GMT2

Multimodal Coordination for Bus Priority Hotspots

Presentation to Regional Bus Subcommittee

October 25, 2011

Parsons Brinckerhoff

Foursquare ITP

Slide 1

GMT2 Girum Meseret, 5/23/2011

Team Organization

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

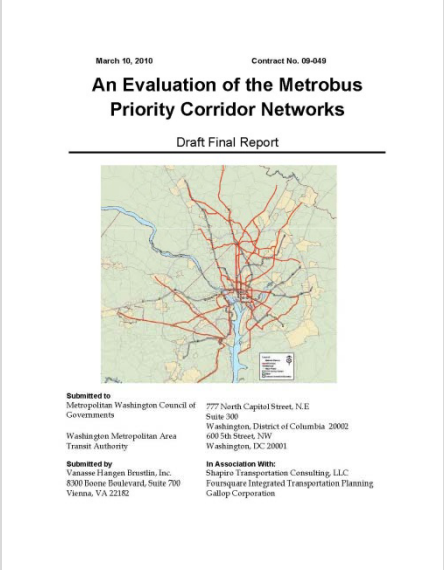
- Data Analysis, Field Verification, Reports – Consultant Team

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


March 10, 2010 Contract No. 09-049

An Evaluation of the Metrobus Priority Corridor Networks

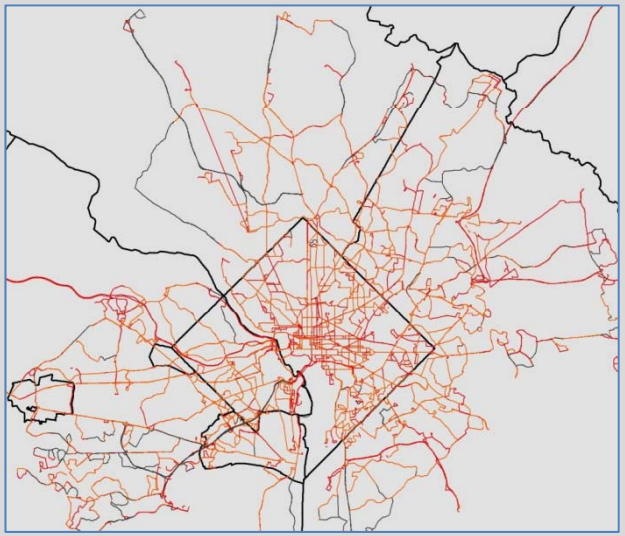
Draft Final Report

Submitted to
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E
Suite 300
Washington, District of Columbia 20002

Washington Metropolitan Area Transit Authority
600 5th Street, NW
Washington, DC 20001

Submitted by
Vanasse Hangen Brustlin, Inc.
8300 Boone Boulevard, Suite 700
Vienna, VA 22182

In Association With:
Shapiro Transportation Consulting, LLC
Foursquare Integrated Transportation Planning
Gallop Corporation



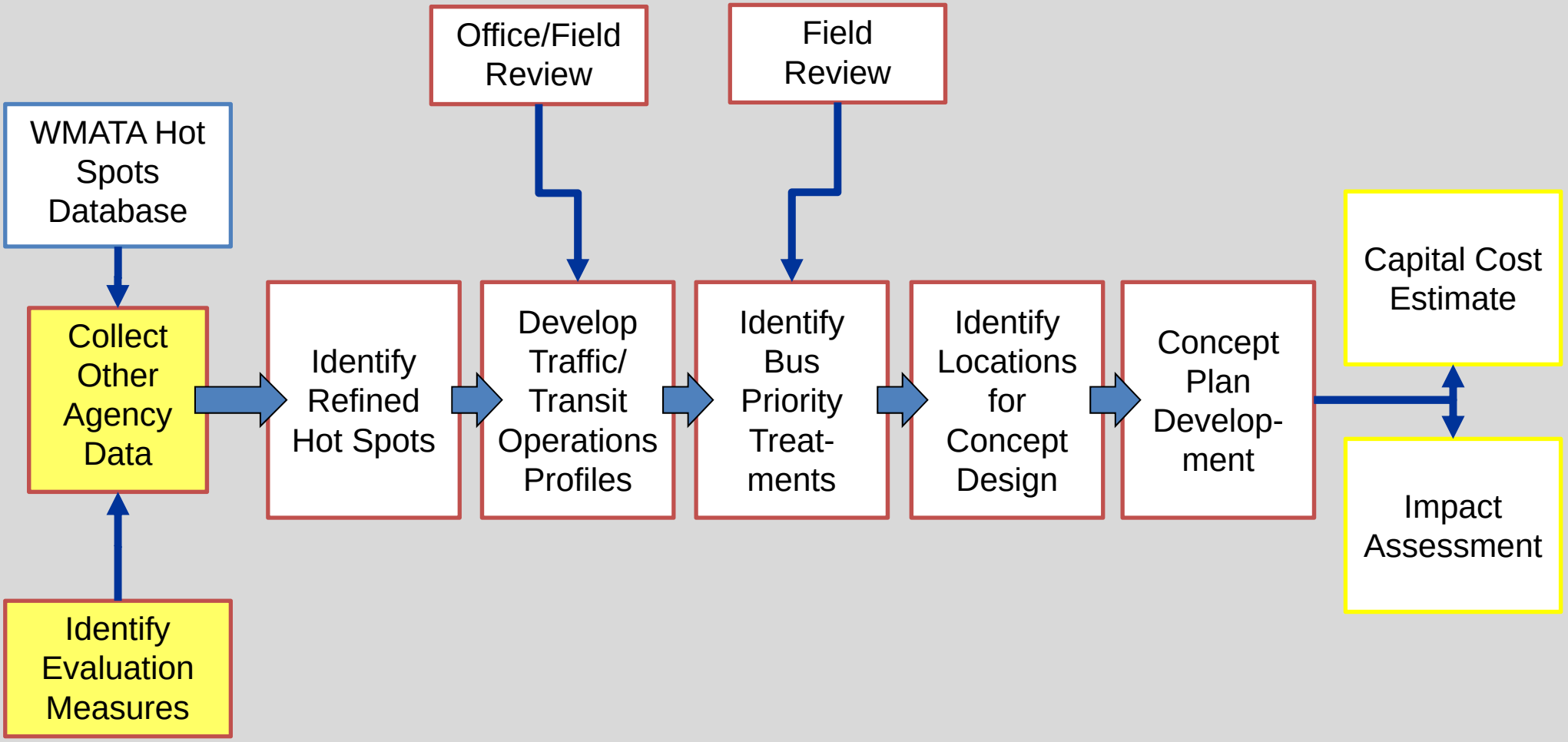
Scope of Work

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
  - Omni-Ride
  - LC Transit
- Non Core Agencies
  - TransIT
  - Connect-a-Ride

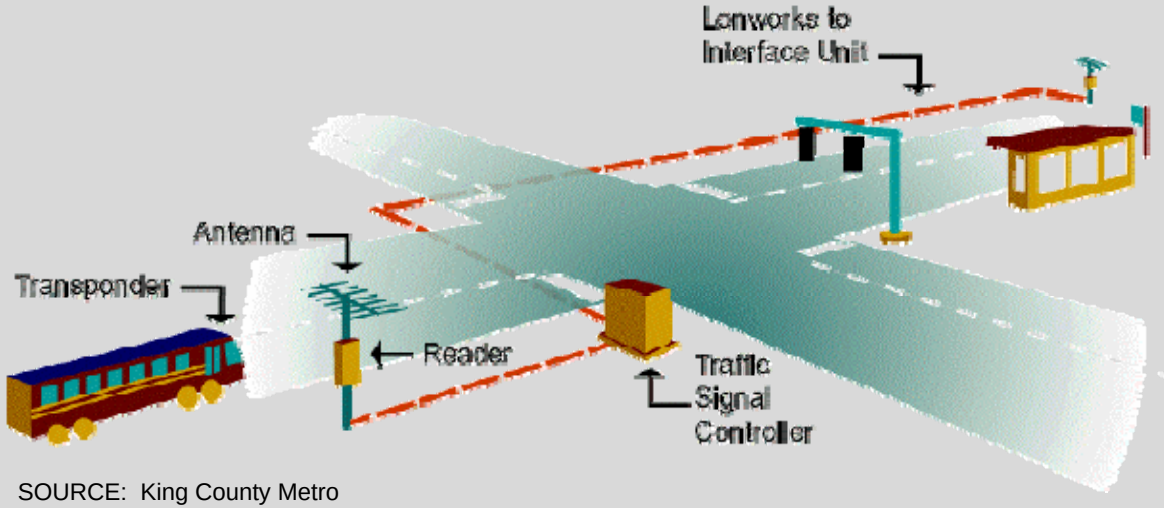
Study Approach



Identify Bus Priority Treatments

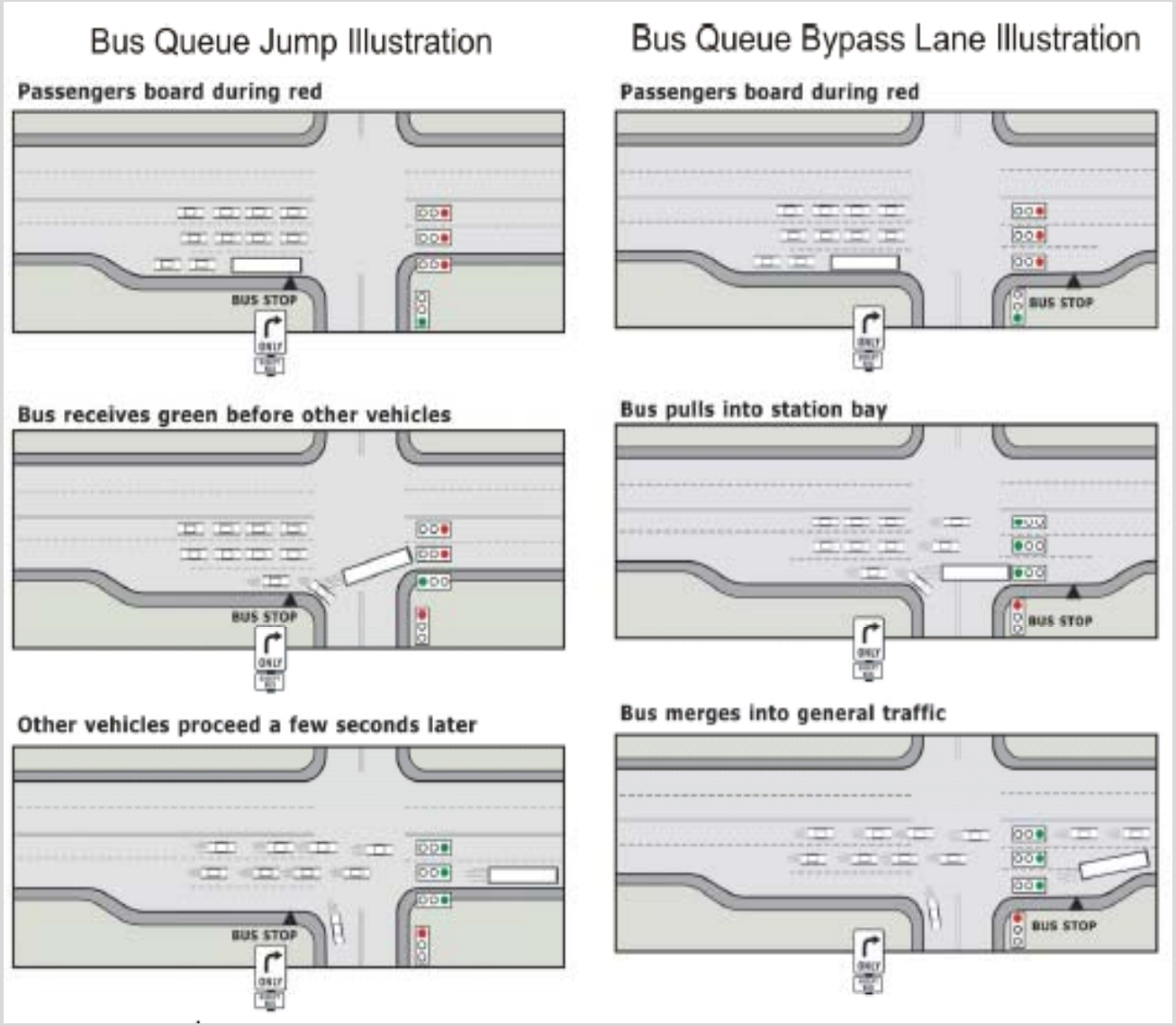
- Corridor/Segment-Level
  - Exclusive Lanes
  - Signal priority – system application (TSP)
  - Passive Signal Coordination
  - Stop Consolidation
- Intersection-Level
  - Isolated TSP
  - Queue-jump signal
  - Bypass Lane
  - Curb Extension
  - Stop Relocation

SOURCE: TCRP Report 118 (5)



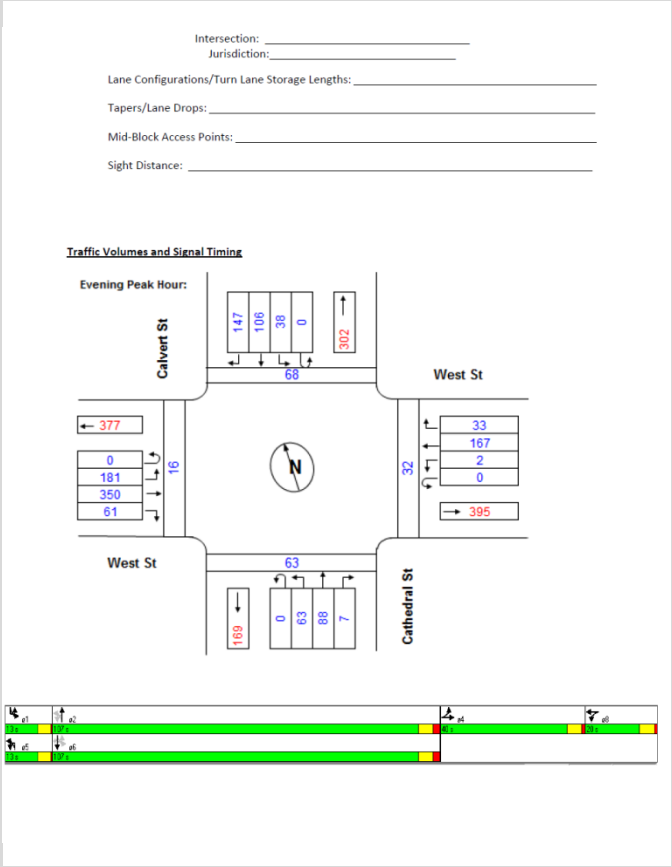
SOURCE: King County Metro

Queue-Jump Signal vs. Bypass Lane



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 Tier 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**

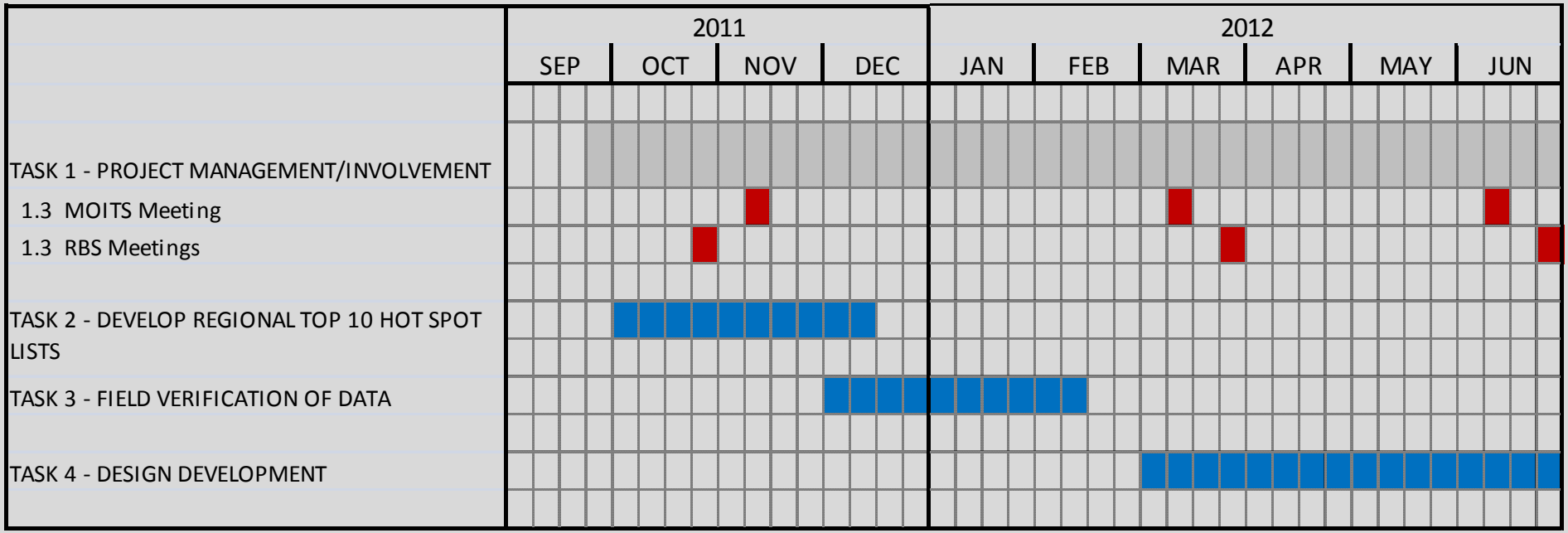
Concept Plan Development

- **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



Data Availability

	Primary Needs			Secondary Analysis			
	LOS	GIS	Vehicle Travel Time/Speeds	Route Level Ridership	Stop Level Ridership	OTP	Other
WMATA	WMATA Study database	WMATA Study database	WMATA Study database	They will provide	They will provide	They will provide	List of hot spots from previous study
ART	They will provide	They will provide	AVL data (but we will have to pull it from the system)	They will provide	APC data (but we will have to pull it from the system)	Yes (but we will have to pull it from the system)	
DASH	They will provide	They will provide	Don't have	They will provide	Yes, and by link	Schedule adherence spot checks (handwritten)	Previous studies with identified hot spots; historical schedule adjustments
CUE	Online	Use from COG	They will provide AVL data	They will provide	Don't have – can pull NTD sampling data if we want to (get from their consultant)	They will provide a report	Hot spots locations provided during call
Fairfax Connector	They will provide	They will provide	Use Geologger data for few routes that have data	They will provide	Use TDP data Round 2 (2008)	Paper sheets for specific stations focused on problem routes	Hot spot info to be provided from MV Transportation
DC Circulator	Online	On DC GIS Website	They will provide	They will provide	Don't have	They will provide	Hot spot info to be provided by First Transit
Ride On	Tbd						
TheBus	Tbd						

Data Collection

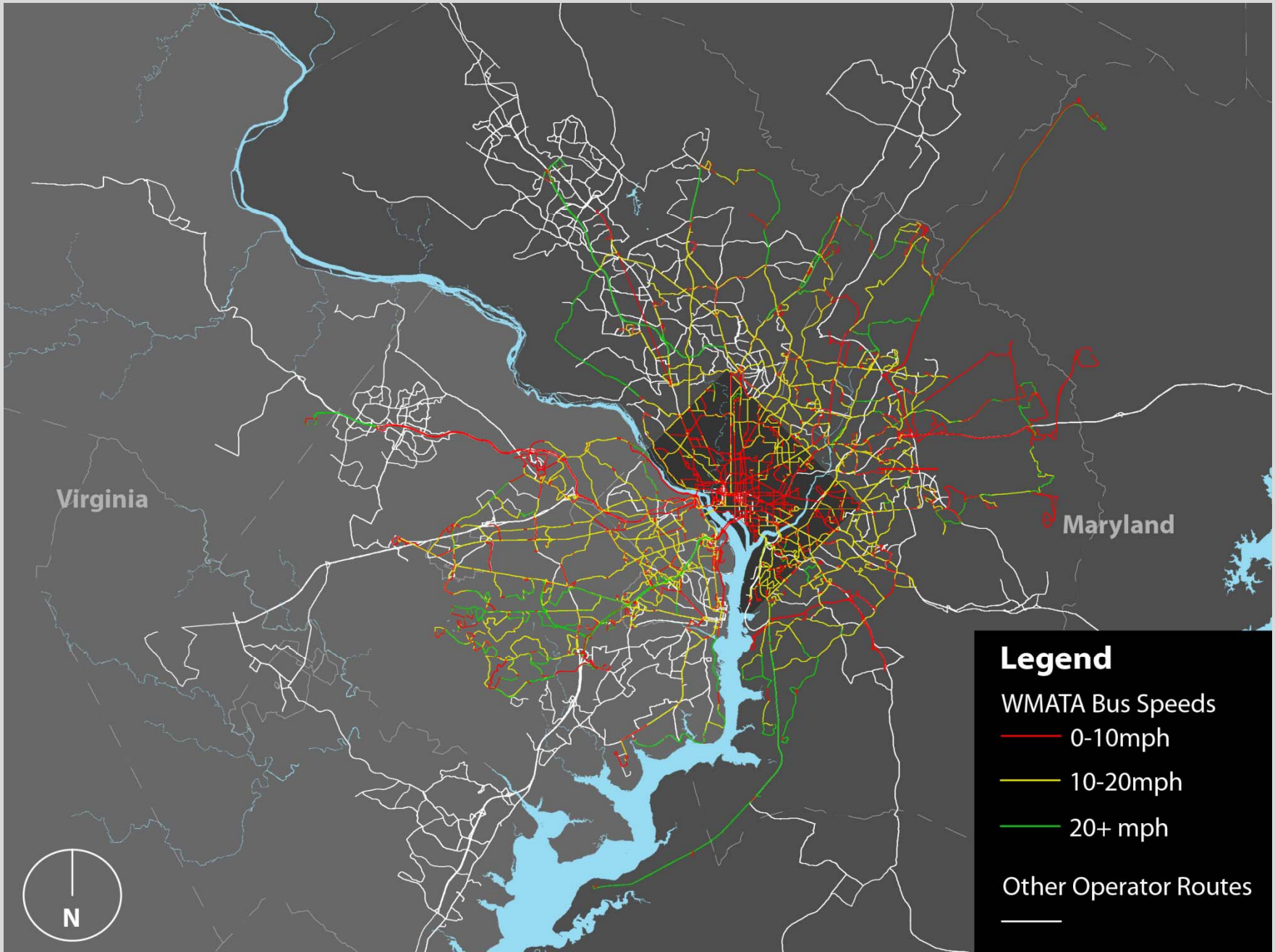
- **The project team has already met with or scheduled meetings with the following agencies:**
  - **ART, DASH, CUE, Fairfax Connector, Ride On, TheBus, and the DC Circulator, PRTC**
- **The project team will be contacting:**
  - **MTA Commuter Bus, LC Transit, TransIT, Connect-a-Ride**
- **Data being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

	Primary Needs			Secondary Analysis			
	LOS	GIS	Vehicle Travel Time/Speeds	Route Level Ridership	Stop Level Ridership	OTP	Other
WMATA	✓	✓	✓				✓
ART				✓			
DASH			n/a		✓		✓
CUE	✓		✓	✓	n/a	✓	✓
Fairfax Connector			✓		✓		
DC Circulator	✓		✓	✓	n/a	✓	
Ride On							
TheBus							

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**
    - **Different link start/end points**
  - **Varying levels of data (route level vs. stop level)**
- **Timeline**
  - **Finalize data collection (October)**
  - **Aggregate and normalize data (October-November)**
  - **Develop methodology for prioritization (October-November)**
  - **Develop list of prioritized hot spot locations (November**