

# Memorandum

TO: Cindy VanDyke, GDOT

FROM: Tracy Selin, CS

DATE: May 2, 2016

RE: Impact Analysis for Roadway Improvements

---

## Benefits Summary

Cambridge Systematics, Inc. (CS) was asked to evaluate the travel time and economic impacts of delivering a package of 11 roadway improvement projects, assuming an open-to-traffic year of 2030. The projects span investment across the state and reflect a mix of improvement strategies. Additional detail on the package of projects that were evaluated and the evaluation methodology that was applied is provided in the Project Description section of this memorandum. The estimated travel time and economic impacts are summarized below in Tables 1 and 2.

The package of 11 roadway improvement projects has a positive impact on auto and truck vehicle delay, on the order of **5% delay reduction** across the transportation network. The decrease in travel delay leads to decreases in transportation costs for residents and businesses, enhancing the state's long-term economic competitiveness. A customized economic forecasting model was used to estimate the competitiveness impact of the transportation investment on Georgia's economy. It is projected that the 11 roadway projects will make the state's economy grow bigger and faster. **The Gross State product (GSP), a measure of the size of the state's economy, is projected to grow by about \$2,466 million more with the projects than without them. The expansion in GSP translates into an additional 13,660 permanent jobs and \$1,081 million of additional personal income for residents throughout the state.** This analysis includes only the long-term economic impacts and not any short-term construction related jobs and impacts.

## Project Description

A summary of the projects evaluated is provided below. A statewide project map and Atlanta inset are included at the end of the memorandum illustrating project locations (Figures 1, 2).

1. **I-285/I-20 East Interchange.** Project reflects ramp reconstruction; construction of Collector-Distributor (CD) lanes between Wesley Chapel and I-285 interchange; and a West-Bound (WB) auxiliary lane between LIB and Panola. Project results in 18 additional lane miles.

2. **I-285/I-20 West Interchange.** Project reflects additional capacity along I-20 East-Bound (EB) and a WB CD lane from the I-285 interchange to FIB. Other improvements include the Hollowell Parkway entrance ramp becoming an additional lane on I-285 South-Bound. The existing left-hand exits will also be reconfigured to right-hand exits with provisions of new alignments and flyovers as appropriate. Project results in a total of 8 additional lane miles.
3. **I-285 West Wall Express Lanes.** Project reflects one new (managed) lane in each direction between I-20 and I-75. The new lanes are added to the outside for a total of 18 additional lane miles.
4. **I-285 East Wall Express Lanes.** Project reflects one new (managed) lane in each direction between I-20 and I-85. The new lanes are added to the outside for a total of 25 additional lane miles.
5. **SR 400 Express Lanes.** Project reflects two (managed) lanes in each direction from I-285 to McGinnis Ferry Road and one (managed) lane each direction from McGinnis Ferry Road to McFarland Road for a total of 71 additional lane miles.
6. **Revive 285 Top End (Express Lanes Only).** Project reflects two new (managed) lanes in each direction along top end of the perimeter between I-75 and I-85 for a total of 62 additional lane miles.
7. **I-85 North Widening from Hamilton Mill to SR 211.** Project reflects an additional general-purpose lane from the end of the current managed lanes at Hamilton Mill to SR 211. The project results in a total of 13 additional lane miles.
8. **I-85 North Widening from SR 211 to U.S. 129.** Project reflects an additional general-purpose lane from SR 211 to U.S. 129. The project results in a total of 20 additional lane miles.
9. **I-75 Truck Lanes from SR 155 (McDonough) to I-475.** Project reflects addition of two truck lanes in northbound direction for a total of 76 additional lane miles.
10. **I-16 Widening from I-516 to I-95.** Project reflects one general-purpose lane from I-516 to I-95, widened to the inside. The project results in a total of 12 additional lane miles.
11. **I-16/95 Interchange Improvement.** Project reflects new flyover ramp, extensions are added while the loop ramps in the existing cloverleaf are removed. The project results in a total of 8 additional lane miles.

Owing to the nature of the projects and their locations, it was necessary to use three separate travel demand models to complete the analysis. They included The Atlanta Regional Commission (ARC) official 4-Step model, the Savannah model, and the GDOT Statewide Travel Demand Model. The ARC and Savannah models have full dual line coding of the freeways and interchanges and thus were the appropriate tools to use to model interchange reconfiguration scenarios. They also represent greater zone and network detail which allows higher fidelity to respond to network changes

A spreadsheet tool was developed by CS as part of the GDOT Economic Impact Study to interface the travel demand model outputs with the economic analysis. The tool reports metrics such as VMT, VHT and average delay by trip purpose by each of 41 REMI regions within Georgia.

Three modeling scenarios were evaluated and summarized for performance impacts. They include:

1. A 2010 Base Year scenario;
2. A 2030 Existing+Committed (E+C) scenario; and
3. A 2030 Build Scenario.

The ARC model was used to analyze the projects within the Atlanta region including projects 1, 2, 3, 4, 5, 6, and 7. The Statewide model was used to analyze the corridor projects along I-85 and I-75 falling just outside of the ARC model domain, including projects 8 and 9<sup>1</sup>. The Savannah model was used to analyze projects within the Savannah region, projects 10 and 11.

The results were summarized across the three model platforms and are summarized in Table 1, below, for travel demand impacts, and in Table 2, below, for corresponding economic impacts. Tables 2.A-C break down the economic impacts by each of the three model regions. Table 3 provides additional detail on Project Costs (including construction and finance costs) and the cost-effectiveness by individual project.

**Table 1 Transportation Impact Summary**

Transportation Impacts	2010	2030 Open to Traffic Year		
	Base	2030 E+C	2030 Build	% Change
Total (Auto+Truck) VMT	225,387,610	275,408,883	274,384,027	-0.4%
Total (Auto+Truck) VHT	8,184,732	11,455,393	11,232,647	-1.9%
Average Vehicle Delay (mins)	0.20	0.32	0.31	-5.4%
Total Vehicle Hours of Delay	1,555,398	3,085,044	2,927,560	-5.1%

**Table 2 Table 2 Aggregate Economic Impact Summary<sup>2</sup>**

ECONOMIC IMPACTS	2030 to 2040
Permanent Jobs (units)	13,660

<sup>1</sup> Truck only lanes were coded in the statewide model for Project 9 parallel to the existing I-75 general-purpose lanes. Autos were prohibited from using these lanes. Note, however, trucks were not prohibited from using the general-purpose lanes. No cost assumptions were applied for the truck only lane assignment; they were loaded to capacity given truck demand along the corridor.

<sup>2</sup> Reflects REMI projections of economic impacts in 2030 carried forward over 10-year timeframe.

Income (millions of \$)	\$1,081
GSP (millions of \$)	\$2,466
Transportation Costs – Auto (millions of \$)	-\$34
Transportation Costs – Truck (millions of \$)	-\$68

**Table 2.A Economic Impact Summary for Projects in Atlanta Region**  
*Projects 1, 2, 3, 4, 5, 6, 7*

<b>ECONOMIC IMPACTS</b>	
Permanent Jobs (units)	10,420
Income (millions of \$)	\$853
GSP (millions of \$)	\$1,971
Transportation Costs – Auto (millions of \$)	-\$28
Transportation Costs – Truck (millions of \$)	-\$48

**Table 2.B Economic Impact Summary for Projects Outside Atlanta/Savannah**  
*Projects 8, 9*

<b>ECONOMIC IMPACTS</b>	
Permanent Jobs (units)	3,230
Income (millions of \$)	\$226
GSP (millions of \$)	\$496
Transportation Costs – Auto (millions of \$)	-\$5.2
Transportation Costs – Truck (millions of \$)	-\$20.1

**Table 2.C Economic Impact Summary for Projects in Savannah Region**  
*Projects 10, 11*

<b>ECONOMIC IMPACTS</b>	
Permanent Jobs (units)	10
Income (millions of \$)	\$2
GSP (millions of \$)	-\$0.5
Transportation Costs – Auto (millions of \$)	-\$0.7
Transportation Costs – Truck (millions of \$)	-\$0.3

**Table 3 Project Level Impacts<sup>3</sup>**

Project	New Lane-Miles	Project Cost (millions)	2030		Difference		Cost (millions)/Benefit <sup>4</sup>
			VHD E+C	VHD Build	VHD Reduction	Percent Reduction in VHD	
1 I-285/I-20 East Interchange	18	\$534	12,518	8,824	3,694	30%	0.14
2 I-285/I-20 West Interchange	8	\$908	7,052	5,739	1,312	19%	0.69
3 I-285 West Wall Express Lanes	18	\$743	50,065	48,390	1,674	3%	0.44
4 I-285 East Wall Express Lanes	25	\$659	68,911	66,470	2,441	4%	0.27
5 SR 400 Express Lanes	71	\$2,420	107,785	88,828	18,957	18%	0.13
6 Revive 285 Top End (Express Lanes Only)	62	\$5,996	116,616	109,915	6,701	6%	0.89
7 I-85 North Widening Hamilton Mill to SR 211	13	\$261	4,716	2,069	2,647	56%	0.10
8 I-85 North Widening SR 211 to U.S. 129	20	\$344	2,178	669	1,509	69%	0.23
9 I-75 Truck Lanes from SR 155 to I-475	76	\$2,064	16,029	9,578	6,451	40%	0.32
10 I-16 Widening from I-516 to I-95	12	\$132	3,776	2,582	1,194	32%	0.11
11 I-16/I-95 Interchange Improvement	8	\$121	2,510	2,455	55	2%	2.2

<sup>3</sup> Reflects average daily impacts.

<sup>4</sup> A measure of relative cost-effectiveness - project cost in millions divided by the VHD reduced for each project.



Figure 2 Coded Projects, Atlanta Inset

