1. Key Takeaways
2. TIA
   A. Document
   B. Analysis
   C. Assumptions
   D. Results—Key
   E. Results—AM
   F. Results—PM
3. Key Takeaways
3. Key Takeaways

Arrival Peak Hour

*Both Site Plan and Alternate Site Plan*

- 5-Points—Need signal timing changes. Need to extend southbound left-turn lane on Military on approach to 5-Points. **NEW**
- Old Dominion & Lorcom—Need signal timing changes. Do not need second northbound thru lane. **NEW**

*Site Plan*

- Drop-off/Pick-Up driveway at Old Dominion—2 exit lanes needed. **CONFIRMED**

*Alternate Site Plan*

- Drop-off/Pick-up driveway at Vacation—2 exit lanes needed. **NEW**
1. Key Takeaways

Dismissal Peak Hour

• Minimal impacts to vehicle operations. **CONFIRMED**

Old Dominion Signal Warrants

*Site Plan (Road)*

• Full signal at new driveway exit meets warrants. **CONFIRMED**

*Alternate Site Plan (No Road)*

• Pedestrian Hybrid Beacon (HAWK) meets warrants. **CONFIRMED**

Site Plan vs. Alternate Site Plan

• TDG has no significant reservations about either the Site Plan or Alternate Site Plan from a transportation perspective. **CONFIRMED**
• Posted on APS website
• Includes:
  – Background information
  – Analysis of existing conditions
  – Trip generation
  – Site traffic distribution and assignment
  – Analysis of future conditions without development
  – Analysis of future conditions with development
  – Conclusions
  – Appendices
2B. TIA Analysis

What we analyzed ...

- Vehicular delay— all study intersections
- Level of Service (LOS)— all study intersections
- Queueing—all study intersections and Vacation Lane

Analysis tools

- SimTraffic used for unsignalized intersections.
- Synchro used for signalized intersections (including 5-Points).
How TIA analysis differs from previous analysis...

- Includes future year of 2019 (previously 2021) based on VDOT requirements
- Refined analysis of 5-points
- Revised trip distribution
- Analyzed impact of pedestrian crossings
- Included HAWK in Alternate Site Plan Analysis

Example of SimTraffic simulation
## 2C. TIA Assumptions

<table>
<thead>
<tr>
<th>Arrival</th>
<th>Dismissal</th>
</tr>
</thead>
<tbody>
<tr>
<td>35% drive rate</td>
<td>22% drive rate</td>
</tr>
<tr>
<td>804 trips</td>
<td>505 trips</td>
</tr>
<tr>
<td>Trip distribution</td>
<td>Trip distribution</td>
</tr>
<tr>
<td>– Inbound – Generally evenly distributed</td>
<td>– Inbound – Weighted slightly toward DC</td>
</tr>
<tr>
<td>– Outbound – Weighted slightly towards DC</td>
<td>– Outbound – Generally evenly distributed</td>
</tr>
<tr>
<td>2019 analysis year</td>
<td>2019 analysis year</td>
</tr>
</tbody>
</table>
2C. TIA Assumptions

Assumed AM Drive Rate vs. Drive Rate at Other APS Neighborhood Middle Schools

Drive Rate Assumption: 35%

Avg. Neighborhood MS

- Williamsburg
- Kenmore
- Swanson
- Jefferson
- Gunston

Assumed drive rate represents 75th percentile of this APS middle school survey data.
Assumed PM Drive Rate vs.
Drive Rate at Other APS Neighborhood Middle Schools

Drive Rate Assumption

Avg. Neighborhood MS

Williamsburg

Kenmore

Jefferson

Swanson

Gunston

Assumed drive rate represents 75th percentile of this APS middle school survey data

2014 Student Tally  2013 Student Tally
## 2C. TIA Assumptions

### Trip Generation

<table>
<thead>
<tr>
<th></th>
<th>AM Peak Hour Trips</th>
<th>PM Peak Hour Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Drop Offs</td>
<td>706</td>
<td>438</td>
</tr>
<tr>
<td>Staff</td>
<td>62</td>
<td>31</td>
</tr>
<tr>
<td>Visitors</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Buses</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>804</strong></td>
<td><strong>505</strong></td>
</tr>
</tbody>
</table>
2D. TIA Results—Key

**Level of Service Codes**

<table>
<thead>
<tr>
<th></th>
<th>LOS A or B</th>
<th>LOS C or D</th>
<th>LOS E or F</th>
<th>N/A</th>
</tr>
</thead>
</table>

**Scenario Codes**

<table>
<thead>
<tr>
<th>Scenario Codes</th>
<th>Existing</th>
<th>No Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>E</td>
<td>NB</td>
</tr>
<tr>
<td>SP</td>
<td>ASP</td>
<td></td>
</tr>
</tbody>
</table>

**Site Plan**

**Alternate Site Plan**
2E. TIA Results – AM

Average Delay per Vehicle (unit: Seconds)

All figures represent year 2019.

E=Existing
NB=No Build
SP=Site Plan
ASP=Alternate Site Plan

LOS A or B
LOS C or D
LOS E or F
N/A

E   NB   SP   ASP

3 3 5 7
2 2 2
16 17
16 18

N/A N/A
2 6
3 3
7 11
All figures represent year 2019.
2E. TIA Results—AM

Average Queue

Peak Queue

Site Plan
Alternate Site Plan
2E. TIA Results—AM

Average Queue

Peak Queue

Site Plan
Alternate Site Plan
2F. TIA Results – PM

Average Delay per Vehicle (unit: Seconds)

All figures represent year 2019.
All figures represent year 2019.

E = Existing
NB = No Build
SP = Site Plan
ASP = Alternate Site Plan
3. Key Takeaways

Arrival Peak Hour

_Both Site Plan and Alternate Site Plan_
- 5-Points—Need signal timing changes. Need to extend southbound left-turn lane on Military on approach to 5-Points. **NEW**
- Old Dominion & Lorcom—Need signal timing changes. Do not need second northbound thru lane. **NEW**

_Site Plan_
- Drop-off/Pick-Up driveway at Old Dominion—2 exit lanes needed. **CONFIRMED**

_Alternate Site Plan_
- Drop-off/Pick-up driveway at Vacation—2 exit lanes needed. **NEW**
1. Key Takeaways

Dismissal Peak Hour

• Minimal impacts to vehicle operations. CONFIRMED

Old Dominion Signal Warrants

Site Plan (Road)

• Full signal at new driveway exit meets warrants. CONFIRMED

Alternate Site Plan (No Road)

• Pedestrian Hybrid Beacon (HAWK) meets warrants. CONFIRMED

Site Plan vs. Alternate Site Plan

• TDG has no significant reservations about either the Site Plan or Alternate Site Plan from a transportation perspective. CONFIRMED
Questions?