

# Economic Impacts of Road Project Timing Shifts in Sarasota County

Prepared for:



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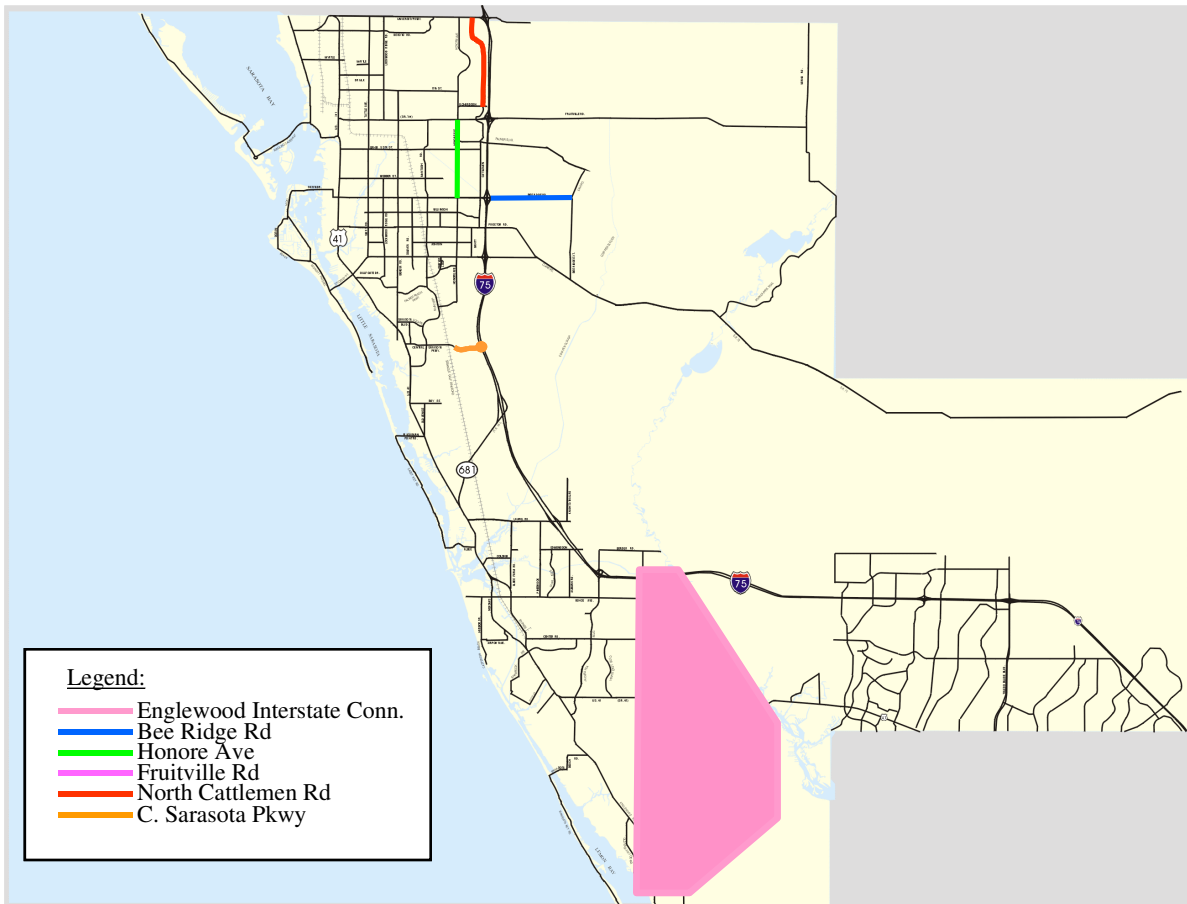
Economic Analysis Program  
Featuring REMI Policy Insight® and IMPLAN®

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## Introduction

Improving traffic flows by widening roads or building new ones could have a significant impact to the people of Sarasota County. What are those impacts and does it make economic sense to finance capital improvement projects to expedite them? Sarasota County has asked the Tampa Bay Regional Planning Council's Economic Analysis Program (EAP) to assess the impacts of expediting several of the road projects in the Long Range Transportation Plan. These projects include; North Cattlemen Road from Fruitville Road to University Parkway, Honore Avenue from Bee Ridge Road to Fruitville Road, Englewood Interstate Connector from south county line to Interstate-75, Fruitville Road from I-75 to Bee Ridge Road Extension, Bee Ridge Road from Interstate-75 to Bee Ridge Road Extension, and Central Sarasota Parkway Interchange from Honore to Interstate-75.

## Location of Road Improvements



## Accelerated Project Schedule

	Design		ROW		Construction	
	<u>Anticipated</u>	<u>Accelerated</u>	<u>Anticipated</u>	<u>Accelerated</u>	<u>Anticipated</u>	<u>Accelerated</u>
<b>Englewood Interstate Connector</b>	2004	2004	2009	2006	2017	2009
<b>Honore Ave.</b>	2004	2004	2005	2005	2008	2007
<b>North Cattleman</b>	2004	2004	2005	2005	2007	2007
<b>Fruitvill Rd.</b>	2009	2005	2011	2007	2014	2009
<b>Bee Ridge Rd.</b>	2011	2006	2013	2008	2015	2010
<b>Central Sarasota Interchange</b>	2003	2003	2005	2005	2017	2006

In addition to providing roads for new development and facilitating some types of re-development to occur in the project area, there are system wide effects that affect all residents, businesses, and visitors in Sarasota County. This study attempts to isolate the economic impact of facilitating accelerate growth in the project areas, the economic impacts of reduced travel delays county wide due to system improvements, the direct fiscal impacts of the project timing shifts, and several other notable considerations. This study does not consider any environmental effects or the effect of a minimal reduction in expected gas tax revenue associated with fuel savings .

### Accelerated Growth Scenario

Growth proponents argue that growth produces jobs and economic prosperity. They say growth builds the tax base and provides needed public revenues. Proponents advocate the active pursuit of growth using economic-development programs, tax subsidies for business, and other means. Growth opponents believe that urban growth does not pay it's fair share of the cost of providing services and that it is linked to many environmental problems including increased automobile emissions, deterioration of air and water quality, loss of rural lands, and a declining sense of community. The results from this section of the study could be viewed as either a constraint scenario or an accelerated growth scenario. The calculations used in REMI's Policy Insight would produce the same results if equal amounts of direct impacts on the development industry were input as positive or negative. The Tampa Bay Regional Planning Council make no claim to be either a proponent or opponent of additional growth in Sarasota County. A 10% annual increase in expected county wide growth was modeled using REMI's Policy Insight. If one expects the accelerated schedule of road projects to have less then a 10% effect in the first few year and great in latter years, one can proportionately increase or decrease these numbers for those particular years to obtain the same results that would be generated by Policy Insight if the model was rerun.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
<b>Employment</b>	58	61	63	62	59	55	51	47	42	39	36	33	31	28	25	
<b>GCP Millions</b>	3.0	3.1	3.2	3.2	2.9	2.7	2.4	2.2	2.0	1.8	1.6	1.5	1.3	1.2	1.1	<b>33.3</b>
<b>Personal Income Milli</b>	3.5	3.7	3.8	3.8	3.6	3.4	3.2	3.0	2.7	2.5	2.3	2.0	1.8	1.6	1.4	<b>42.3</b>

\* GCP and Personal Income are in 21

\* Results represent a 10% annual increase total county c

## System Wide Effects

The FSUTMS (Florida Standard Urban Transportation Model Structure) is used by state and local governments throughout Florida for use in travel demand forecasting. The primary objective of travel demand forecasting is to predict the effects of various policies, programs, and projects on transportation networks. These impacts are commonly quantified by representing the projected demand in terms of forecasted traffic volumes but can provide a wealth of other information that can be used by planners.

Travel demand modeling involves a series of mathematical models that simulate human behavior while traveling. The models are done in a sequence of steps that answer a series of questions about traveler decisions and simulate choices that travelers make in response to a given system of highway and transit alternatives. The travel simulation process follows trips as they begin at a trip origin zone, move through a network of links and nodes and end at a trip destination zone. These traffic analysis zones (TAZs) are composed of land use with similar area type characteristics. TAZs that produce trips are mostly residential and those that attract trips are mostly commercial.

Sarasota County's Public Works Department used FSUTMS to model the effects the projects would have on system efficiency. The FSUTMS was run both with and without the projects. The difference in system delays due to congestion predicted by the FSUTMS was used to estimate the magnitude of economic variables used in REMI's Policy Insight.

REMI's Policy Insight offers users two ways to input variables in the model, variable type or study type. The study type provides a subset of relevant policy variables for a given study type. For example, you could study the effect of casino gaming, an adjustment to minimum wages, or a new road. The input variables offered under the new road study type include; construction of the road, industry reduced travel time, and consumer reduced travel time. TBRPC used the FSUTMS estimates of system delay reduction and an estimate of the consumer and industry costs as they relate to traffic delays. TBRPC also took into account the direct cost of the gasoline saved by reduced congestion when modeling the economic impacts. The economic impacts of the system wide effects are summarized below.

### Cumulative Economic Impacts of System Delay and Fuel Cost Reductions from Construction Year - 2020

	Englewood IS	CS Interchange	Fruitville Rd.	Honore Ave.	Cattlemen Rd.	Bee Ridge Rd.
<b>Average Employment</b>	2994	1254	289	1610	2125	1057
<b>GCP Millions</b>	1971	1017	190	1226	1617	639
<b>Personal Income Millions</b>	1565	858	152	992	1339	497

\*GCP and Personal Income are reported in 2002 dollars

Annual Economic Impacts of System Delay and Fuel Cost Reductions  
from Construction Year - 2020 (\$2002)

<b>Englewood Interstate Connect</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	0	0	0	1984	2263	2486	2681	2857	3017	3159	3287	3404	3507	3599	3678	2994
GCP Millions	0	0	0	99	116	131	144	155	165	175	183	191	198	204	210	1971
Personal Income Million	0	0	0	62	73	88	103	116	128	140	151	162	172	181	190	1565
<b>Central Sarasota Interchange</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	777	889	979	1058	1127	1193	1251	1303	1352	1395	1434	1470	1500	1527	1550	1254
GCP Millions	38	45	50	55	59	64	67	71	74	77	79	82	84	86	87	1017
Personal Income Million	24	28	34	40	45	50	55	59	64	68	71	75	79	82	84	858
<b>Fruitville Rd.</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	0	0	0	191	218	239	258	276	291	305	318	329	339	348	356	289
GCP Millions	0	0	0	10	11	13	14	15	16	17	18	18	19	20	20	190
Personal Income Million	0	0	0	6	7	9	10	11	12	14	15	16	17	18	18	152
<b>Honore Ave.</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	0	1010	1162	1278	1379	1474	1558	1635	1705	1768	1824	1876	1920	1960	1993	1610
GCP Millions	0	50	59	66	72	78	84	89	93	98	101	105	108	111	113	1226
Personal Income Million	0	30	36	44	51	58	64	70	76	82	87	92	97	101	105	992
<b>Cattlemen Rd.</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	0	1344	1540	1691	1824	1947	2057	2157	2249	2330	2403	2472	2530	2581	2626	2125
GCP Millions	0	66	78	87	96	104	111	117	123	129	133	138	142	146	149	1617
Personal Income Million	0	41	49	59	69	79	87	95	103	110	117	124	130	136	141	1339
<b>Bee Ridge Rd.</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
Employment	0	0	0	0	713	817	897	969	1033	1091	1143	1191	1232	1269	1269	1057
GCP Millions	0	0	0	0	36	42	48	52	57	60	64	67	70	72	72	639
Personal Income Million	0	0	0	0	23	27	32	37	42	47	51	55	59	63	61	497

## Fiscal Impacts

The time value of money is probably the single most important concept in fiscal analysis. When we say that money has time value, we mean that a dollar to be paid today is worth more than a dollar to be paid at any future time. Money has a time value because of the opportunity to earn interest and the higher cost of goods & service in the future due to inflation. The table below summarizes the road project savings based on the anticipated difference in road construction dates and a range of discount rates.

<b>Discount Rate Used</b>	<b>Below Average</b>	<b>Average</b>	<b>Above Average</b>
Englewood Interstate Connector	15.30	23.38	30.13
Honore Ave	0.38	0.63	0.88
Fruitville Rd.	2.63	3.96	5.07
Bee Ridge Rd.	3.61	5.32	6.68
Central Sarasota Pkwy Interchange	4.01	6.08	7.75
<b>Total</b>	<b>25.94</b>	<b>39.37</b>	<b>50.51</b>

\*Savings Reported in 2002 Millions

\*Project dates for N. Cattlemen Rd. are not expected to change

## Other Considerations

**Construction Impacts**- There will be economic impacts associated with the Design and Construction Phases of the projects. Regardless of when the roads are constructed these impacts will exist and are worth isolating. Accelerating the work schedule could help jump start a stagnate economy by infusing non-local funds into the local economy. The economic impacts associated with the accelerated design and construction phase are summarized below.

<b>Below Average Discount Rate</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
<b>Employment</b>	20	134	11	167	322	-25	793	87	
<b>GCP Millions</b>	1.1	7.2	0.7	8.7	17.0	-1.3	42.6	4.8	<b>80.8</b>
<b>Personal Income Millions</b>	0.6	4.4	1.0	5.6	10.9	1.2	26.2	6.9	<b>56.8</b>

<b>Average Discount Rate</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
<b>Employment</b>	20	134	10	134	320	-24	676	80	
<b>GCP Millions</b>	1.1	7.2	0.6	7.0	16.9	-1.2	36.3	4.3	<b>72.2</b>
<b>Personal Income Millions</b>	0.6	4.4	0.9	4.6	10.7	1.1	22.5	6.1	<b>51.0</b>

<b>Above Average Discount Rate</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
<b>Employment</b>	20	134	8	107	317	-22	574	72	
<b>GCP Millions</b>	1.1	7.2	0.5	5.6	16.7	-1.1	30.9	3.9	<b>64.8</b>
<b>Personal Income Millions</b>	0.6	4.4	0.9	3.7	10.5	1.1	19.2	5.5	<b>45.9</b>

\*GCP and Personal Income are in 2002 dollars

\*No construction costs were input in 2008 but some of the 2007 and 2009 spending could occur in 2008

**Safety-** There have been several studies that have attempted to put a value on injury and death resulting from automobile accidents. Many of these accidents have been attributed to congestion levels on roadways and at dangerous intersections. Accidents can lead to loss of life, loss of limb, and many other injuries. In addition, they can cause enormous damage to personal property and contribute to employee absenteeism. Estimating and valuing reductions in accidents due to the road improvements is beyond the scope of this study. Any reduction in accidents due to the system improvements discussed above are not expected to be significant.

**Right of Way-** Right of way cost make up a large portion of the road projects. These cost could be considered a transfer payment to businesses or households. Any of these dollars that are reinvested or spend with in the county would have a significant multiplier effect. TBRPC used the REMI's Policy Insight to simulate the reinvestment of these transfer payments. The difference in right of way cost due to the time value of money (inflation) was modeled rather than actual right of way cost since one could argue that future road projects are already accounted for in the baseline forecast. The table below represents the economic impacts associated with relative to the base line forecast.

<b>Below Average Discount Rate</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Employment	12	14	6	6	3	2
GCP Millions	553	665	285	269	117	112
Personal Income Millions	1,190	1,482	709	688	359	346

<b>Average Discount Rate</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Employment	17	20	8	8	3	3
GCP Millions	767	917	386	363	155	151
Personal Income Millions	1,649	2,045	960	931	481	465

<b>Above Average Discount</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Employment	20	23	10	9	4	4
GCP Millions	903	1,077	446	418	178	171
Personal Income Millions	1,937	2,399	1,112	1,077	555	533

\*GCP and Personal Income is reported in 2002 dolla

**Property Tax and Right of Ways-** Right of way cost make up a large portion of the road projects. One could make the argument that land acquisition has a large negative effect on the county's tax rolls. Land owners have the right to just compensation for the highest and best use of their land. Since the property appraisers assessment is usually much lower than the amount a land owners receives for their right of way the immediate magnitude of tax impacts are not as great as they appear . One could argue that new and enhanced roads will positively effect the assessments of lands near the project area and could likely offset any tax revenue loss associated with right of way acquisition.

## **An Introduction to REMI & REMI Policy Insight**

### What Is REMI Policy Insight?

Founded in 1980, Regional Economic Models, Inc. (REMI) constructs models that reveal the economic and demographic effects that policy initiatives or external events may cause on a local economy. REMI model users include national, regional, state and city governments, as well as universities, nonprofit organizations, public utilities and private consulting firms.

REMI Policy Insight, the newest version of REMI's software, combines years of economic experience with an easy-to-use software interface. A major feature of REMI is that it is a dynamic model which forecasts how changes in the economy and adjustments to those changes will occur on a year-by-year basis. The model is sensitive to a very wide range of policy and project alternatives and to interactions between the regional and national economies. By pointing and clicking, you can answer the toughest "What if...?" questions about federal, state, local or regional economies. REMI is dedicated to continuing economic research combined with quality customer service and support.

### Model Introduction

REMI Policy Insight includes a REMI model that has been built especially for the geographic area(s) in your customized version of the model. The model-building system uses hundreds of programs developed over the past two decades to build customized models for each area using data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, the Department of Energy, the Census Bureau and other public sources.

The REMI model is a structural model, meaning that it clearly includes cause-and-effect relationships. The model shares two key underlying assumptions with mainstream economic theory: *households maximize utility* and *producers maximize profits*. Since these assumptions make sense to most people, the model can be understood by intelligent lay people as well as trained economists.

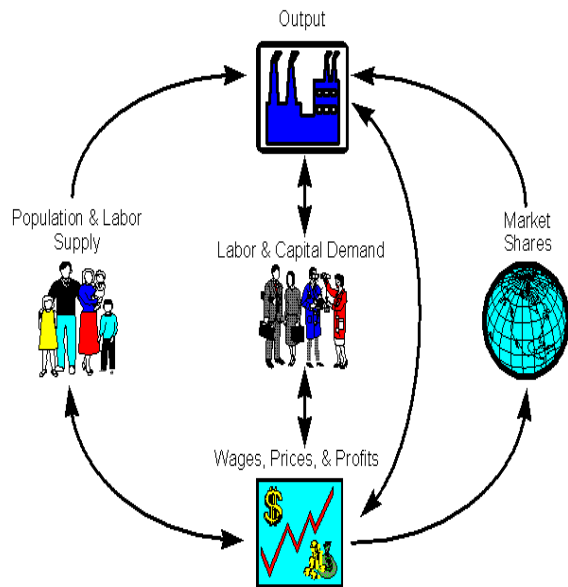
In the model, businesses produce goods to sell to other firms, consumers, investors, governments and purchasers outside the region. The output is produced using labor, capital, fuel and intermediate inputs. The demand for labor, capital and fuel per unit of output depends on their relative costs, since an increase in the price of any one of these inputs leads to substitution away from that input to other inputs. The supply of labor in the model depends on the number of people in the population and the proportion of those people who participate in the labor force. Economic migration affects the population size. More people will move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

Supply and demand for labor in the model determine the wage rates. These wage rates, along with other prices and productivity, determine the cost of doing business for every industry in the model. An increase in the cost of doing business causes either an increase in price or a cut in



profits, depending on the market for the product. In either case, an increase in cost would decrease the share of the local and U.S. market supplied by local firms. This market share combined with the demand described above determines the amount of local output. Of course, the model has many other feedbacks. For example, changes in wages and employment impact income and consumption, while economic expansion changes investment and population growth impacts government spending.

### Model Overview



Adjacent is a pictorial representation of the model. The Output block shows a factory that sells to all the sectors of final demand as well as to other industries. The Labor and Capital Demand block shows how labor and capital requirements depend both on output and their relative costs. Population and Labor Supply are shown as contributing to demand and to wage determination in the product and labor market. The feedback from this market shows that economic migrants respond to labor market conditions. Demand and supply interact in the Wage, Price and Profit block. Once prices and profits are established, they determine market shares, which along with components of demand, determine output.

The REMI model brings together all of the above elements to determine the value of each of the variables in the model for each year in the baseline forecasts. The model includes all the inter-industry relationships that are in an input-output model in the Output block, but goes well beyond the input-output model by including the relationships in all of the other blocks shown in the figure.

In order to broaden the model in this way, it was necessary to estimate key relationships. This was accomplished by using extensive data sets covering all areas in the country. These large data sets and two decades of research effort have enabled REMI to simultaneously maintain a theoretically sound model structure and build a model based on all the relevant data available.

The model has strong dynamic properties, which means that it forecasts not only what will happen but when it will happen. This results in long-term predictions that have general equilibrium properties. This means that the long-term properties of general equilibrium models are preserved without sacrificing the accuracy of event timing predictions and without simply taking elasticity estimates from secondary sources.