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Development Industry Cluster in Hillsborough County

An Analysis Performed by

CENTER FOR ECONOMIC DEVELOPMENT RESEARCH
College of Business Administration



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Preface

The Tampa Bay Regional Coalition is a trade association of land development, construction, building materials and related businesses. In 2001, the Coalition commissioned the Center for Economic Development Research (CEDR), College of Business Administration, University of South Florida, to conduct a four-part study of the development industry cluster in Tampa Bay. In May, 2002, CEDR published its final report of the four-part study. Since that time, growth management issues in Hillsborough County have come to the forefront of public debate, with ongoing discussions for imposing a moratorium on new development. The Coalition has commissioned CEDR to perform further analysis of the effect of such an action. The purpose of the study is to analyze the development industry cluster in Hillsborough County to determine the levels of activity and potential economic effects to this industry should activity be curtailed.

This is a final report on the economic impacts on Tampa Bay's economy, if there were a sharp reduction of development activity in Hillsborough County. CEDR released a preliminary report to the Tampa Bay Coalition in July 2002.

CEDR provides information and conducts research on issues related to economic growth and development in the Nation, in the state of Florida, and particularly in the central Florida region. The Center serves the faculty, staff, and students of the College of Business Administration, the University, and individuals and organizations in the University's service area. CEDR's activities are designed to further the objectives of the University and specifically the objectives of the College of Business Administration.

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Executive Summary

The purpose of this study is to estimate the economic impacts, such as a loss of jobs, on Tampa Bay's economy, if there were a sharp reduction of development activity in Hillsborough County. This study is an extension of a previous study. The previous study is titled "Development Industry Cluster in Tampa Bay," an analysis performed by the Center for Economic Development Research, College of Business Administration, University of South Florida, dated May 2002.

First, we assess the baseline of economic activity for the Cluster in Hillsborough County. There are over 52,000 jobs in the Development Industry Cluster in Hillsborough County. These jobs account for about 6.7% of all jobs in the County. The workers in these jobs produce almost \$6 billion of output annually. This output is nearly 10% of all goods and services produced in Hillsborough County each year.

Next, we assess the economic contribution of the Development Industry Cluster in Hillsborough County using the traditional counter-factual approach. With this approach, we use the REMI™ model to simulate complete removal of the baseline output produced by the primary industries of the cluster in the County. The model tabulates the direct effects of the removal as well as the ripple, or secondary, effects throughout the Tampa Bay economy.

The Hillsborough County's Development Industry Cluster contributes more than 100,000 jobs to the Tampa Bay economy. In 2002, firms located in Hillsborough County are contributing 90,000 of those jobs. And, the Development Industry Cluster firms, which are based in Hillsborough County, annually contribute more than \$10 billion of economic activity in Tampa Bay. \$9.3 billion of that economic activity takes place within the County. The Development Industry firms in Hillsborough County contribute about 15% of the total annual output in the County.

After quantifying the economic contribution of all of the primary industries of the Development Industry Cluster in Hillsborough County, we build a new baseline to use with a "what if" simulation of a slowdown of development-driven economic activity in the County. A new baseline is needed because the slowdown scenario does not include all of the primary industries of the Cluster. The slowdown scenario is an assumed restriction on issuance of new residential and commercial building permits in Hillsborough County. Thus, we do not include all of the primary industries from the Development Industry Cluster as previously defined.

Predicated on the assumptions we selected for the slowdown scenario, we estimate that about 90% of the economic activity of the construction industries and about 16% of real estate industry activity in Hillsborough County will cease. Employment, output and personal income measure the economic impact of the slowdown.

Almost 85,000 people working in Tampa Bay are expected to lose their jobs within six months after the restriction is imposed. About 75,000 of those jobs would be lost by people working in Hillsborough County. That is, nearly one out of ten workers in Hillsborough County would be affected.

As measured by output, we expect that only one-quarter of annual output would be lost in 2002. In 2002, just over \$2 billion of output would be lost; about \$1.8 billion of the \$2 billion would be lost output for goods and services usually produced in Hillsborough County. In 2003, we value the full year's expected decline in output at \$7.9 billion for Tampa Bay of which \$7.1 billion would be for goods and services usually produced in Hillsborough County.

And, as measured by income, we expect that only one-quarter of annual income would be lost in 2002. In 2002, the residents of Tampa Bay would be expected to lose about \$935 million of labor and property income. Residents of Hillsborough would lose about \$823 million out of the total Tampa Bay loss of income of \$935 million. In 2003, the expected decline in personal income is estimated at slightly over \$4 billion for Tampa Bay residents. For Hillsborough County's residents the anticipated loss in 2003 is just over \$3.5 billion.

In summary, we estimate the following economic impacts for Hillsborough County due to a shock to the economy by a restriction on issuance of new building permits in the County. People working in Hillsborough County would lose approximately 75,000 jobs about six months after the slowdown in development activity. These lost jobs equate to a decline of \$1.8 billion of output of goods and services usually produced in Hillsborough County. And, the residents of Hillsborough County lose \$823 million of personal income. With the restriction presumed to last throughout the year 2003, the losses of output and income in Hillsborough County mount. There are also economic impacts that are expected to spillover into other counties in the Tampa Bay region.

The Development Industry Cluster in Hillsborough County

The purpose of this study is to estimate the economic impacts, such as a loss of jobs, on Tampa Bay’s economy, if there were a sharp reduction of development activity in Hillsborough County.

This study is an extension of a previous study. The previous study is titled “Development Industry Cluster in Tampa Bay,” an analysis performed by the Center for Economic Development Research, College of Business Administration, University of South Florida, dated May 2002. We refer to the analysis reported in May 2002 as the *basic study*. We begin this study by using the primary industries defined in Section 2, An Operational Definition of the Development Industry Cluster, of the basic study to develop the baseline of the Development Industry Cluster in Hillsborough County. The baseline provides a basis from which we assess the economic contribution of the Development Industry Cluster in Hillsborough County. The measures of the baseline economic activity are employment and output.

Table 1 shows the baseline estimates. There are over 52,000 jobs in the Development Industry Cluster in Hillsborough County. These jobs account for about 6.7% of all jobs in the County. The workers in these jobs produce almost \$6 billion of output annually. This output is nearly 10% of all goods and services produced in Hillsborough County each year.

Table 1
Hillsborough County Development Industry Cluster - REMI Baseline

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**

EMPLOYMENT (000s)

	2002	2003
Total County Employment	783.506	798.732
Cluster Employment	52.937	53.396
Cluster Employment as % of County Employment	6.76%	6.69%

OUTPUT (Bil. 01\$)

	2002	2003
Total County Outout	61.824	64.024
Cluster Output	5.866	5.990
Cluster Output as % of County Output	9.49%	9.36%

Next, we assess the economic contribution of the Development Industry Cluster in Hillsborough County using the traditional counter-factual approach. With this approach, we use the REMI™ model to simulate complete removal of the baseline output produced by the primary industries of the cluster in the County. The model tabulates the direct effects of the removal as well as the ripple, or secondary, effects throughout the Tampa Bay economy. This assessment of economic contribution differs from that discussed in Section 5, Economic Contribution of the Development Industry Cluster, of the basic report in that only primary-industry output that is produced in Hillsborough County is virtually removed from the economy, instead of primary-industry output from all counties of Tampa Bay. However, the ripple effect is allowed to spread throughout Tampa Bay to permit us to assess the contribution of primary-industry economic activity on neighboring counties as well as the contribution in Hillsborough County.

Employment, output and personal income measure the economic contribution. That is, firms hire a number of workers (employment), who produce goods and services of value (output). Output is equal to sales plus or minus an inventory adjustment. The value-added – less indirect business taxes – from production (personal income) is distributed among the workers and the owners of the capital that the workers use in the production process.

Table 2 reports the economic contribution of Hillsborough County's Development Industry Cluster to Tampa Bay as measured by employment. The County's Development Industry Cluster contributes more than 100,000 jobs to the Tampa Bay economy. In 2002, firms located in Hillsborough County are contributing 90,000 of those jobs.

Table 2
Hillsborough County Development Industry Cluster - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**

EMPLOYMENT

Panel A

Total Employment (000s)
before Removal

Location	2002	2003
Hernando	43.852	44.595
Hillsborough	783.506	798.732
Manatee	159.296	162.159
Pasco	105.737	107.122
Pinellas	580.113	586.852
Polk	245.968	250.046
Sarasota	215.068	218.125
Tampa Bay	2133.540	2167.631

Panel B

Total Employment (000s)
after Removal

Location	2002	2003
Hernando	43.455	44.202
Hillsborough	693.506	710.952
Manatee	158.494	161.398
Pasco	103.896	105.231
Pinellas	574.100	581.103
Polk	244.059	248.161
Sarasota	214.232	217.345
Tampa Bay	2031.742	2068.392

Panel C

Difference in Employment (000s)
after Removal

Location	2002	2003
Hernando	-0.397	-0.393
Hillsborough	-90.000	-87.780
Manatee	-0.802	-0.761
Pasco	-1.841	-1.891
Pinellas	-6.013	-5.749
Polk	-1.909	-1.885
Sarasota	-0.836	-0.780
Tampa Bay	-101.798	-99.239

Panel D

Difference in Employment (% change)
after Removal

Location	2002	2003
Hernando	-0.91%	-0.88%
Hillsborough	-11.49%	-10.99%
Manatee	-0.50%	-0.47%
Pasco	-1.74%	-1.77%
Pinellas	-1.04%	-0.98%
Polk	-0.78%	-0.75%
Sarasota	-0.39%	-0.36%
Tampa Bay	-4.77%	-4.58%

Table 3 reports the economic contribution of Hillsborough County's Development Industry Cluster to Tampa Bay as measured by output. Firms, based in Hillsborough County, of the Development Industry Cluster annually contribute more than \$10 billion of economic activity in Tampa Bay. And, \$9.3 billion of that economic activity takes place in the County. The Development Industry firms in Hillsborough County contribute about 15% of the total annual output in the county.

Table 3
Hillsborough County Development Industry Cluster - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**

OUTPUT

Panel A

Total Output (Bil. 01\$)
before Removal

Location	2002	2003
Hernando	2.678	2.764
Hillsborough	61.824	64.024
Manatee	12.013	12.428
Pasco	6.770	6.953
Pinellas	46.062	47.608
Polk	19.757	20.388
Sarasota	14.881	15.325
Tampa Bay	163.985	169.491

Panel B

Total Output (Bil. 01\$)
after Removal

Location	2002	2003
Hernando	2.648	2.738
Hillsborough	52.511	54.825
Manatee	11.946	12.366
Pasco	6.647	6.831
Pinellas	45.570	47.135
Polk	19.577	20.217
Sarasota	14.813	15.262
Tampa Bay	153.713	159.373

Panel C

Difference in Output (Bil 01\$)
after Removal

Location	2002	2003
Hernando	-0.030	-0.027
Hillsborough	-9.313	-9.200
Manatee	-0.066	-0.062
Pasco	-0.123	-0.123
Pinellas	-0.493	-0.474
Polk	-0.180	-0.171
Sarasota	-0.067	-0.063
Tampa Bay	-10.272	-10.119

Panel D

Difference in Output (% change)
after Removal

Location	2002	2003
Hernando	-1.11%	-0.96%
Hillsborough	-15.06%	-14.37%
Manatee	-0.55%	-0.50%
Pasco	-1.81%	-1.76%
Pinellas	-1.07%	-1.00%
Polk	-0.91%	-0.84%
Sarasota	-0.45%	-0.41%
Tampa Bay	-6.26%	-5.97%

Table 4 reports the economic contribution of Hillsborough County's Development Industry Cluster to Tampa Bay as measured by personal income (labor and property income). Firms of the Development Industry Cluster in Hillsborough County contribute over \$4 billion of personal income to the workers and owners of capital in Tampa Bay. Residents of Hillsborough County receive about \$3.9 billion of this income. Development Industry derived income represents about 13.7% of personal income received in Hillsborough County.

Table 4
Hillsborough County Development Industry Cluster - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**

PERSONAL INCOME

Panel A

Total Labor & Property Inc. (Bil. nominal)
before Removal

Location	2002	2003
Hernando	1.120	1.182
Hillsborough	28.469	30.165
Manatee	4.541	4.772
Pasco	2.759	2.891
Pinellas	19.491	20.441
Polk	7.754	8.156
Sarasota	6.337	6.667
Tampa Bay	70.471	74.274

Panel B

Total Labor & Property Inc. (Bil. nominal)
after Removal

Location	2002	2003
Hernando	1.103	1.163
Hillsborough	24.569	25.995
Manatee	4.510	4.739
Pasco	2.686	2.809
Pinellas	19.195	20.123
Polk	7.672	8.066
Sarasota	6.302	6.630
Tampa Bay	66.037	69.525

Panel C

Difference in Labor & Prop. Inc. (Bil nominal)
after Removal

Location	2002	2003
Hernando	-0.017	-0.019
Hillsborough	-3.900	-4.170
Manatee	-0.031	-0.033
Pasco	-0.073	-0.082
Pinellas	-0.296	-0.318
Polk	-0.082	-0.090
Sarasota	-0.035	-0.037
Tampa Bay	-4.434	-4.749

Panel D

Difference in Labor & Prop. Inc. (% change)
after Removal

Location	2002	2003
Hernando	-1.52%	-1.61%
Hillsborough	-13.70%	-13.82%
Manatee	-0.68%	-0.69%
Pasco	-2.65%	-2.84%
Pinellas	-1.52%	-1.56%
Polk	-1.06%	-1.10%
Sarasota	-0.55%	-0.55%
Tampa Bay	-6.29%	-6.39%

After quantifying the economic contribution of all of the primary industries of the Development Industry Cluster in Hillsborough County, we build a new baseline to use with a “what if” simulation of a slowdown of development-driven economic activity in the County. A new baseline is needed because the slowdown scenario does not include all of the primary industries of the cluster. The slowdown scenario is an assumed restriction on issuance of new residential and commercial building permits in Hillsborough County. Thus, we do not include the following four primary industries from the Development Industry Cluster as defined in the basic study.

- Highway & Street Construction (SIC 1611)
- Bridge, Tunnel, & Elevated Highway (SIC 1622)
- Water, Sewer, Pipeline & Communications Construction (SIC 1623)

Nonresidential Building Operators (SIC 6512).

We want to quantify the baseline for the slowdown scenario. To effectively do so we consider the assumptions of the simulation. The assumptions are:

1. The slowdown is due to a restriction on issuance of new residential and commercial building permits in Hillsborough County.
2. The restriction on residential building permits includes undeveloped land as well as new subdivisions currently under review for development.
3. The full effect of the slowdown will take place within six months after imposition of the restriction on building permits. The restriction is imposed in mid-2002. The restriction is lifted at the end of 2003.
4. No substitute economic activity occurs in other Tampa Bay counties following Hillsborough's restriction.
5. No substitute economic activity by remodeling or rebuilding of existing structures occurs following Hillsborough's restriction.

Assumptions 1 and 2 set the scenario for the "what if" simulation. Assumption 3 fixes the timing of the economic shock caused by the restriction on building permits. Assumptions 4 and 5 are used to provide objectivity for the analysis. For example, if substitution of remodeling or rebuilding activity for new construction were allowed, then we must subjectively decide the percentage of restricted, new construction that is substituted for by remodeling or rebuilding. *The results of the new baseline estimation and the "what if" simulation should be understood within the context of the above assumptions.*

We use employment data to apportion economic activity among the construction industries. We assign a 0% attribute to the three excluded construction industries because they are not constrained by the assumed moratorium on residential and commercial building permits. And, we assign a 100% attribute to the rest of the construction industries, because we assume that no substitute activities will occur.

Table 5 shows the results of our apportionment of the construction industries. We weight the apportionment according to the number of employees in each industry. As a result, we estimate that 89.07% of the economic activity of the construction industries in Hillsborough County will cease. (By assumption 4, above, we expect the cessation of activities to happen gradually until the 89.07% reduction is reached about six months after the imposition of a slowdown.)

Table 5
Apportionment of Construction Industries

SIC	Description	Employment	Weight by # of Employees	Assumed % Attributed to new Residential, Commercial, & Industrial Construction	Weight x % Attrib
1521	Single Family Housing	3,034	0.5957	100%	0.5957
1522	Other Residential Construction	47	0.0093	100%	0.0093
1531	Operative Builders	77	0.0152	100%	0.0152
1541	Industrial Buildings	371	0.0729	100%	0.0729
1542	Other Non-res. Construction	1,564	0.3070	100%	0.3070
Total	General Building Contractors	5,094	1.0000		1.0000
1611	Highway & Street Construction	1,343	0.3025	0%	0.0000
1622	Bridge, Tunnel, & Elevated Highway	307	0.0692	0%	0.0000
1623	Water, Sewer, Pipeline & Communications Construction	1,578	0.3555	0%	0.0000
1629	Heavy Construction NEC	1,211	0.2728	100%	0.2728
Total	Heavy Construction	4,439	1.0000		0.2728
1711	Plumbing, Heating & Air Conditioning	3,690	0.1844	100%	0.1844
1721	Painting & Paper Hanging	1,138	0.0569	100%	0.0569
1731	Electrical Work	4,246	0.2122	100%	0.2122
1741	Masonry, Stone Setting, & Other Stone Work	918	0.0459	100%	0.0459
1742	Plastering, Drywall, Acoustical & Insulation Work	1,752	0.0876	100%	0.0876
1743	Terrazzo, Tile, Marble, & Mosaic Work	218	0.0109	100%	0.0109
1751	Carpentry Work	911	0.0455	100%	0.0455
1752	Floor Laying and Other Floor Work NEC	240	0.0120	100%	0.0120
1761	Roofing, Siding, & Sheet Metal Work	1,259	0.0629	100%	0.0629
1771	Concrete Work	1,710	0.0855	100%	0.0855
1781	Water Well Drilling	166	0.0083	100%	0.0083
1791	Structural Steel Erection	294	0.0147	100%	0.0147
1793	Glass & Glazing Work	314	0.0157	100%	0.0157
1794	Excavation Work	602	0.0301	100%	0.0301
1795	Wrecking & Demolition Work	393	0.0196	100%	0.0196
1796	Installation or Erection of Building Equipment NEC	420	0.0210	100%	0.0210
1799	Special Trade Contractors NEC	1,735	0.0867	100%	0.0867
Total	Special Trade Contractors	20,006	1.0000		1.0000
15xx	General Building Contractors	5,094	0.1724	100.00%	0.1724
16xx	Heavy Construction	4,439	0.1503	27.28%	0.0410
17xx	Special Trade Contractors	20,006	0.6773	100.00%	0.6773
Total	Construction Industries	29,539	1.0000		0.8907

Source: Bureau of Labor Statistics Covered Employment and Wages data (also called ES-202data) as reported by the Florida Agency for Workforce Innovation for 2nd quarter 2001.

Furthermore, in the basic study (page 14) we previously estimated that Subdividers and Developers (SIC 6552) account for 16.84% of the economic activity of the Real Estate major industry group.

Thus, in the “what if” simulation we reduce construction activity in Hillsborough County by 89.07% and real estate activity in Hillsborough County by 16.84% in order to estimate the economic impact of a restriction on the issuance of new residential and commercial building permits.

Table 6 shows the baseline estimates. There are nearly 40,000 jobs in the reduced-size Development Industry Cluster in Hillsborough County. These jobs account for about 5.1% of all jobs in the County. The workers in these jobs produce almost \$4.5 billion of output annually. This output is about 7% of all goods and services produced in Hillsborough County each year.

Table 6
Hillsborough County Development Industry Cluster(-) - REMI Baseline

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1622)
Water, Sewer, Pipeline & Communications Construction (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

EMPLOYMENT (000s)

	2002	2003
Total County Employment	783.506	798.732
Cluster(-) Employment	39.981	40.082
Cluster(-) Employment as % of County Employment	5.10%	5.02%

OUTPUT (Bil. 01\$)

	2002	2003
Total County Outout	61.824	64.024
Cluster(-) Output	4.406	4.488
Cluster(-) Output as % of County Output	7.13%	7.01%

Next, for the “what if” simulation we use the REMITM model to virtually remove the output of the reduced-size Development Industry Cluster in Hillsborough County. The model tabulates the direct effects of the removal as well as the ripple, or secondary, effects throughout the Tampa Bay economy.

Employment, output and personal income measure the economic impact. **Table 7** reports the expected economic impact, measured by employment, to the Tampa Bay economy due to the assumed restriction on issuance of new residential and commercial building permits in Hillsborough County. Almost 85,000 people working in Tampa Bay are expected to lose their

jobs within six months after the restriction is imposed. About 75,000 of those jobs would be lost by people working in Hillsborough County. That is, nearly one out of ten workers in Hillsborough County would be affected.

Table 7
Hillsborough County Development Industry Cluster(-) - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1612)
Water, Sewer, Pipeline & Communications Constructipon (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

EMPLOYMENT

Panel A
Total Employment (000s)
before Removal

Location	2002	2003
Hernando	43.852	44.595
Hillsborough	783.506	798.732
Manatee	159.296	162.159
Pasco	105.737	107.122
Pinellas	580.113	586.852
Polk	245.968	250.046
Sarasota	215.068	218.125
Tampa Bay	2133.540	2167.631

Panel B
Total Employment (000s)
after Removal

Location	2002	2003
Hernando	43.517	44.263
Hillsborough	708.758	725.838
Manatee	158.631	161.529
Pasco	104.187	105.528
Pinellas	575.057	582.013
Polk	244.356	248.453
Sarasota	214.367	217.470
Tampa Bay	2048.873	2085.094

Panel C
Difference in Employment (000s)
after Removal

Location	2002	2003
Hernando	-0.335	-0.332
Hillsborough	-74.748	-72.894
Manatee	-0.665	-0.630
Pasco	-1.550	-1.594
Pinellas	-5.056	-4.839
Polk	-1.612	-1.593
Sarasota	-0.701	-0.655
Tampa Bay	-84.667	-82.537

Panel D
Difference in Employment (% change)
after Removal

Location	2002	2003
Hernando	-0.76%	-0.74%
Hillsborough	-9.54%	-9.13%
Manatee	-0.42%	-0.39%
Pasco	-1.47%	-1.49%
Pinellas	-0.87%	-0.82%
Polk	-0.66%	-0.64%
Sarasota	-0.33%	-0.30%
Tampa Bay	-3.97%	-3.81%

Table 8 reports the expected economic impact of the assumed restriction as measured by output. Following assumption 3, we expect that only one-quarter of annual output would be lost in 2002. In 2002, just over \$2 billion of output would be lost; about \$1.8 billion of the \$2 billion would be lost output for goods and services usually produced in Hillsborough County. In 2003, we value the full year's expected decline in output at \$7.9 billion for Tampa Bay of which \$7.1 billion would be for goods and services usually produced in Hillsborough County. As a

percentage, Hillsborough County's decrease in economic activity is expected to be 2.93% in 2002 and 11.14% in 2003.

Table 8
Hillsborough County Development Industry Cluster(-) - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1612)
Water, Sewer, Pipeline & Communications Constructipon (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

OUTPUT

Panel A
Total Output (Bil. 01\$)
before Removal

Location	2002	2003
Hernando	2.678	2.764
Hillsborough	61.824	64.024
Manatee	12.013	12.428
Pasco	6.770	6.953
Pinellas	46.062	47.608
Polk	19.757	20.388
Sarasota	14.881	15.325
Tampa Bay	163.985	169.491

Panel B
Total Output (Bil. 01\$)
after Removal

Location	2002	2003
Hernando	2.672	2.741
Hillsborough	60.013	56.893
Manatee	11.999	12.375
Pasco	6.745	6.849
Pinellas	45.959	47.211
Polk	19.719	20.241
Sarasota	14.867	15.271
Tampa Bay	161.973	161.581

Panel C
Difference in Output (Bil 01\$)
after Removal

Location	2002	2003
Hernando	-0.006	-0.024
Hillsborough	-1.811	-7.131
Manatee	-0.014	-0.052
Pasco	-0.025	-0.104
Pinellas	-0.104	-0.397
Polk	-0.038	-0.147
Sarasota	-0.014	-0.054
Tampa Bay	-2.012	-7.910

Panel D
Difference in Output (% change)
after Removal

Location	2002	2003
Hernando	-0.23%	-0.86%
Hillsborough	-2.93%	-11.14%
Manatee	-0.12%	-0.42%
Pasco	-0.36%	-1.50%
Pinellas	-0.23%	-0.83%
Polk	-0.19%	-0.72%
Sarasota	-0.09%	-0.35%
Tampa Bay	-1.23%	-4.67%

Table 9 reports the expected economic impact of the assumed restriction as measured by personal income (labor and property income). Following assumption 3, we expect that only one-quarter of annual income would be lost in 2002. In 2002, the residents of Tampa Bay would be expected to lose about \$935 million of labor and property income. Residents of Hillsborough would lose about \$823 million out of the total Tampa Bay loss of income of \$935 million. In 2003, the expected decline in personal income is estimated at slightly over \$4 billion for Tampa Bay residents. For Hillsborough County's residents the anticipated loss in 2003 is just over \$3.5

billion. As a percentage, the County residents' decrease in personal income is 2.89% in 2002 and 11.69% in 2003.

Table 9
Hillsborough County Development Industry Cluster(-) - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1612)
Water, Sewer, Pipeline & Communications Constructipon (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

PERSONAL INCOME

Panel A

Total Labor & Property Inc. (Bil. nominal)
before Removal

Location	2002	2003
Hernando	1.120	1.182
Hillsborough	28.469	30.165
Manatee	4.541	4.772
Pasco	2.759	2.891
Pinellas	19.491	20.441
Polk	7.754	8.156
Sarasota	6.337	6.667
Tampa Bay	70.471	74.274

Panel B

Total Labor & Property Inc. (Bil. nominal)
after Removal

Location	2002	2003
Hernando	1.117	1.167
Hillsborough	27.647	26.640
Manatee	4.535	4.745
Pasco	2.744	2.821
Pinellas	19.429	20.173
Polk	7.737	8.080
Sarasota	6.329	6.636
Tampa Bay	69.536	70.261

Panel C

Difference in Labor & Prop. Inc. (Bil nominal)
after Removal

Location	2002	2003
Hernando	-0.003	-0.015
Hillsborough	-0.823	-3.525
Manatee	-0.006	-0.027
Pasco	-0.015	-0.070
Pinellas	-0.062	-0.268
Polk	-0.017	-0.076
Sarasota	-0.008	-0.031
Tampa Bay	-0.935	-4.013

Panel D

Difference in Labor & Prop. Inc. (% change)
after Removal

Location	2002	2003
Hernando	-0.31%	-1.31%
Hillsborough	-2.89%	-11.69%
Manatee	-0.14%	-0.57%
Pasco	-0.56%	-2.42%
Pinellas	-0.32%	-1.31%
Polk	-0.22%	-0.93%
Sarasota	-0.12%	-0.47%
Tampa Bay	-1.33%	-5.40%

Table 10 depicts economic migration. Economic migrants are persons under age 65, who were part of the civilian population of the U.S. the preceding year, and who respond to economic and / or amenity factors by moving into or out of a region. Panel A shows anticipated yearly economic net migration for each county and a summation for Tampa Bay. Panel B shows anticipated net economic migration after the imposition of a restriction on building permits. Panel C quantifies the difference in net economic migration before and after the restriction.

Following assumption 3, there is only a half-year impact in 2002. Panel D shows the difference in net economic migration as a percentage of the anticipated net migration in Panel A.

Table 10
Hillsborough County Development Industry Cluster(-) - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1612)
Water, Sewer, Pipeline & Communications Constructipon (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

NET ECONOMIC MIGRATION

Panel A
Net Economic Migrants (000s)
before Removal

Location	2002	2003
Hernando	2.880	2.772
Hillsborough	20.328	19.047
Manatee	6.869	6.264
Pasco	8.417	7.622
Pinellas	16.979	15.510
Polk	9.470	8.776
Sarasota	9.477	8.754
Tampa Bay	74.420	68.745

Panel B
Net Economic Migrants (000s)
after Removal

Location	2002	2003
Hernando	2.699	2.336
Hillsborough	13.483	2.197
Manatee	6.723	5.910
Pasco	7.429	5.222
Pinellas	15.652	12.321
Polk	9.085	7.818
Sarasota	9.193	8.411
Tampa Bay	64.263	44.215

Panel C
Differernce in Net Economic Migrants (000s)
after Removal

Location	2002	2003
Hernando	-0.181	-0.436
Hillsborough	-6.845	-16.850
Manatee	-0.146	-0.354
Pasco	-0.989	-2.400
Pinellas	-1.327	-3.189
Polk	-0.385	-0.958
Sarasota	-0.284	-0.343
Tampa Bay	-10.157	-24.530

Panel D
Difference in Net Economic Migrants
(% change) after Removal

Location	2002	2003
Hernando	-6.27%	-15.72%
Hillsborough	-33.67%	-88.47%
Manatee	-2.12%	-5.65%
Pasco	-11.74%	-31.49%
Pinellas	-7.82%	-20.56%
Polk	-4.07%	-10.91%
Sarasota	-3.00%	-3.92%
Tampa Bay	-13.65%	-35.68%

In Panels C and D, Table 10, we report an estimated 10,000-person (13.65%) drop in net economic migration to Tampa Bay in 2002. In 2003 we expected the decline to be 24,500 (35.68%) economic migrants. For Hillsborough County, the expected decrease in economic migrants is 6,800 persons (33.67%) in 2002 and 16,850 persons (88.47%) in 2003. Although, we expect a decrease in net economic migration from the baseline, net economic migration is still expected to be positive. For example, from Panel B, Table 10, note that there is an anticipated net gain of 2,197 economic migrants into Hillsborough in 2003.

Table 11 depicts net migration whether motivated by economic factors or otherwise. Panel A shows anticipated yearly net migration for each county and a summation for Tampa Bay before the imposition of a restriction on building permits. Panel B shows anticipated net migration after the imposition of a restriction on building permits. Panel C quantifies the difference in net migration before and after the restriction. Following assumption 3, there is only a half-year impact in 2002. Panel D shows the difference in net migration as a percentage of the anticipated net migration in Panel A.

Table 11
Hillsborough County Development Industry Cluster(-) - REMI Counter-factual Removal

**Primary Industries: Construction Major Industry Groups less
Highway & Street Construction (SIC 1611)
Bridge, Tunnel, & Elevated Highway (SIC 1612)
Water, Sewer, Pipeline & Communications Constructipon (SIC 1623) plus
Subdividers and Developers (SIC 6552)**

NET MIGRATION

Panel A

Net Migrants (000s)
before Removal

Location	2002	2003
Hernando	3.463	3.342
Hillsborough	25.746	24.357
Manatee	7.804	7.181
Pasco	8.322	7.508
Pinellas	17.558	16.047
Polk	11.429	10.706
Sarasota	10.555	9.804
Tampa Bay	84.877	78.945

Panel B

Net Migrants (000s)
after Removal

Location	2002	2003
Hernando	3.282	2.906
Hillsborough	18.901	7.507
Manatee	7.658	6.827
Pasco	7.334	5.108
Pinellas	16.231	12.858
Polk	11.044	9.748
Sarasota	10.413	9.461
Tampa Bay	74.863	54.416

Panel C

Difference in Net Migrants (000s)
after Removal

Location	2002	2003
Hernando	-0.181	-0.436
Hillsborough	-6.845	-16.850
Manatee	-0.146	-0.354
Pasco	-0.989	-2.400
Pinellas	-1.327	-3.189
Polk	-0.385	-0.958
Sarasota	-0.142	-0.343
Tampa Bay	-10.015	-24.530

Panel D

Difference in Net Migrants (% change)
after Removal

Location	2002	2003
Hernando	-5.22%	-13.04%
Hillsborough	-26.59%	-69.18%
Manatee	-1.87%	-4.93%
Pasco	-11.88%	-31.97%
Pinellas	-7.56%	-19.87%
Polk	-3.37%	-8.95%
Sarasota	-1.35%	-3.50%
Tampa Bay	-11.80%	-31.07%

In Panels C and D, Table 11, we report an estimated 10,000-person (11.80%) drop in net migration to Tampa Bay in 2002. In 2003 we expect the decline to be 24,500 (31.07%) migrants.

For Hillsborough County, the expected decrease of migrants is 6,800 persons (26.59%) in 2002 and 16,850 persons (69.18%) in 2003. Although, we expect a decrease in net migration from the baseline, net migration is still expected to be positive. For example, from Panel B, Table 11, note that there is an anticipated net gain of 7,500 migrants into Hillsborough in 2003.

Comparing Tables 10 and 11, we conclude that the expected decrease in net migration is almost entirely due to an expected decrease in net *economic* migration. That is, after the imposition of the restriction on building permits the relative employment opportunity declines in Tampa Bay and particularly in Hillsborough County. Fewer working age persons in-migrate and more out-migrate. However, other-than economic migrants, such as retirees, continue to come to Tampa Bay in approximately the same numbers as before the restriction.

In summary, we estimate the following economic impacts for Hillsborough County due to a shock to the economy by a restriction on issuance of new building permits in the County. About six months after the slowdown in development activity, approximately 75,000 jobs would be lost by people working in Hillsborough County. These lost jobs equate to a decline of \$1.8 billion of output of goods and services usually produced in Hillsborough County. And, the residents of Hillsborough County lose \$823 million of personal income. With the restriction presumed to last throughout the year 2003, the losses of output and income in Hillsborough County mount. There are also economic impacts that are expected to spillover into other counties in the Tampa Bay region.