Effingham Parkway and Forest Haven Drive/Squirrel Run

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Prepared by:

POND

Prepared for:

Effingham County Georgia

Attachments:

Appendix A – Traffic Counts
Appendix B – Traffic Analysis Output
Appendix C – Pavement Analysis and Cost Estimations

Introduction

Effingham County and the Georgia Department of Transportation (GDOT) are constructing Effingham Parkway, a new roadway in southern Effingham County, extending from the intersection of SR 30 and Benton Boulevard northward to Blue Jay Road. This roadway will connect to a number of existing roadways, including Forest Haven Drive and Squirrel Run. Upon its completion, Forest Haven Drive will create a link between Hodgeville Road and Effingham Parkway as shown in **Figure 1**.

Figure 1 *Study Area Map*

This report works to anticipate how this new connection may affect travel patterns in the area and specifically how it may affect traffic patterns on Forest Haven Drive, including at the existing intersection with Hodgeville Road. This document also includes a discussion of potential improvements needed along Forest Haven Drive and at the intersection with Hodgeville Road, including improvements to existing pavement needed to support increased traffic, improvements to signage and/or curvature needed to help improve safety, and intersection lane changes needed to support increased traffic at Hodgeville Road.

Existing Conditions

In order to understand existing traffic dynamics in the area, the following traffic volumes were referenced:

- A twelve-hour intersection turning movement count was taken at the intersection of Hodgeville Road and Forest Haven Drive on Wednesday, February 23, 2022.
- A twenty-four-hour segment count was taken on Forest Haven Drive west of Mallard Court on Wednesday, February 23, 2022.
- A four-hour intersection turning movement count at Hodgeville Road and SR 30 from the Effingham County TMP was referenced. This count was originally taken on Tuesday, February 9, 2021.

All traffic counts are included in **Appendix A** of this report. In order to estimate current conditions, the observed volumes at Hodgeville Road and SR 30 were adjusted by the COVID-adjustment factor (13%) and the annual growth rate (3.5%) developed in the TMP. Based on this information, estimated year 2022 travel volumes are shown in **Figure 2**.

These intersections were analyzed using Trafficware's Synchro 11 software to understand existing congestion levels at each intersection. Analysis was performed based on methodologies published in the 6th edition of the Highway Capacity Manual (HCM). HCM methodology determines the average amount of delay an intersection control (signal, stop sign, etc.) causes for each vehicle in the intersection. This is typically expressed in average seconds of delay per vehicle (sec/veh). Intersections (or individual approaches or movements at intersections) are then assigned a Level of Service based on this average delay, based on research about drivers' perceptions of delay. Levels of Service range from A to F, with different threshold for signalized and unsignalized control.

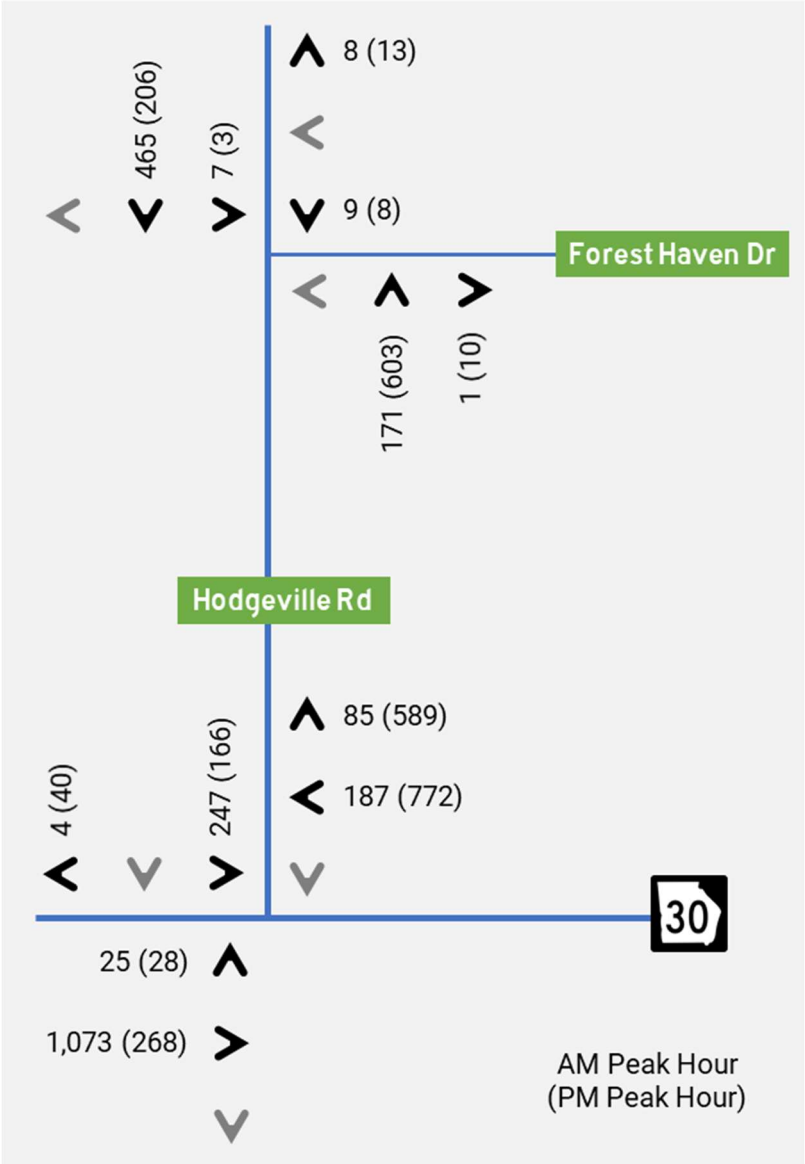

Figure 2 *Year 2022 Peak Hour Traffic Volumes*

Different jurisdictions have different policies, but generally an LOS of A through D is considered acceptable, while LOS of E or F is typically cause for concern. Detailed results of the analysis using year 2022 volumes are included in **Appendix B** and a summary is shown below in **Table 1**.

Table 1 *Existing Conditions*

Intersection	Approach	AM Delay* (AM LOS)	PM Delay* (PM LOS)
Hodgeville Road at Forest Haven Drive	Westbound	12 (B)	14 (B)
	Southbound Left Turn	8 (A)	9 (A)
Hodgeville Road at SR 30	Southbound	>300 (F)	111 (F)
	Eastbound Left Turn	8 (A)	13 (B)

**Average delay is shown in seconds per vehicle*

Existing congestion at the stop-controlled approach of Hodgeville Road at SR 30 is already fairly severe in both the morning and afternoon peak periods. This congestion may encourage drivers to seek alternative routes if they were available.

To understand pavement improvements that may be needed along Forest Haven Drive to support increased traffic flow, a core sample of the existing roadway was taken, along with other observations of the road's physical conditions. This field review revealed that the existing pavement is composed of two inches of asphalt with six inches of base, which is believed to be recycled concrete. The existing pavement is an average of 22.5 feet wide.

Planned Changes

As described previously, Effingham County and GDOT are currently constructing Effingham Parkway, a new two-lane roadway through southern Effingham County from SR 30 to Blue Jay Road. As part of this effort, a concept report was produced in 2014 that included anticipated traffic volumes along Effingham Parkway and turning movement counts at key intersections. While the intersection with Forest Haven Drive/Squirrel Run was not specifically included, this concept report has been referenced to support this analysis. Effingham Parkway is currently anticipated to be open to traffic beginning in year 2025. The concept report references an open year of 2019 and a design year of 2039. Volumes from the concept report have been adjusted using the traffic growth methodology used in the Effingham County TMP to reflect a more updated likely open year of 2025 and design year of 2045. This growth methodology includes applying a 3.5% per year growth through the year 2031 and a growth rate of 1.5% per year thereafter.

GDOT project 0018023 includes substantial improvements planned for the intersection of SR 30 and Hodgeville Road. GDOT plans to construct a single-lane roundabout with eastbound through and westbound right turn bypass lanes at the intersection to relieve congestion and improve safety. Currently this project is anticipated to be let in late 2025 and will open to traffic some time after that.

Magnitude of Potential Cut-Through Traffic

An assessment of current travel patterns was used to estimate how much total traffic may divert to Forest Haven Drive. **Figure 3** shows the existing travel path (in red) that may be diverted along Forest Haven Drive via a new travel path (in pink) made possible by Effingham Parkway. Based on this understanding of the potential travel paths, it was determined that the maximum number of vehicles that may divert to this new travel path is effectively equal to the number of vehicles making a westbound right turn and a southbound left turn at the intersection of Hodgeville Road and SR 30. The estimated total traffic volume that could divert (in year 2025 volumes) is shown by direction and time period in **Table 2**.

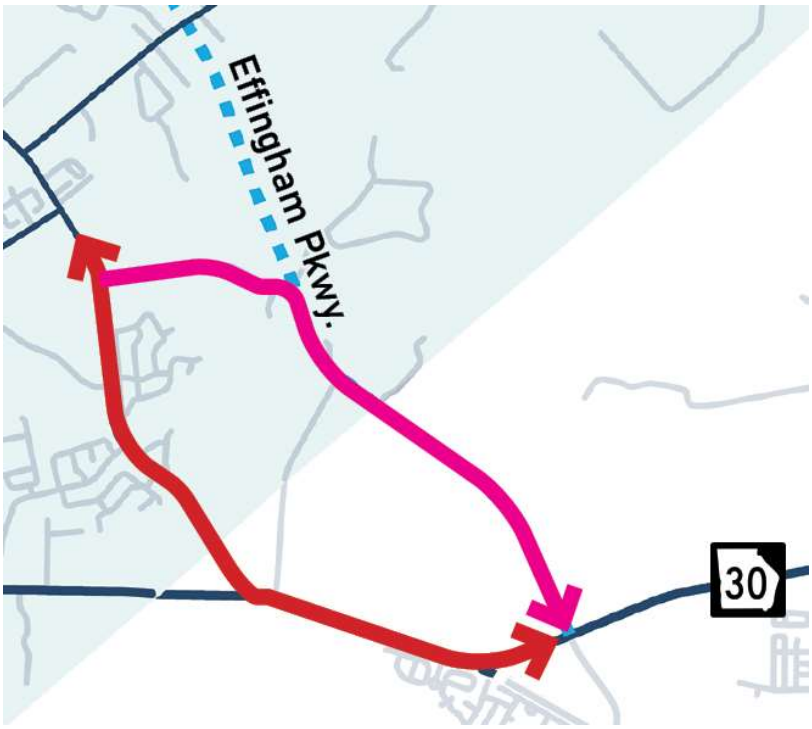

Figure 3 *Existing Travel Path (in red) and Potential New Travel Path (in pink) via Effingham Parkway and Forest Haven Drive*

Table 2 *Total Potential Diverting Traffic, Year 2022*

Time Period	Northbound Travel	Southbound Travel
Morning Peak	94	274
Afternoon Peak	653	184
Daily	3,831	2,349

To better understand how many vehicles are *likely* to use the new travel route along Effingham Parkway and Forest Haven Drive, a travel time comparison was conducted. This analysis was conducted based on open year 2025 volumes, which were developed based on the growth rates developed in the Effingham County TMP (3.5% through year 2031, and 1.5% per year after that). Each travel path (existing or potential) was analyzed under conditions in which all possible diverting traffic follows the path being studied. Each travel path was also analyzed based on its peak period – the southbound paths were both analyzed in the morning peak and the northbound paths were analyzed in the afternoon period. The travel volumes used for these analyses are shown in **Figures 4 and 5**. Results of this travel time analysis are shown in **Table 3**.

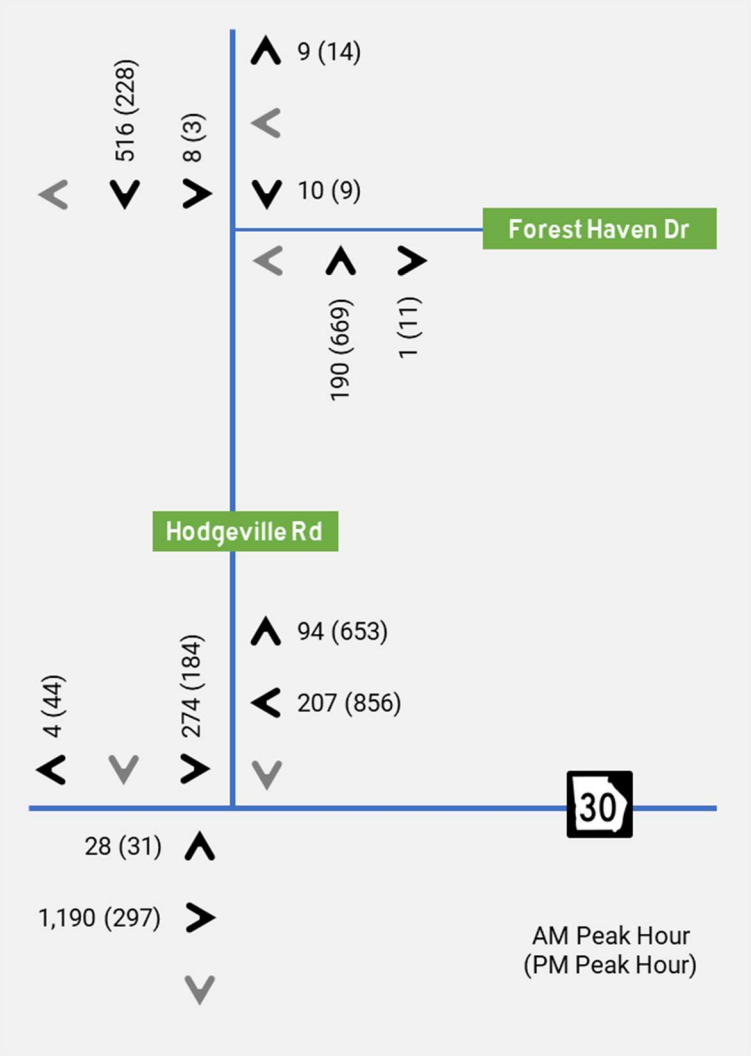

Figure 4 *Year 2025 Volumes Used in Travel Time Analysis of Existing Travel Path*

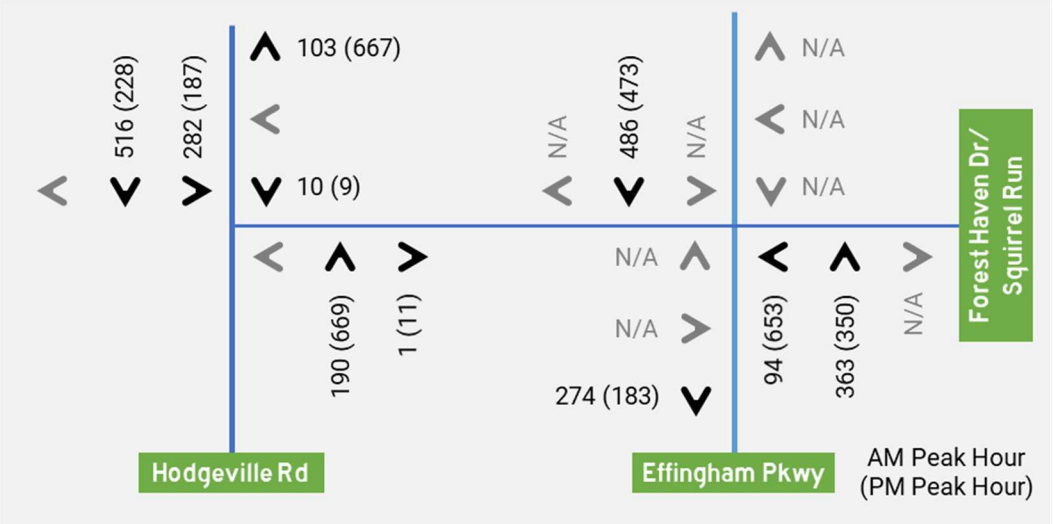

Figure 5 *Year 2025 Volumes Used in Travel Time Analysis of Potential New Travel Path*

Table 3 *Estimated Travel Time by Route, Year 2025*

Existing Travel Path – Northbound (PM)	
Movement/Segment	*Average Time (seconds)*
SR 30 from Effingham Parkway/Benton Boulevard to Hodgeville Road	112
Westbound right turn from SR 30 to Hodgeville Road *(with existing intersection configuration)*	0
Westbound right turn from SR 30 to Hodgeville Road *(with planned GDOT roundabout)*	8
Hodgeville Road from SR 30 to Forest Haven Drive	128
Total *(with existing configuration at Hodgeville Road and SR 30):*	**240 (4.0 mins)**
Total *(with planned GDOT roundabout at Hodgeville Road and SR 30):*	**248 (4.1 mins)**
Potential Travel Path – Northbound (PM)	
Movement/Segment	*Average Time (seconds)*
Effingham Parkway from SR 30 to Forest Haven Drive	148
Northbound left turn from Effingham Parkway to Forest Haven Drive	9
Forest Haven Drive from Effingham Parkway to Hodgeville Road	130
Westbound right turn from Forest Haven Drive to Hodgeville Road	19
Total:	**305 (5.1 mins)**
Existing Travel Path – Southbound (AM)	
Movement/Segment	*Average Time (seconds)*
Hodgeville Road from Forest Haven Drive to SR 30	128
Southbound left turn from SR 30 to Hodgeville Road (under existing intersection configuration)	>300
Southbound left turn from SR 30 to Hodgeville Road (with planned GDOT roundabout)	6
SR 30 from Hodgeville Road to Effingham Parkway/Benton Boulevard	112
Total *(with existing configuration at Hodgeville Road and SR 30)*:	**540 (9.0 mins)**
Total *(with planned GDOT roundabout at Hodgeville Road and SR 30)*:	**246 (4.1 mins)**
Potential Travel Path – Southbound (AM)	
Movement/Segment	*Average Time (seconds)*
Southbound left from Hodgeville Road to Forest Haven Drive	8
Forest Haven Drive from Hodgeville Road to Effingham Parkway	130
Eastbound right Forest Haven Drive to Effingham Parkway	19
Effingham Parkway from Forest Haven Drive to SR 30	148
Total:	**305 (5.1 mins)**

In general, the potential new route is physically about a quarter of a mile shorter (approximately 2.75 miles compared to 3 miles) but may take longer to travel in part because of Forest Haven Drive's lower speed limit (25mph) than other roadways (45mph). In the afternoon period, northbound travelers may not find the potential new path very attractive due to the slower speeds on Forest Haven Drive, and the relative challenge they are likely to find turning from Forest Haven Drive onto Hodgeville Road. However, in the morning, southbound travelers are likely to find the new alternative route attractive because it would avoid the congested southbound left turn from Hodgeville Road onto SR 30. Once the proposed roundabout at this location is constructed, this delay is expected to decrease which is expected to make the route along Forest Haven Drive less attractive.

Based on the comparable forecast travel times predicted in this analysis, it was assumed that it was reasonable to expect approximately 40% of total potential diverting traffic to take the new route, and to expect 60% of existing traffic to remain on the existing route. Total diverting traffic anticipated under this assumption is shown in **Table 4**.

Table 4 *Estimated Diverting Traffic Volume*

Year	Time Period	Northbound Travel	Southbound Travel
2025 (Open Year)	Morning Peak	38	110
	Afternoon Peak	261	74
	Daily	1,532	940
2045 (Design Year)	Morning Peak	57	166
	Afternoon Peak	395	111
	Daily	2,320	1,423

To understand the impacts of these diversions, analyses of the existing intersections were performed based on a scenario in which no access is provided from Hodgeville Road to Effingham Parkway via Forest Haven Drive. Volumes used for these scenarios are shown in **Figure 6 and 7**. Based on the estimated diverting volumes, new volumes were developed to analyze future conditions with the potential access to identify improvements needed to support this change in travel behavior. These volumes are shown in **Figures 8 and 9**. Results of these analyses using existing and already-planned configurations are shown in **Table 5**.

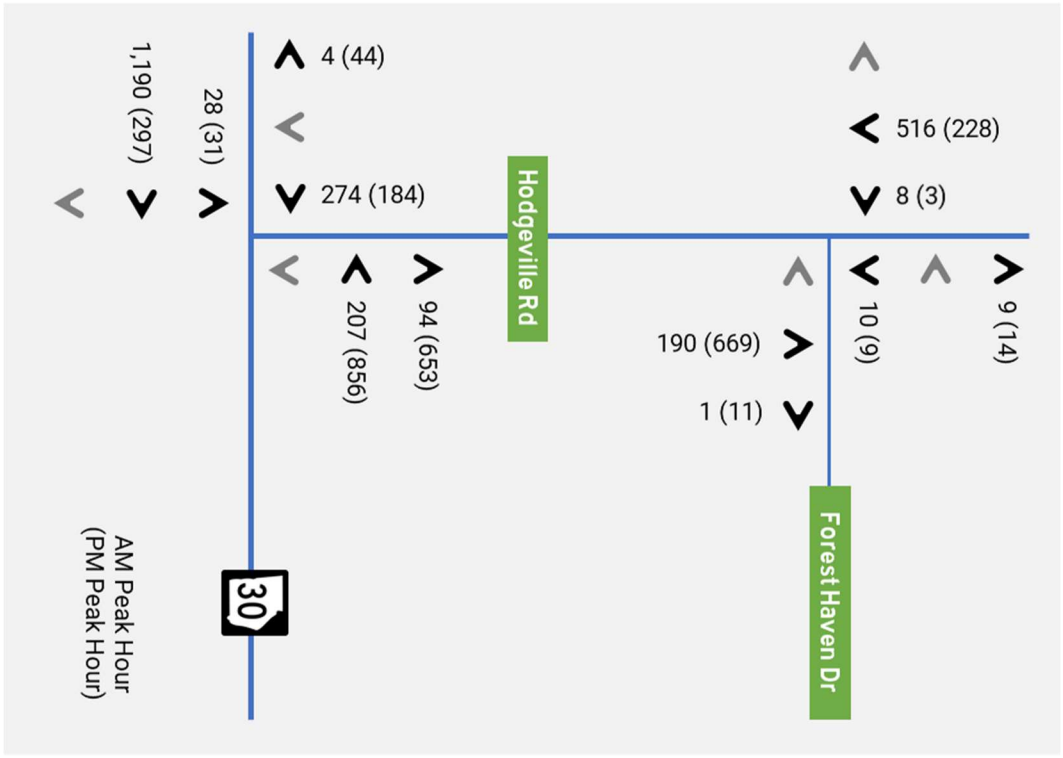

Figure 6 *Year 2025, No Access Volumes*

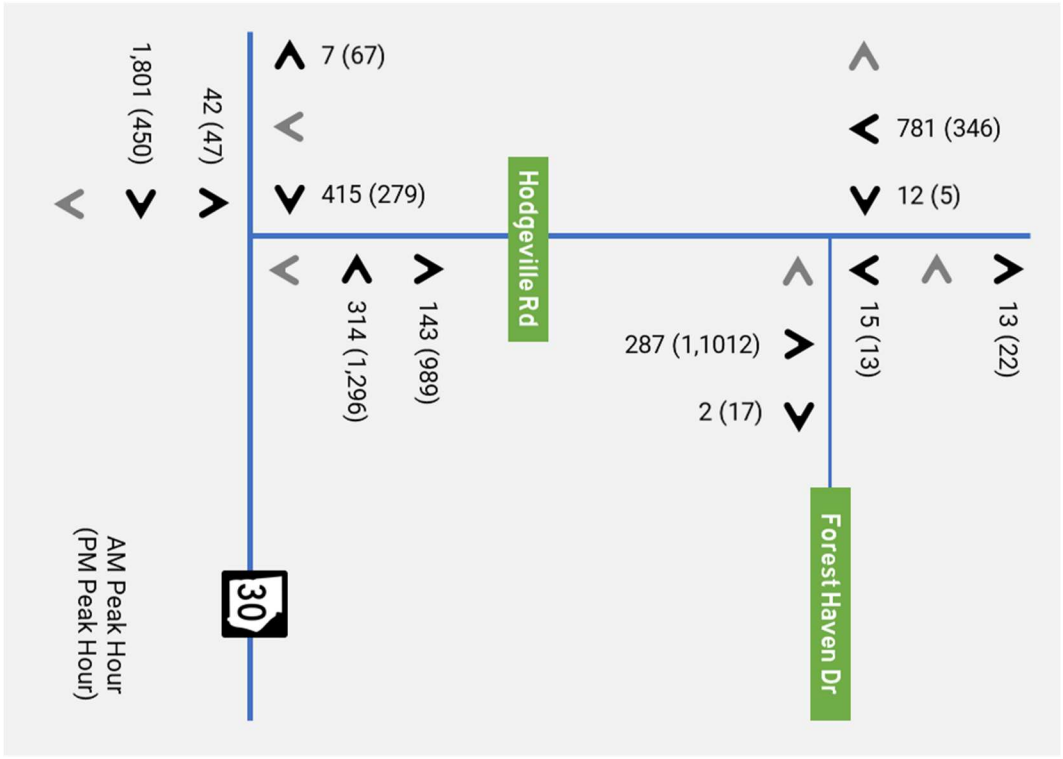

Figure 7 *Year 2045, No Access Volumes*

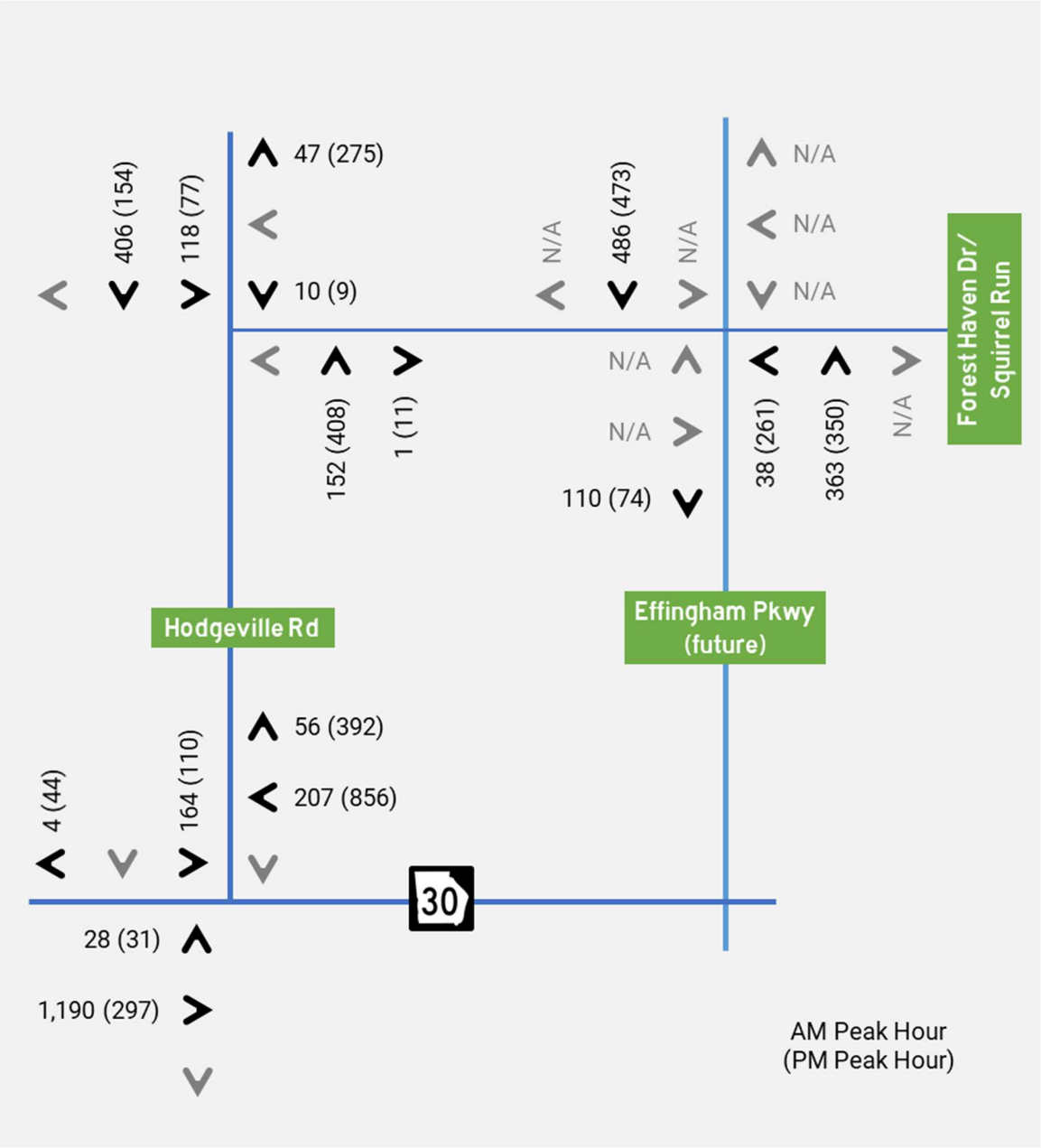

Figure 7 *Year 2025, With Access Volumes*

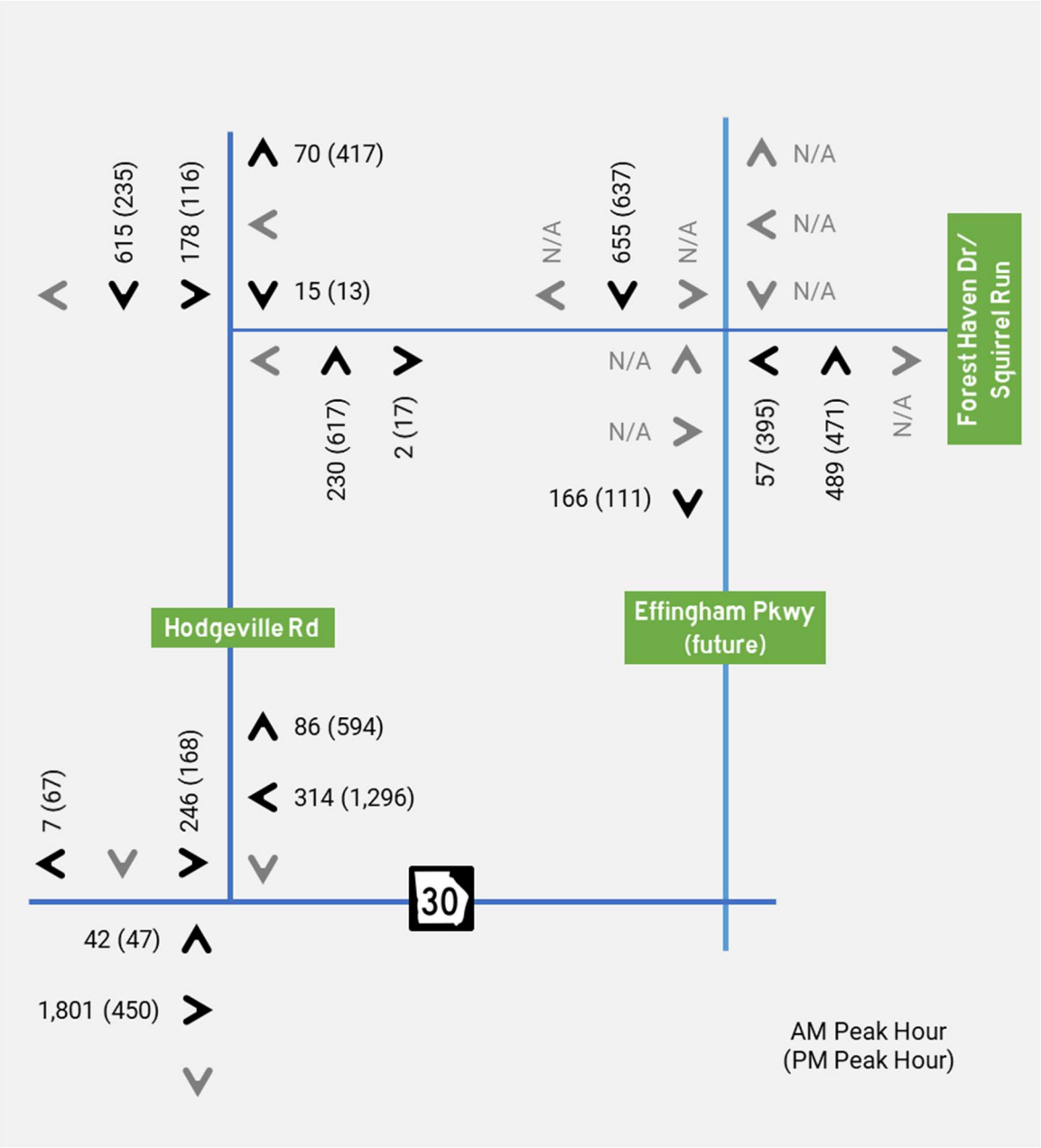

Figure 8 *Year 2045, With Access Volumes*

Table 5 *Future Year Congestion Analysis Results*

2025 No Access			
Intersection	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Hodgeville Road at Forest Haven Drive	Westbound	13 (B)	15 (C)
	Southbound Left Turn	8 (A)	9 (A)
Hodgeville Road at SR 30 (existing configuration)	Southbound	**>300 (F)**	**235 (F)**
	Eastbound Left Turn	8 (A)	15 (B)
Hodgeville Road at SR 30 (GDOT roundabout)	Intersection	2 (A)	9 (A)
2045 No Access			
Intersection	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Hodgeville Road at Forest Haven Drive	Westbound	19 (C)	26 (D)
	Southbound Left Turn	8 (A)	10 (B)
Hodgeville Road at SR 30 (existing configuration)	Southbound	**>300 (F)**	**>300 (F)**
	Eastbound Left Turn	9 (A)	29 (D)
Hodgeville Road at SR 30 (GDOT roundabout)	Intersection	2 (A)	**37 (E)**
2025 With Access			
Intersection	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Hodgeville Road at Forest Haven Drive	Westbound	11 (B)	16 (C)
	Southbound Left Turn	8 (A)	8 (A)
Hodgeville Road at SR 30 (existing configuration)	Southbound	**>300 (F)**	**80 (F)**
	Eastbound Left Turn	8 (A)	12 (B)
Hodgeville Road at SR 30 (GDOT roundabout)	Intersection	1 (A)	8 (A)
Effingham Parkway at Forest Haven Drive	Northbound Left Turn	9 (A)	10 (A)
	Eastbound Right Turn	13 (B)	13 (B)
2045 With Access			
Intersection	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Hodgeville Road at Forest Haven Drive	Westbound	16 (C)	**66 (F)**
	Southbound Left Turn	8 (A)	9 (A)
Hodgeville Road at SR 30 (existing configuration)	Southbound	**>300 (F)**	**>300 (F)**
	Eastbound Left Turn	8 (A)	20 (C)
Hodgeville Road at SR 30 (GDOT roundabout)	Intersection	2 (A)	30 (D)
Effingham Parkway at Forest Haven Drive	Northbound Left Turn	9 (A)	13 (B)
	Eastbound Right Turn	19 (C)	16 (C)

Potential Improvements

If access from Forest Haven Drive is **not permitted** onto Effingham Parkway, no further improvements beyond the already planned roundabout at SR 30 and Hodgeville Road are anticipated to be necessary. In order to restrict access, either a cul-de-sac or a hammerhead cap could be constructed on Forest Haven Drive immediately west of Effingham Parkway. Cost estimates for each of these options are included in **Appendix C**. It is anticipated that construction of this **cul-de-sac could cost between $600,000 and $720,000**, while construction of a **hammerhead cap is estimated to cost between $405,000 and $487,000**. Alternatively, In this scenario, the intersection of SR 30 and Hodgeville Road may begin to experience some congestion by year 2045 and be in need of further improvements to maintain throughput.

If access from Forest Haven Drive **is permitted** onto Effingham Parkway, minor improvements to the intersection of Hodgeville Road and Forest Haven Drive may be necessary to preserve good capacity. A right turn lane on Forest Haven Drive would provide for reduced congestion, and a southbound left turn lane on Hodgeville Road would provide safety benefits for the increased number of turning vehicles. **Table 6** compares anticipated congestion at the intersection with the existing configuration to an improved condition. Notably, the westbound left turn lane still experiences a failing level of service in year 2045. This may be improved with the installation of a two-stage left turn area or an unsignalized High-T configuration. This movement is expected to host fewer than twenty vehicles in the peak hour in year 2045 and this congestion is anticipated to be present regardless of the connection between Forest Haven Drive and Effingham Parkway.

Table 6 *Hodgeville Road and Forest Haven Drive Congestion Analysis*

2025 With Access			
Condition	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Existing Configuration	Westbound	11 (B)	16 (C)
	Southbound Left	8 (A)	8 (A)
Improved condition (additional westbound right and southbound left turn lanes)	Westbound Right	10 (A)	13 (B)
	Westbound Left	15 (C)	15 (C)
	Southbound Left	8 (A)	8 (A)
2045 With Access			
Condition	*Approach*	*AM Delay* (AM LOS)*	*PM Delay* (PM LOS)*
Existing Configuration	Westbound	16 (C)	**66 (F)**
	Southbound Left	8 (A)	9 (A)
Improved condition (additional westbound right and southbound left turn lanes)	Westbound Right	15 (B)	16 (C)
	Westbound Left	17 (C)	**51 (F)**
	Southbound Left	10 (A)	9 (A)

In addition, the pavement along Forest Haven Drive should be improved to support the increased traffic demands placed upon it. As detailed in Appendix C, this could be achieved by either replacing existing pavement and constructing a new pavement section consisting of 6.25” of asphalt and 8” of compacted gravel base, or by performing a Full-Depth Reclamation of the existing pavement. A table including a cost estimate for these pavement improvements and the

new turn lanes at the intersection of Hodgeville Road and Forest Haven Drive is included in **Tables 7 and 8**.

Table 7 *Cost Estimate for Improvements Needed if Access is Provided including Full Depth Reclamation on Forest Haven Drive*

Component	Estimated Construction Cost
Westbound Right Turn Lane	$128,000
Southbound Left Turn Lane	$360,000
Full Depth Reclamation	$400,000
Subtotal:	$888,000
Contingency:	$177,600
Total:	**$1,065,600**

Table 8 *Cost Estimate for Improvements Needed if Access is Provided including Pavement Reconstruction on Forest Haven Drive*

Component	Estimated Construction Cost
Westbound Right Turn Lane	$128,000
Southbound Left Turn Lane	$360,000
Pavement Reconstruction	$700,000
Subtotal:	$1,188,000
Contingency:	$237,600
Total:	**$1,425,600**

In this scenario, diverted traffic also provides relief to the intersection of SR 30 and Hodgeville Road, which reduces congestion at that location and abates the potential need for further improvement. Maintaining access also provides for an alternative route during situations with roadway blockages such as crashes or other emergencies on nearby routes. Maintaining access will also provide more options for emergency vehicle access to locations along Forest Haven Drive and on nearby roadways, potentially reducing response times and improving community safety.