

City of Alexandria, Virginia

Traffic and Parking Board Meeting

Consideration of Washington Street Left Turn Restrictions During HOV Hours

November 28, 2011

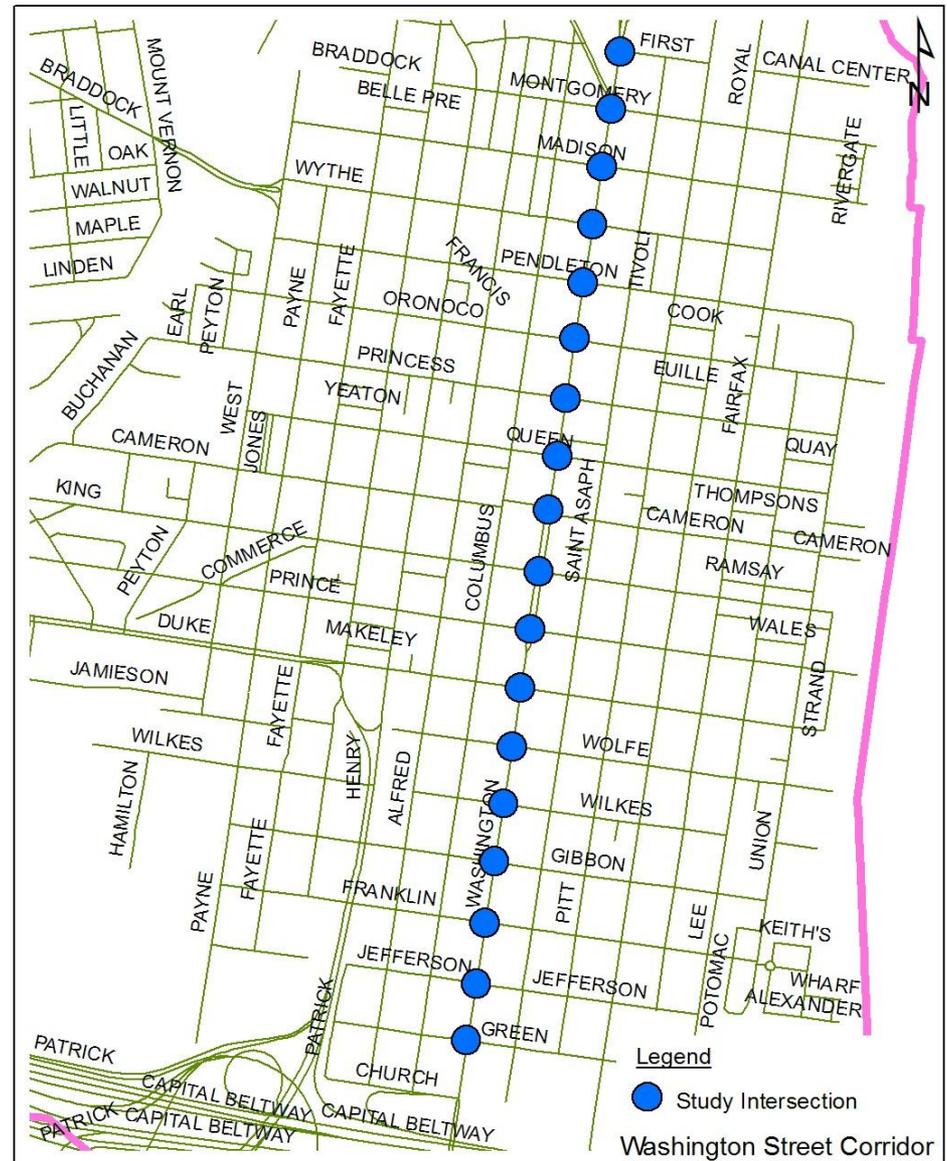


Timeline

- * April 2011 - Washington Street Safety Study Completed
- * July 2011 – Presentation of proposed Washington Street Left Turn Restrictions to Traffic and Parking Board (proposed restrictions deferred to allow for additional citizen outreach)
- * August 2011 – Stakeholder Worksession
- * September 2011 – Second Stakeholder Worksession
- * November 10, 2011 – Community Meeting
- * November 28, 2011 – Traffic and Parking Board

Study Location

- * Washington Street between Green Street and First Street
- * Total of 18 Intersections Studied
- * Accident data for each intersection collected over a 3 year period

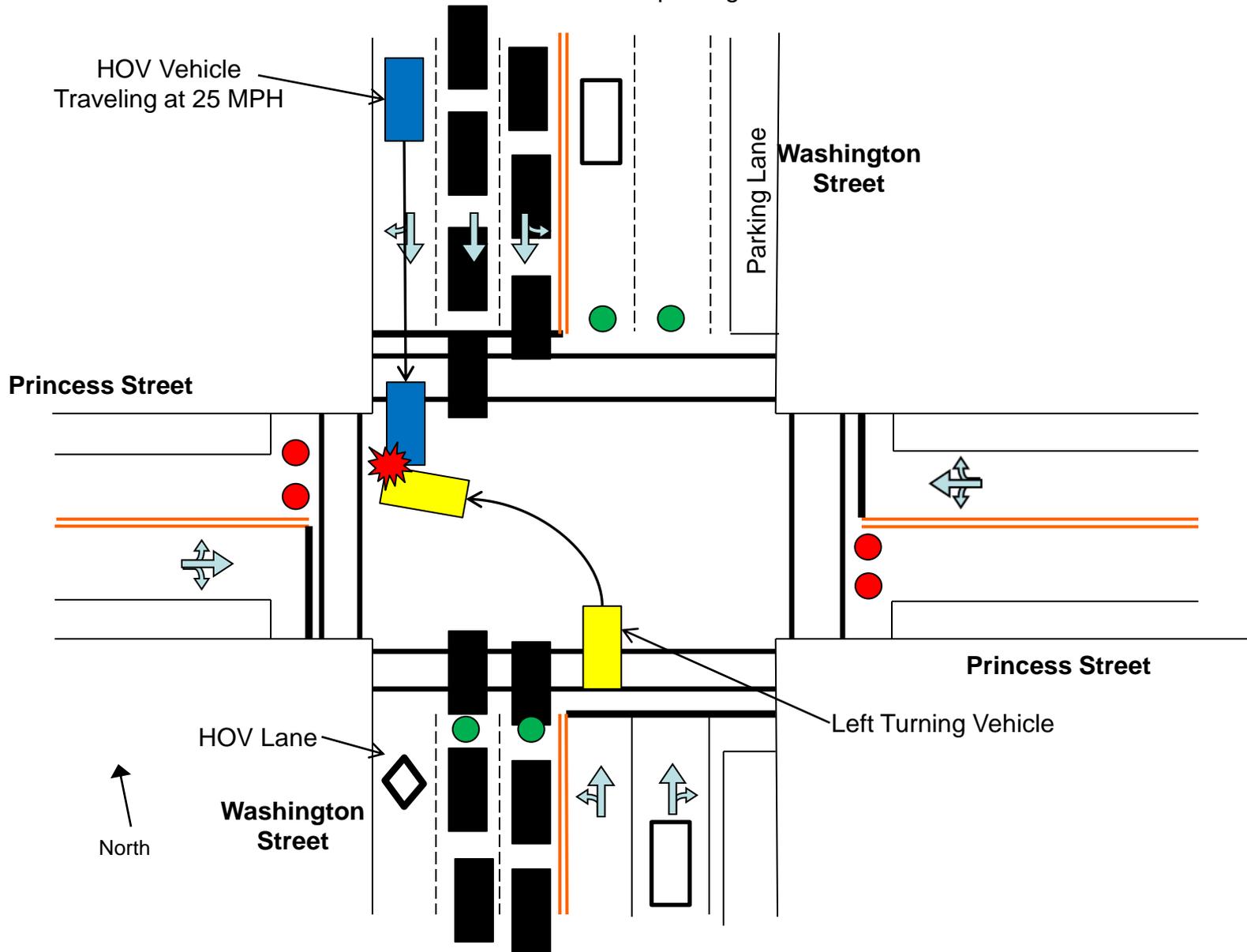


Issue

- * Citizen concerns led staff to conduct a safety study of the Washington Street Corridor
- * Analysis of accident data from 2008-2010 revealed an accident rate for left turning vehicles that was several times higher than the overall intersection crash rate and significantly higher than left turn crash rates at similar intersections along the Route 1 and Duke Street corridors

Washington St & Princess St – PM Peak

Graphic of limited sight distance for left turning vehicles due to vehicle queuing



Crash Rate Table

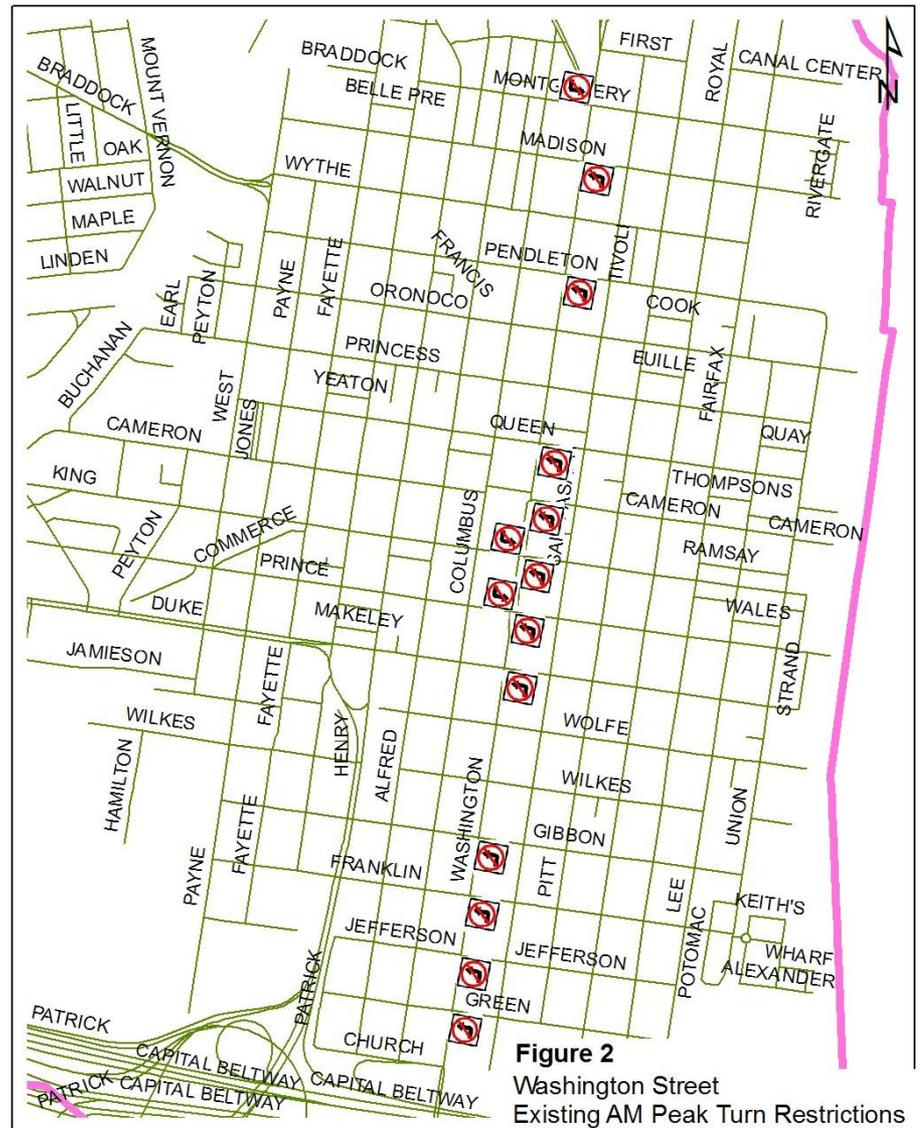
Intersection Crash Rates by Corridor

Corridor	Overall Intersection Crash Rate	AM Peak Left Turn Crash Rate	PM Peak Left Turn Crash Rate	Overall Left Turn Crash Rate
Washington Street (18 intersections)	0.425	19.96 (SB Lefts Only)	40.74 (NB Lefts Only)	7.03 (NB & SB Lefts)
Route 1 (JD Hwy) (4 Intersections)	0.161	N/A (No SB Lefts)	0.00 (NB Lefts)	0.54 (NB Lefts)
Duke Street (2 Intersections)	0.412	0.00 (EB & WB Lefts)	2.20 (EB & WB Lefts)	2.75 (EB & WB Lefts)

Existing Conditions

AM Peak

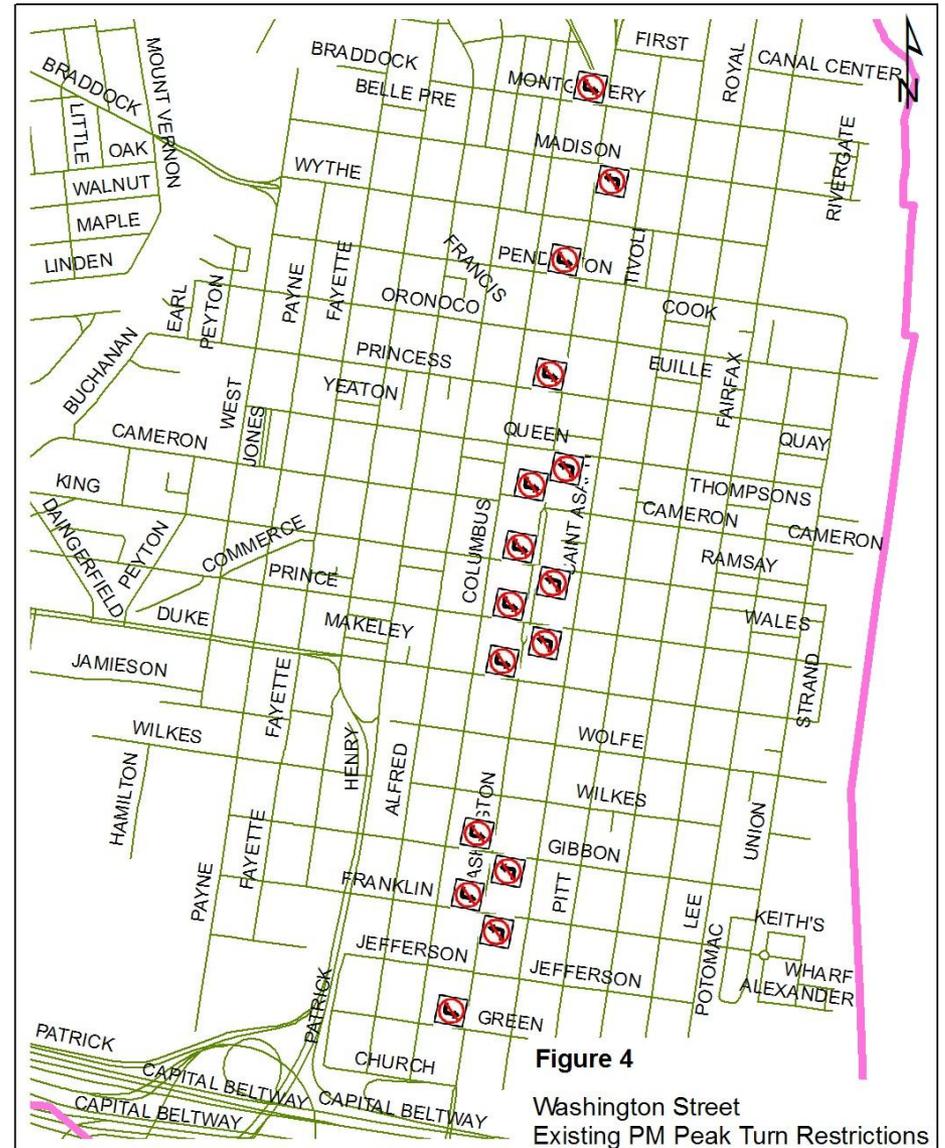
- * All intersections signalized
- * Three northbound lanes (including HOV lane), two southbound lanes plus a southbound parking lane



Existing Conditions

PM Peak

- * All intersections signalized
- * Three southbound lanes (including HOV lane), two northbound lanes plus a northbound parking lane



Alternatives

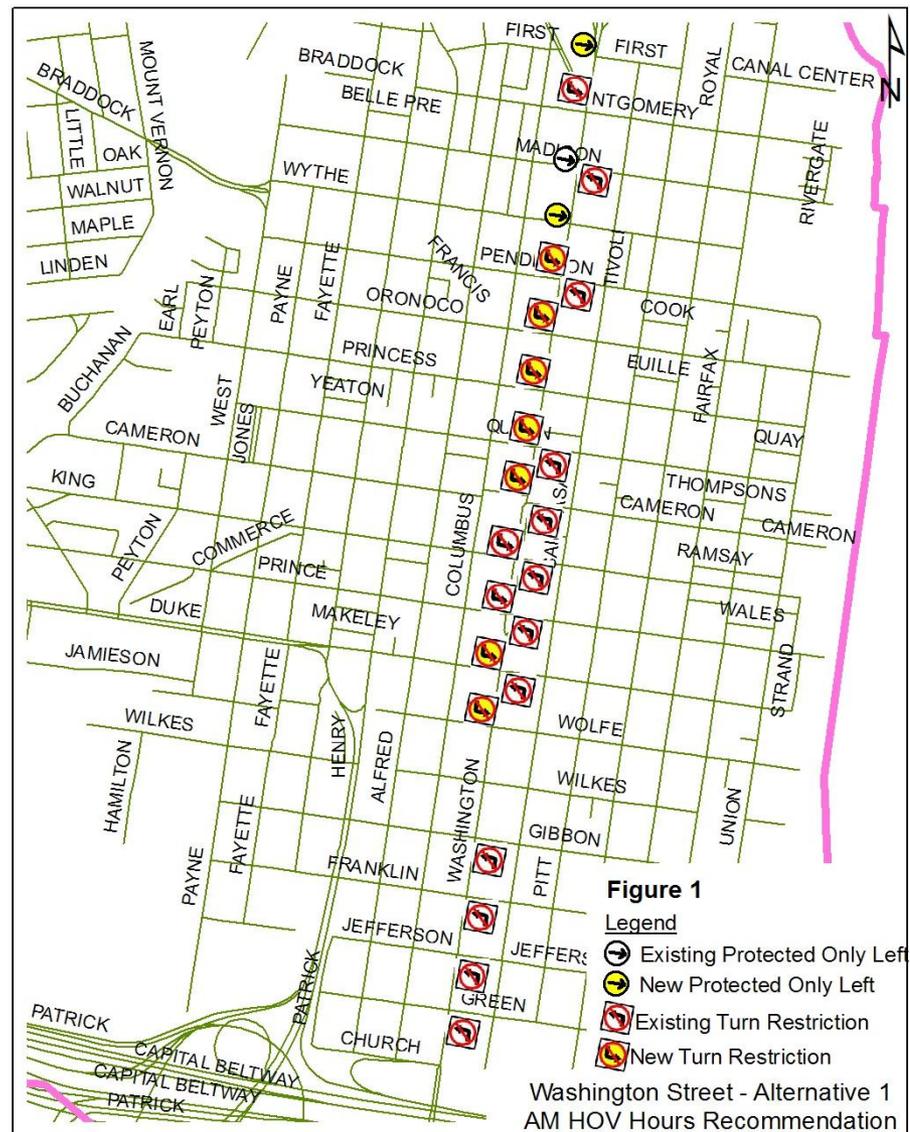
* Five alternatives were considered to address the elevated left turn crash rates:

1. Left turn prohibitions during HOV hours
2. Lane control signals with shifting double yellow line
3. Left turns on green arrow only during HOV hours
4. Move HOV lane from curb lane to inside lane
5. Eliminate HOV lanes on Washington Street

Alternative 1 Proposed Conditions AM Peak

* New southbound left turn restrictions at seven intersections:

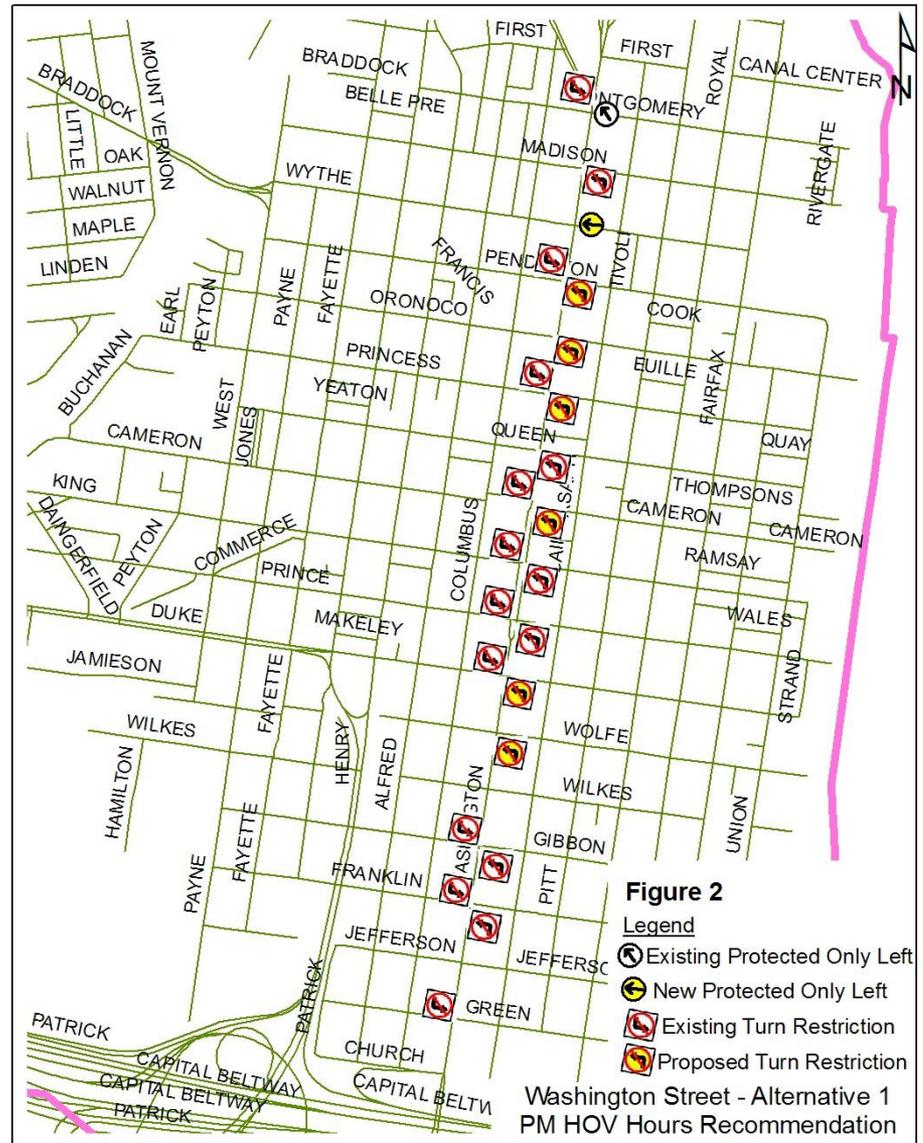
1. Pendleton Street
2. Oronoco Street
3. Princess Street
4. Queen Street
5. Cameron Street
6. Duke Street
7. Wolfe Street



Alternative 1 Proposed Conditions PM Peak

* New northbound left turn restrictions at six intersections:

1. Pendleton Street
2. Oronoco Street
3. Princess Street
4. Cameron Street
5. Duke Street
6. Wolfe Street



Input from Traffic & Parking Board Meeting

- * Make sure bus turning movements are considered
- * Concern about the increase in the number of potential new trips on the adjacent parallel streets
- * Concern about the length and overall number of left turn restrictions (9 consecutive intersections restricted in the AM peak; 9 consecutive intersections restricted in the PM peak)
- * Reconsider the feasibility of Alternative 3 (protected left turn phasing) in lieu of restricting left turns
- * Potential of loss of business for shops along Washington St
- * Increased traffic adjacent to school sites

Alternative 6 based on Traffic & Parking Board Input

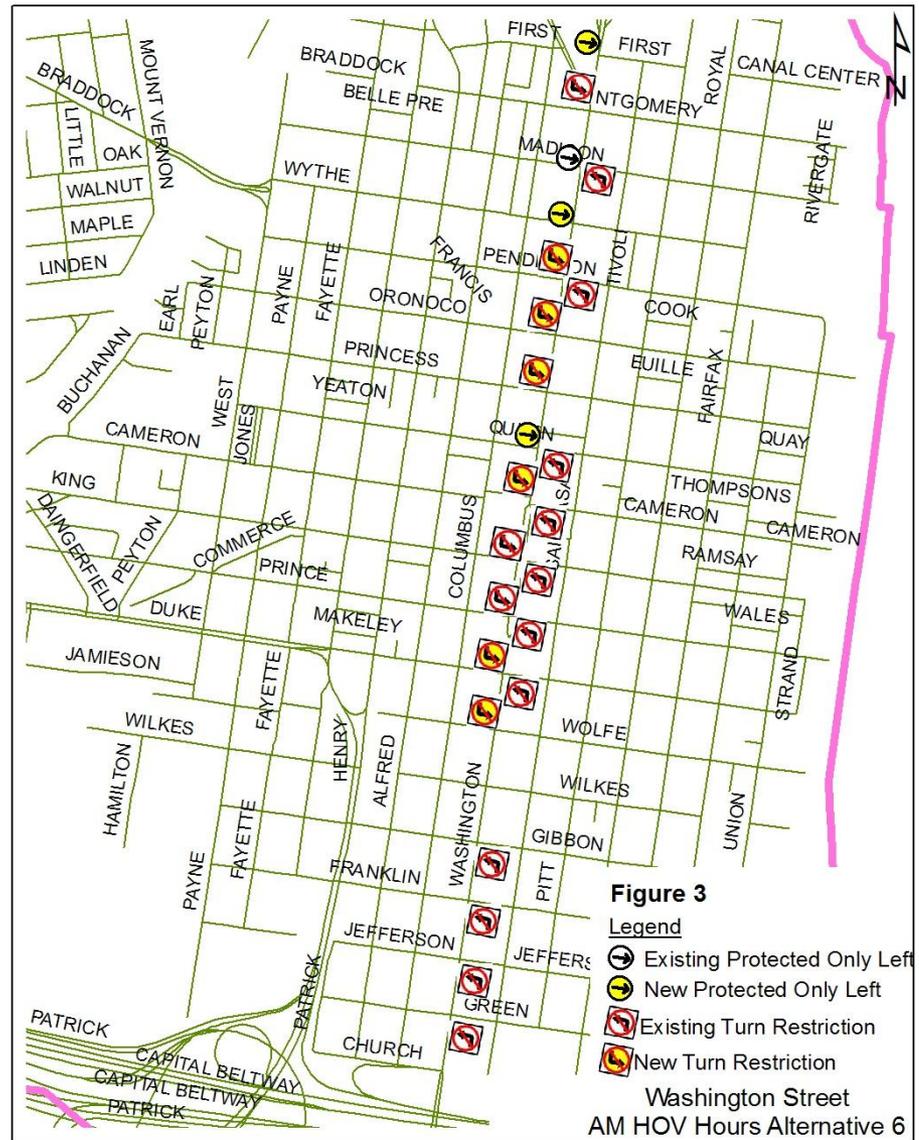
- * Hybrid of Alternatives 1 & 3
- * During the AM HOV hours, protected left turns would be allowed southbound at Queen Street
- * During the PM HOV hours, protected left turns would be allowed northbound at Princess Street
- * All other proposed left turn restrictions in Alternative 1 would remain in place.
- * Would require signing the left lane as left turn only during the protected left turn hours (7-9 AM SB and 4-6 PM NB)

Alternative 6 Proposed Conditions AM Peak

* New southbound left turn restrictions at six intersections:

1. Pendleton Street
2. Oronoco Street
3. Princess Street
4. Cameron Street
5. Duke Street
6. Wolfe Street

* New protected left turn (left on green arrow only) at Queen Street

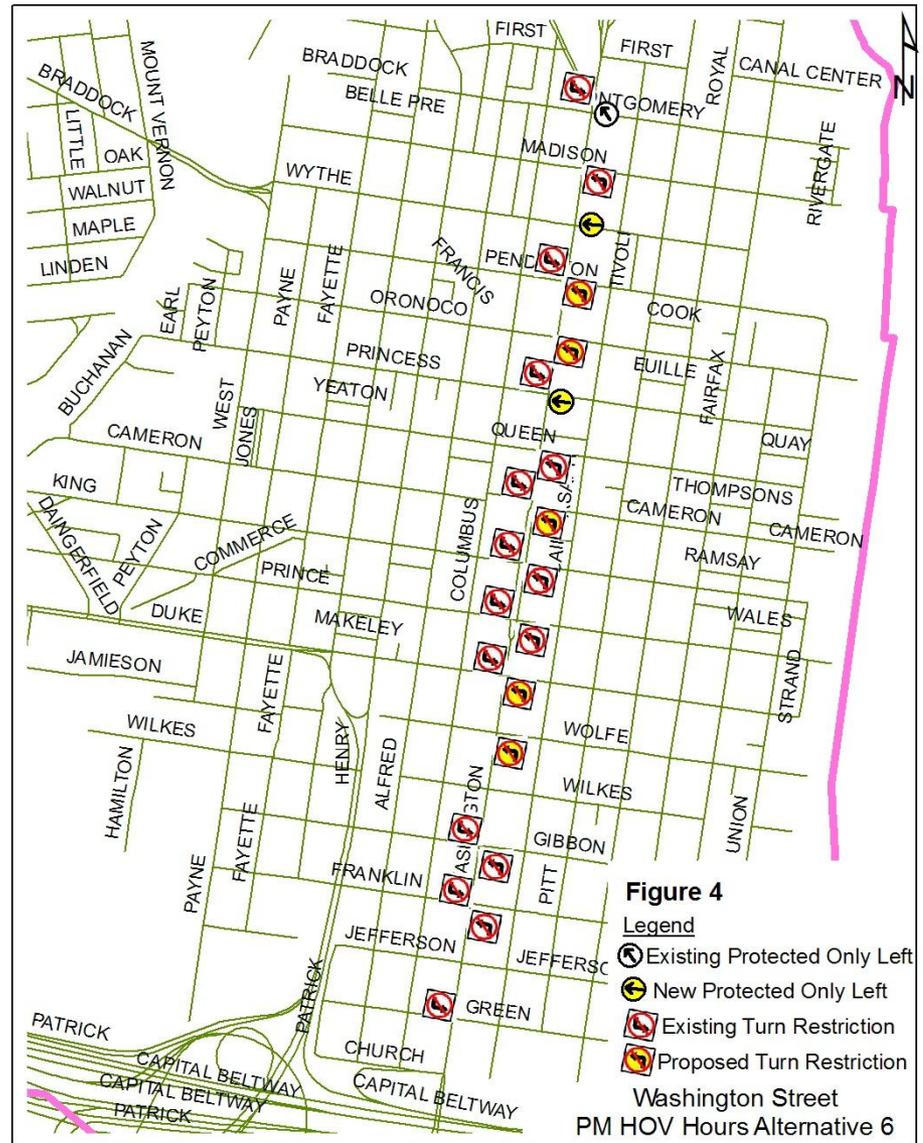


Alternative 6 Proposed Conditions PM Peak

* New northbound left turn restrictions at five intersections:

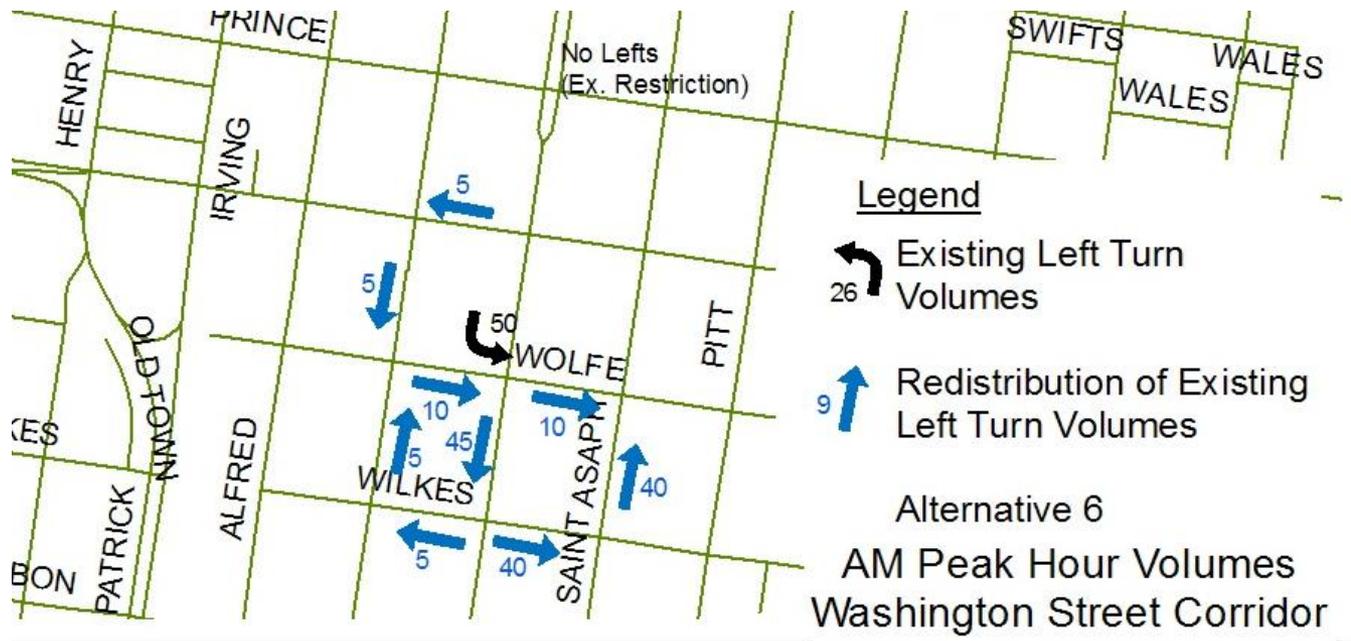
1. Pendleton Street
2. Oronoco Street
3. Cameron Street
4. Duke Street
5. Wolfe Street

* New protected left turn (left on green arrow only) at Princess Street



Redistribution of Traffic

AM Peak Hour example of traffic redistribution due to left turn restriction



Analysis of Alternative 6

* Advantages

1. Provides a break from nine consecutive intersections with no left turn during both AM and PM HOV hours
2. Provides one additional protected left turn movement in the off peak direction during HOV hours
3. Helps minimize distances traveled on roadways parallel to Washington Street

* Disadvantages

1. Off peak direction limited to one left turn lane and one shared through/right turn lane
2. Potential for driver confusion due to unique signal configuration
3. Five consecutive intersections with no left turn during AM HOV hours and six consecutive intersections with no left turn during PM HOV hours

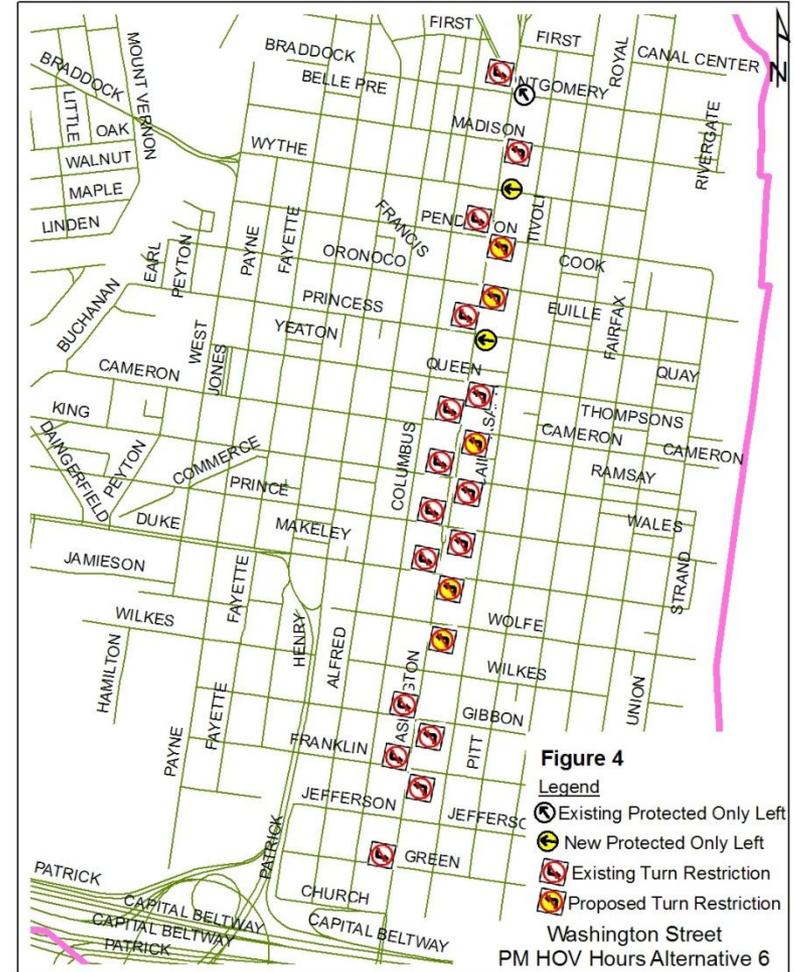
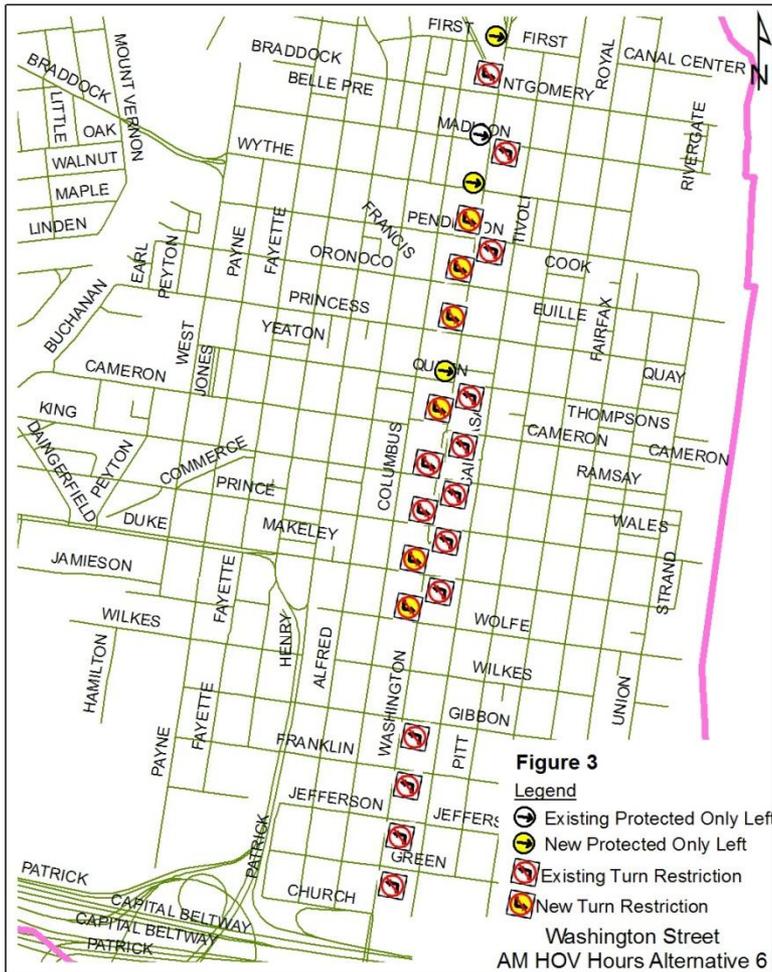
Input from Stakeholder Meetings

- * Consider lengthening yellow light timing on Washington Street
- * Concern over speeding in HOV lanes
- * Consider adding pedestrian countdown signals
- * Alternative 6 was favored over the alternative originally presented to the Traffic and Parking Board

HOV Speed Data & Existing Yellow Timing Data

- * HOV Spot Speed Data
 - Southbound Average HOV Speed from 4-6 PM was 20.0 MPH and 85th percentile speed was 26.6 MPH.
- * HOV Average Speed Data
 - Average Speed was 10.7 MPH during the AM Peak
 - Average Speed was 9.9 MPH during the PM Peak
- * Yellow timing data
 - All study intersections on Washington Street corridor timed at 3 seconds of yellow. This is compliant with the yellow time requirements using VDOT's methodology

Staff Recommendation



* Staff recommends Alternative 6 be approved by the Traffic and Parking Board