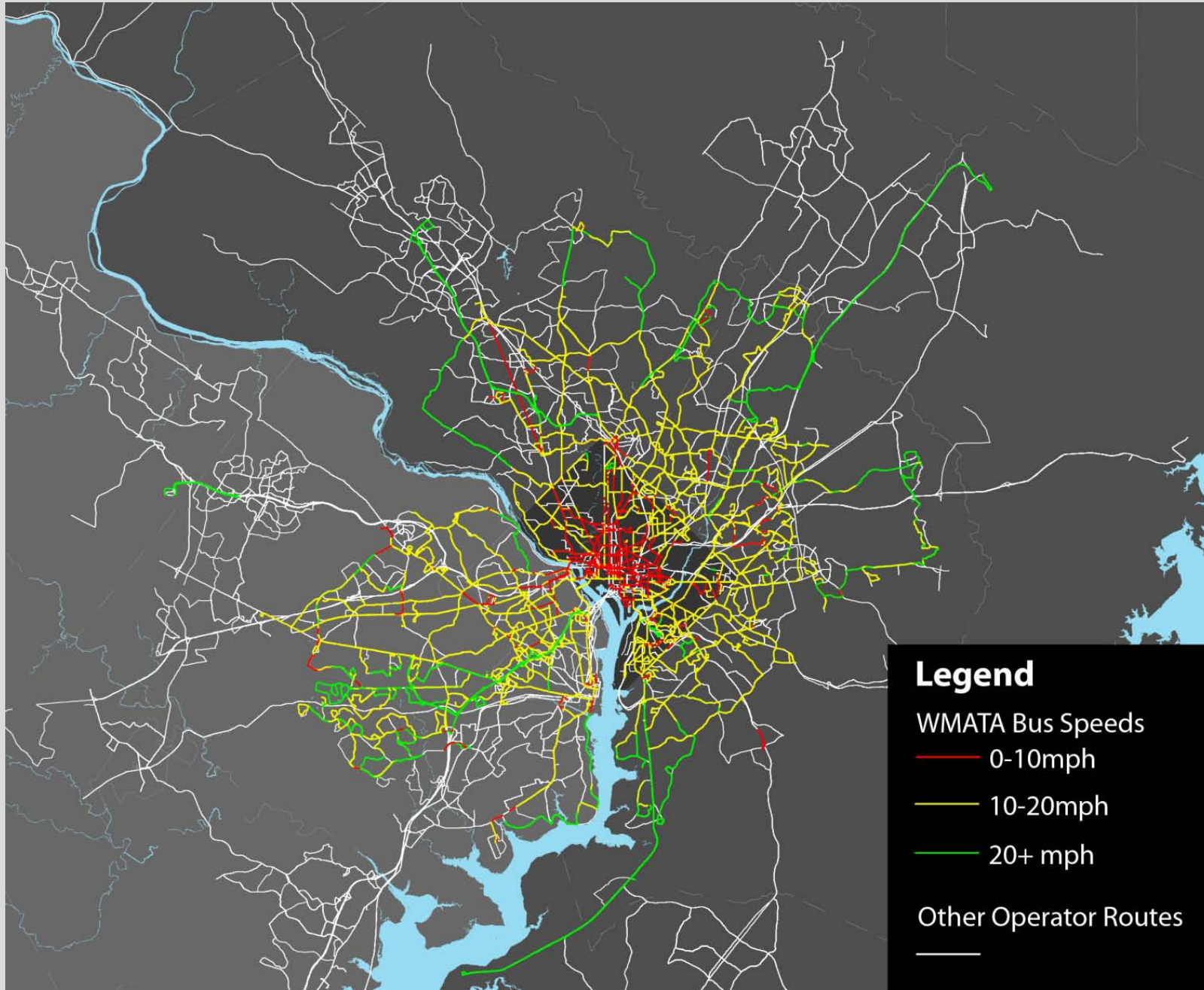
- The project team has already met with or scheduled meetings with the following agencies:
 - ART, DASH, CUE, Fairfax Connector, Ride On, TheBus, and the DC Circulator, PRTC
- The project team will be contacting:
 - MTA Commuter Bus, LC Transit, TransIT, Connect-a-Ride
- Data being collected includes:

| | Level of Service | Vehicle Speed | Route-level ridership | Stop-level ridership | On-time performance | Information on known Hot Spots |
|-------------------|------------------|---------------|-----------------------|----------------------|---------------------|--------------------------------|
| Core Agencies | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Commuter Bus | ✓ | | ✓ | | | ✓ |
| Non Core Agencies | ✓ | | ✓ | | | ✓ |

Methodology

1. Utilize existing bus speed data from WMATA
 - AM, PM, Daily across all jurisdictions where WMATA provides service
2. Supplement with speed data from other agencies for locations without WMATA data
3. Use number of bus trips for all agencies to weight roadway segments
4. Develop Hot Spots list
5. Tie-breakers, final decisions, additional information:
 - Use roadway/intersection LOS
 - Use agency supplied hot spot locations and on-time performance data as back-check
 - Apply known ridership information by segment or at route level for further justification of selected Hot Spots

WMATA Bus Speeds



Database Development

- Challenges
 - Data Collection timeline
 - Ability to merge data from different sources
 - Varying levels of data – AVL vs. scheduled
 - Varying data formats
- Next Steps
 - Finalize data collection
 - Aggregate and normalize data
 - Implement methodology for prioritization
 - Develop list of prioritized hot spot locations

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