

## TECHNICAL MEMORANDUM

To: Elizabeth Scullin  
From: Kayla Ord, PE  
Chad Baird  
Date: October 20, 2021  
Subject: **Digital Gateway - Trip Generation Memo**

Prince William County  
Gorove Slade

### Introduction

The purpose of this memorandum is to assess the Trip Generation for the proposed Comprehensive Plan Amendment (CPA) against the existing Plan's allowable development. The proposed CPA is for approximately 2,133 acres of land in northern Prince William County along the Pageland Lane corridor. Approval would allow the 2,133 acre corridor to develop data centers at up to a 0.3 FAR.

The study area contains approximately 198 parcels which are all currently zoned either A-1 (Agricultural) which allows one dwelling unit per 10 acres or SR-5 (Semirural Residential) which allows one dwelling unit per 5 acres. Some of these parcels are legally non-conforming as to size – being smaller grandfathered or family subdivision lots. The Civil War Preservation Trust owns 20.35 acres within the corridor, which cannot be developed, leaving 2,113 acres to be developed at up to a 0.30 FAR. This could result in up to 27,612,684 SF of data center GFA.

Figure 1 shows the general location and the affected land bays.

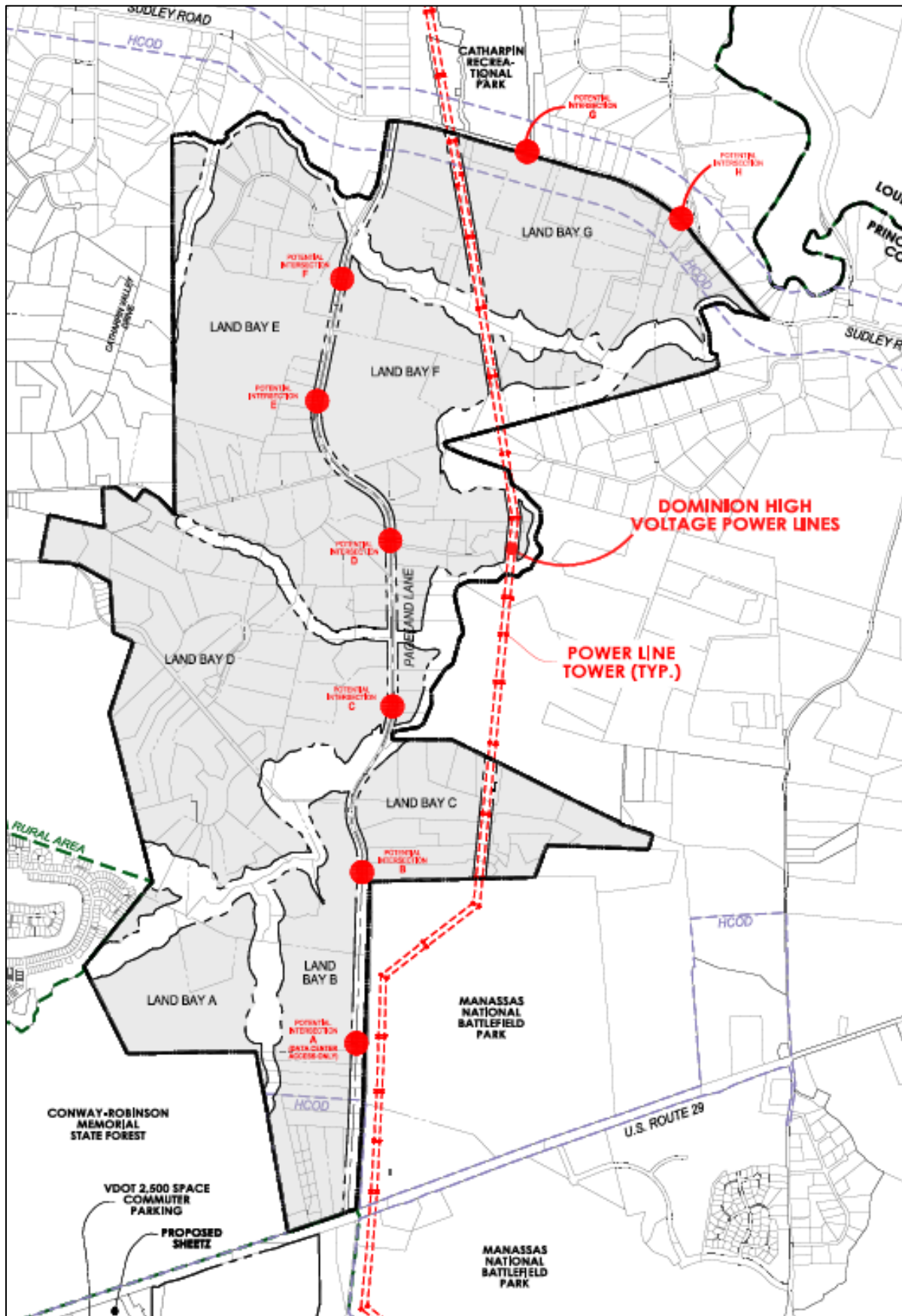


Figure 1: Site Location

## Trip Generation Comparison

### Existing Development

As noted previously, the site is currently occupied by approximately 198 parcels which are estimated to contain approximately 196 dwelling units. The trip generation for the existing development was assessed for the weekday morning (AM) and weekday afternoon (PM) peak hours, as well as for a typical weekday utilizing ITE’s Trip Generation Manual, 10<sup>th</sup> Edition as shown in Table 1. Please note, the trip generation presented has no internal, transit, or pass-by reductions applied for the purposes of this trip comparison.

**Table 1: Existing Trip Generation (ITE 10th Ed.; Peak Hour of the Adjacent Street)**

ITE Land Use Code <i>Trip Generation, 10th Ed.</i>		Quantity	----- Weekday -----						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
<b>Existing Development</b>									
Residential	210	Single-Family Housing	36	108	144	122	72	194	1,931
<b>Existing Development</b>			<b>36</b>	<b>108</b>	<b>144</b>	<b>122</b>	<b>72</b>	<b>194</b>	<b>1,931</b>

As can be seen in the table above, the existing development is anticipated to generate approximately 144 AM peak hour trips, 194 PM peak hour trips, and 1,931 daily trips throughout a typical weekday

### Allowable Subdivided Development

In addition to the existing development, the trip generation for the allowable subdivided development. Per the Virginia State Code, family subdivision is allowed in addition to Prince William County’s 10 acre lot requirement. Many lot owners along the Pageland Lane corridor have the right to subdivide their property to as little as 1 acre lots. Therefore, this additional development should be considered By-Right. In order to determine the number of by-right lots, each existing parcel was analyzed for its suitability for additional family subdivision lots, resulting in approximately 750 lots.

The trip generation for the allowable development was assessed for the weekday morning (AM) and weekday afternoon (PM) peak hours, as well as for a typical weekday utilizing ITE’s Trip Generation Manual, 10<sup>th</sup> Edition as shown in Table 2. Please note, the trip generation presented has no internal, transit, or pass-by reductions applied for the purposes of this trip comparison.

**Table 2: Allowable Trip Generation (ITE 10th Ed.; Peak Hour of the Adjacent Street)**

ITE Land Use Code <i>Trip Generation, 10th Ed.</i>		Quantity	----- Weekday -----						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
<b>Allowable Development (Subdivided Residential)</b>									
Subdivided Residential	210	Single-Family Housing	134	403	537	443	260	703	6,637
<b>Allowable Development</b>			<b>134</b>	<b>403</b>	<b>537</b>	<b>443</b>	<b>260</b>	<b>703</b>	<b>6,637</b>

As can be seen in the table above, the allowable development is anticipated to generate approximately 537 AM peak hour trips, 703 PM peak hour trips, and 6,637 daily trips throughout a typical weekday.

### Proposed Development Program

As previously mentioned, the proposed CPA would allow approximately 2,113 acres to develop data centers at up to an FAR of 0.3 which would result in up to 27,612,684 SF of data centers.

The trip generation for the allowable development was assessed for the weekday morning (AM) and weekday afternoon (PM) peak hours, as well as for a typical weekday utilizing ITE’s Trip Generation Manual, 10<sup>th</sup> Edition as shown in Table 3. Please note, the trip generation presented has no internal, transit, or pass-by reductions applied for the purposes of this trip comparison.

**Table 3: Proposed Site Trip Generation (ITE 10th Ed.; Peak Hour of the Adjacent Street)**

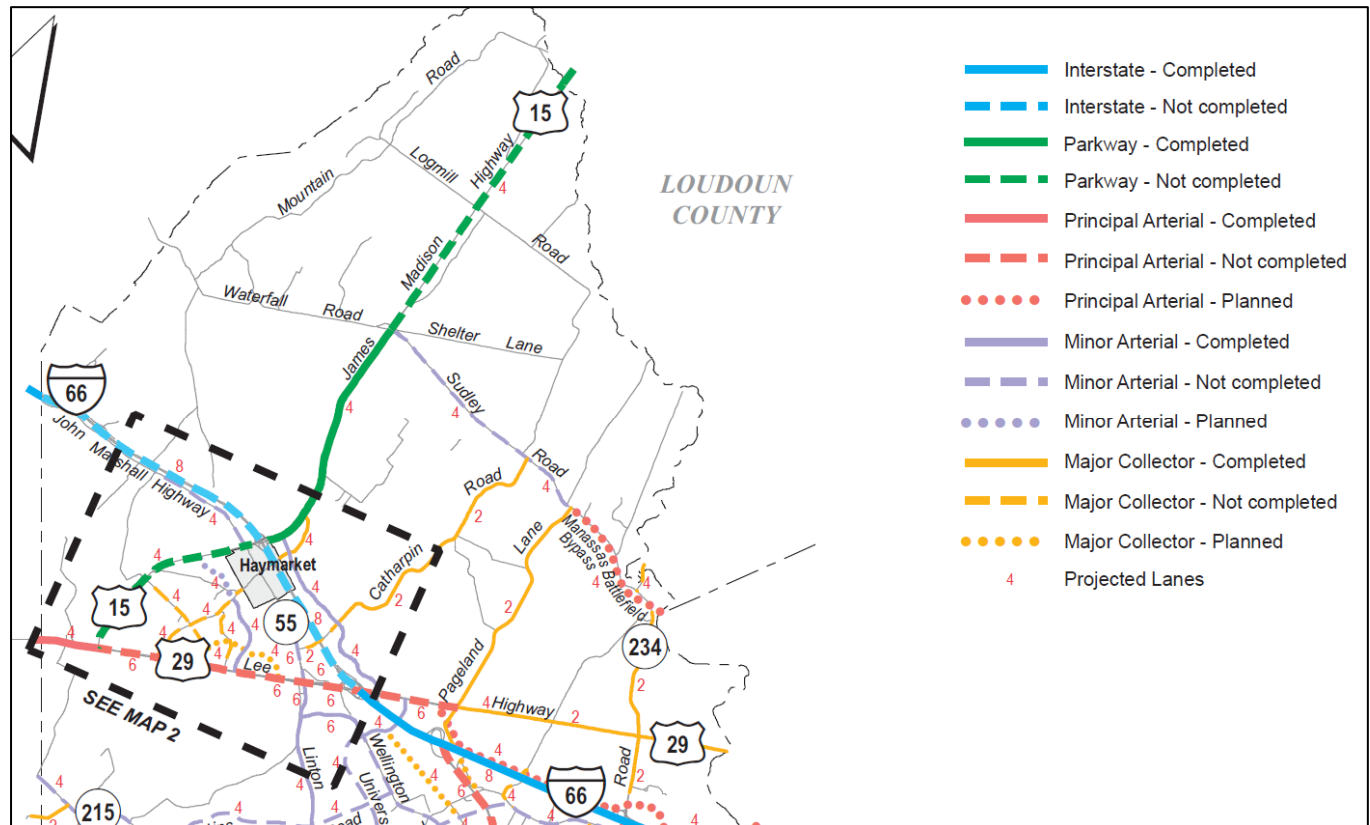
ITE Land Use Code Trip Generation, 10th Ed.		Quantity	----- Weekday -----							
			AM Peak Hour			PM Peak Hour			Daily	
			In	Out	Total	In	Out	Total	Total	
<b>Proposed Development</b>										
Data Centers	160	Data Center	27,612,684 SF	1,971	1,613	3,584	910	2,122	3,032	27,337
<b>Proposed Development Site Trips</b>				<b>1,971</b>	<b>1,613</b>	<b>3,584</b>	<b>910</b>	<b>2,122</b>	<b>3,032</b>	<b>27,337</b>
<b>Difference (Proposed - Existing)</b>				<b>1,935</b>	<b>1,505</b>	<b>3,440</b>	<b>788</b>	<b>2,050</b>	<b>2,838</b>	<b>25,406</b>
<b>Difference (Proposed - Allowable)</b>				<b>1,837</b>	<b>1,210</b>	<b>3,047</b>	<b>467</b>	<b>1,862</b>	<b>2,329</b>	<b>20,700</b>

As can be seen in the table above, the proposed development is anticipated to generate approximately 3,584 AM peak hour trips, 3,032 PM peak hour trips, and 27,337 daily trips throughout a typical weekday. These project trips would be an increase over the existing and the allowable trip generations.

**CUBE Analysis**

As indicated in the previous section, the proposed CPA would generate more trips than the existing or buildout of by-right scenarios. Therefore, a CUBE Model analysis is proposed to determine the impact of this increase in trips on the regional transportation network.

The CUBE Modeling, which is currently underway, will assume the planned road improvements included in the current comprehensive plan in the 2040 analysis and determine what, if any, additional high-level transportation improvements may be required to accommodate the increase in vehicular trips. The currently planned regional road improvements are shown in Figure 2.



**Figure 2: Comprehensive Plan – Thoroughfare Plan Map Excerpt**

As shown, the following are some of the road improvements planned in the vicinity of the site:

- Sudley Road: Planned to be widened to 4 lanes from Route 15 to Gum Springs Road
- Gum Springs Road: Planned to be widened to 4 lanes
- Lee Highway (Route 29): Planned to be widened to 6 lanes west of Pageland Lane

In addition to the planned roads, the analysis will look at a number of potential improvements that may be needed to offset the additional trips, including the potential to widen Pageland Lane to 4 lanes.

## Conclusions

This memorandum supports the following conclusions:

- The proposed CPA development is anticipated to generate more trips than the existing or buildout of by-right development.
- A CUBE model analysis will be done to determine the impact on the regional transportation network and if additional improvements are needed to accommodate the additional trips.