

Appendix B

ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS AT THE DISTRICT LEVEL

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I. INTRODUCTION

The economic benefits of marine-related activities on the Florida Inland Navigation District's (the District) Waterways were estimated in a series of documents titled *Economic Analysis of the District's Waterways* (referred to as the original analyses). Each document in the series detailed the estimated economic benefits generated by the Waterways in one of the 12 counties within the District's boundaries. Benefits were estimated for existing conditions and two Waterways maintenance scenarios, one assuming a cessation of maintenance and another assuming a higher state of maintenance. The economic benefits at the District level were not estimated during these previous analyses. The purpose of this analysis is to estimate the benefits at the District level, using updated county level economic benefits of the Waterways. The impact of the 2007-2009 U.S. economic recession on marine-related businesses in the county are also estimated. In addition, fuel taxes and sales tax revenues attributable to activities associated with the Waterways, which were not estimated in the original analyses, are estimated in this analysis. For the purpose of this report, the District's Waterways (the Waterways) are defined as all navigable waterways within the District's boundaries, including the Intracoastal Waterway and all waterways that are physically connected to it.

The purpose of the original analyses was twofold: (1) to identify and quantify the total economic benefit of the Waterways in each county; and (2) to estimate the influence of the Waterways on property values in each county. The original analyses included an explanation of economic benefits, a literature review of economic benefits of marine activities in Florida and in other states, an explanation of the methods used in estimating economic benefits, details of the data collection and manipulation required for the analysis, quantification of direct marine-related business purchases, and estimation of the economic benefits of the Waterways under existing conditions, assuming a cessation of maintenance, and assuming a higher state of maintenance. For this updated analysis, the estimation of the influence of the Waterways on property values in each county will not be addressed.

As the local sponsor of the Waterways, the District shares in the responsibility for the operation and maintenance of the Waterways. With reduced federal funding, the local sponsors of the nation's inland navigation systems are being required to shoulder a larger portion of the maintenance costs. The District has made a decision not to let the Waterways deteriorate by

deferring maintenance projects and has elected instead to fund this budgetary shortfall. To meet these responsibilities, the District may invest up to \$800 million in maintaining and operating the Waterways over the next 50 years. With such a large potential investment, the District needs to inform the general public as well as federal, state, and local public officials regarding the economic importance of expending these monies to meet the new needs of the Waterways. This update is intended to address that need.

This analysis is divided into two sections: (1) this introduction; and (2) an estimate of the economic benefits of the District's Waterways under four scenarios. Section I includes an introduction to the report and a summary of the findings.

Section II presents the methodology and findings of the estimate of the economic benefits of the District's Waterways. Estimated benefits for four scenarios are presented: (1) current existing conditions (which have been affected by the recession); (2) assuming a cessation of maintenance; (3) assuming a higher state of maintenance; and (4) assuming that the 2007-2009 U.S. economic recession did not occur. Benefits are measured as changes in business volume, personal income, jobs, and tax revenues. The economic benefits presented in this section are based on two data sources. The benefits arising from marine-related businesses, excluding firms involved in commercial fishing in Miami-Dade County, and the benefits from boater related purchases at non-marine-related firms were originally estimated in a series of documents titled *Economic Analysis of the District's Waterways*. The benefits arising from commercial fishing in Miami-Dade County were originally estimated in the *Biscayne Bay Economic Study*, conducted for the South Florida Water Management District in 2005. The direct benefits presented in the *Biscayne Bay Economic Study* were updated to current values using the percent change in gross sales of all Kind Codes for the State of Florida. The analyses and results are presented separately for the two components, with a summary presenting the total economic benefits of the combined components.

Summary of Findings

A summary of the findings of the economic benefits of the four scenarios evaluated are presented in Table B-1. Economic benefits were developed for marine-related businesses activity and retail purchases of non-marine-related items by recreational boaters, and commercial fishing in Miami-Dade County. Current updated benefits in 2010 dollars include \$11.20 billion

in business volume, \$2.848 billion in personal income, 62,625 jobs, and \$507.4 million in tax revenues. The economic benefits of the Waterways assuming decreased maintenance of the Waterways include \$6.066 billion in business volume, \$1.509 billion in personal income, 32,134 jobs, and \$270.4 million in tax revenues. This is a 46 to 48 percent decrease in benefits compared to existing conditions. The economic benefits of the Waterways assuming a higher state of maintenance of the Waterways include \$12.452 billion in business volume, \$3.181 billion in personal income, 70,151 jobs, and \$566.6 million in tax revenues. This is an approximately twelve percent increase in benefits compared to existing conditions. If the 2007-2009 U.S. economic recession had not occurred, economic benefits of the Waterways in 2009 would have been approximately \$19.479 billion in business volume, \$4.973 billion in personal income, 110,333 jobs, and \$877.5 million in tax revenues. In other words, the recession reduced the benefits of the District's Waterways by \$8.278 billion in business volume, \$2.125 billion in personal income, 47,708 jobs, and \$370.1 million in tax revenues.

Table B-1. Summary of Total Economic Benefits of the District's Waterways

Activity	Business Volume (Millions)				Personal Income (Millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Current Existing Impacts	7,346.7	1,934.3	1,919.4	11,200.4	1,539.3	694.6	614.0	2,847.9	33,817	13,873	14,935	62,625
Three-Foot Draft Restriction Impacts	3,981.0	1,068.5	1,016.7	6,066.1	785.4	398.1	325.2	1,508.8	16,317	7,905	7,912	32,134
Ten-Foot Draft Restriction Impacts	8,180.7	2,128.3	2,143.6	12,452.6	1,731.6	763.2	685.7	3,180.5	38,200	15,272	16,679	70,151
Impacts Assuming No Recession	12,794.1	3,332.6	3,351.8	19,478.5	2,721.8	1,179.0	1,072.3	4,973.1	60,703	23,554	26,076	110,333

The Intracoastal Waterway

The Intracoastal Waterway is a 2,640-mile federally and locally maintained system of natural waterbodies and connecting canals paralleling the Atlantic and Gulf coasts of the United States that encompasses the Atlantic Intracoastal Waterway (AIWW) and the Gulf Intracoastal Waterway (GIWW). The purpose of the waterway is to provide a protected environment for vessels moving coastwise, particularly shallow-draft commercial and recreational vessels.

The Gulf Intracoastal Waterway is a 1,100-mile channel between Brownsville, Texas, and St. Marks, Florida, south of Tallahassee. The channel is 150 feet wide and 12 feet deep and runs mainly behind barrier beaches.

The Atlantic Intracoastal Waterway is a 1,391-mile channel between Trenton, New Jersey, and Miami, Florida. A southward extension from Miami to Key West was authorized but never constructed. The channels from Trenton to St. Johns River in Florida, on which Jacksonville is located, are 12 feet deep, 90 feet wide through land areas, and generally 150 or 300 feet wide in open

water areas. The section from the Georgia-Florida line to St. Johns River is 125 feet wide. The channel south from St. Johns River was constructed as an independent project under the title *Intracoastal Waterway, Jacksonville to Miami, Florida*. An early authorization called for a 12-foot by 125-foot channel throughout, but was modified to a 10-foot depth from Fort Pierce south to Miami. The project, which was completed in its modified form in 1965, is 370 miles long and follows coastal rivers and lagoons past numerous tourism-oriented communities.

A detailed description of the waterway as it flows through each of the District's countries is presented in Section I of the Main Report.

II. ESTIMATED BENEFITS OF THE DISTRICT'S WATERWAYS

Economic Benefits Under Current Existing Conditions

Marine-Related Business Activity

The data presented in the original analyses that outlined the direct impact of marine-related businesses in the 12 counties within the District's boundaries were updated to current values using the estimated increase in gross sales as recorded by the Florida Department of Revenue (FDOR) Kind Code 28. FDOR classifies businesses by type and reports the gross sales receipts and sales tax collections for each business type. Business types are classified as Kind Codes. Kind Code 28 consists of *Motorboats, Yachts, Marine Parts, Accessories, and Boat Dealers*. The percent change in reported Kind Code 28 gross sales from the year of the original analyses to 2009 was applied to the direct marine-related business activity (obtained from the original analyses) to estimate the direct current impact of marine-related businesses in each county. For details on each county, see the appropriate appendix for each county.

Port operations are influenced less by local marine-related sales and more by macro-economic factors within the region served by the port. For this reason, the direct impact of port operations in each county was updated to current values using the percent change in gross sales of all Kind Codes for the State of Florida from the time of the original analyses to 2009.

Table B-2 presents the summation of the updated 2009 marine-related business volume for each of the District's 12 counties, aggregated by business type. In 2009, total marine-related business activity in the District is estimated at \$6.795 billion.

The original analyses included the distribution of business volume for each marine-related business type for each county. The aggregation of the 12 county tables is presented as Table B-3. For this analysis, for each county, the business activity distribution (Table B-3) for each business type was applied to the 2009 updated marine-related business volume (Table B-2) to quantify the dollar value of sales of each business type generated by each type of activity in each county. The summations of the values for the 12 counties are presented in Table B-4.

**Table B-2. Total Direct Marine-Related Business Volume in the District,
Aggregated by Business Type, 2009**

Business Type	2009 Total Marine Business Volume
Boat Dealers	\$636,507,532
Yacht Brokers	\$507,245,988
Marinas	\$318,025,361
Boat Yards	\$184,045,136
Canvas Products/Upholstery	\$86,682,443
Boat Repairs	\$171,597,151
Outboard Repairs	\$174,332,658
Marine Equipment/Electronics	\$442,326,823
Marine Construction	\$229,592,273
Auto Parts	\$4,879,446
Tackle/Dive Equipment	\$136,715,611
Marine/Sporting Goods Retail	\$186,439,288
Wholesaler	\$669,376,421
Boat Manufacturer	\$820,359,162
Equipment Manufacturer	\$281,199,199
Ski/Boating Instruction	\$11,461,886
Boat Trailers	\$25,494,083
A/C Heating	\$44,787,570
Signs	\$2,281,659
Water Transportation	\$67,312,587
Clubs/Associations	\$23,840,126
Engineering/Surveyors	\$66,661,499
Consultants	\$12,723,027
Government	\$16,291,418
Legal Services	\$2,895,971
Insurance	\$30,526,038
Interior Design	\$8,733,040
Business/Personal Services	\$58,882,680
Storage	\$7,961,321
Boating Services	\$155,554,542
Auto/Cycle Dealers	\$65,530,377
Auto Repair	\$881,767
General Manufacturing	\$174,653,447
Camp/Resort/Lodging	\$7,733,317
Restaurant/Seafood Market	\$99,024,219
Miscellaneous Retail/Other	\$22,443,265
Charter Boats/Rentals	\$131,439,953
Port Tenants	\$908,993,515
Total	\$6,795,431,797

Table B-3. Distribution of Direct Marine-Related Business Revenue by Business Type and Business Activities

Business Type	Business Activities									
	Percent Construction	Percent Transportation	Percent Retail Trade	Percent Boat Sales	Percent Used	Percent Manufacturing	Percent Wholesale	Percent Finance	Percent Service	
Boat Dealers	0.07%	0.06%	67.37%	9.57%	0.79%	1.12%	1.25%	19.75%		
Yacht Brokers	0.34%	0.02%	9.16%	72.93%	0.55%	0.32%	0.32%	16.36%		
Marinas	0.78%	0.52%	26.98%	1.69%	0.20%	0.44%	0.20%	69.19%		
Boat Yards	6.39%	2.62%	13.90%	3.08%	37.72%	1.79%	0.08%	34.42%		
Canvas Products/Upholstery	0.56%	0.30%	18.85%	0.00%	59.49%	5.41%	0.41%	14.99%		
Boat Repairs	0.22%	0.07%	15.25%	1.97%	8.02%	9.74%	0.00%	64.72%		
Outboard Repairs	0.06%	0.07%	9.26%	0.37%	2.98%	34.53%	0.00%	52.72%		
Marine Equipment/Electronics	0.31%	0.15%	61.44%	0.01%	5.58%	9.86%	0.10%	22.55%		
Marine Construction	93.90%	0.18%	0.18%	0.00%	0.90%	0.05%	0.00%	4.79%		
Auto Parts	0.00%	0.00%	52.76%	0.00%	1.43%	20.51%	0.00%	25.30%		
Tackle/Dive Equipment	0.04%	2.53%	62.56%	0.00%	0.30%	1.55%	0.00%	33.02%		
Marine/Sporting Goods Retail	0.04%	0.12%	87.54%	0.32%	0.65%	5.72%	0.26%	5.36%		
Wholesaler	0.00%	0.30%	3.91%	0.00%	1.70%	84.08%	0.00%	10.01%		
Boat Manufacturer	0.15%	0.01%	1.29%	1.77%	95.25%	0.02%	0.01%	1.49%		
Equipment Manufacturer	0.00%	0.00%	2.20%	0.00%	88.22%	8.67%	0.00%	0.91%		
Ski/Boating Instruction	0.00%	0.47%	0.00%	0.00%	0.00%	0.00%	0.00%	99.53%		
Boat Trailers	0.00%	1.67%	71.39%	0.00%	1.08%	7.51%	0.00%	18.36%		
A/C Heating	0.09%	0.00%	22.26%	0.00%	17.48%	0.00%	0.00%	60.16%		
Signs	0.00%	0.00%	18.68%	0.00%	2.93%	60.74%	0.00%	17.65%		
Water Transportation	0.51%	6.58%	0.02%	0.00%	3.54%	0.44%	0.00%	88.90%		
Clubs/Associations	6.39%	1.14%	11.55%	0.61%	0.61%	0.00%	0.00%	79.69%		
Engineering/Surveyors	3.13%	6.88%	0.27%	0.71%	2.45%	0.00%	0.00%	86.56%		
Consultants	0.20%	0.10%	0.00%	0.00%	11.03%	0.00%	0.00%	88.68%		
Legal Services	0.00%	4.26%	0.00%	0.00%	0.00%	0.00%	0.00%	95.74%		
Insurance	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%		
Interior Design	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%	99.53%		
Business/Personal Services	0.80%	0.00%	40.17%	0.00%	38.00%	1.38%	0.00%	19.65%		
Storage	0.12%	0.00%	1.41%	0.00%	0.00%	1.61%	6.88%	89.98%		
Boating Services	0.00%	0.00%	0.66%	0.00%	0.00%	0.00%	0.00%	99.34%		
Auto/Cycle Dealers	0.26%	19.26%	40.47%	0.17%	2.60%	0.18%	3.38%	33.67%		
Camp/Resort/Lodging	0.00%	0.00%	62.23%	1.13%	6.33%	4.75%	3.05%	22.52%		
Restaurant/Seafood Market	0.00%	0.00%	57.74%	0.00%	0.08%	12.95%	0.00%	29.23%		
Miscellaneous Retail/Other	0.08%	0.00%	1.03%	0.00%	96.95%	1.24%	0.00%	0.70%		
Charter Boats/Rentals	0.00%	0.00%	22.21%	0.00%	0.04%	0.00%	0.00%	77.75%		
Port Tenants	0.00%	0.00%	54.09%	0.00%	0.00%	39.63%	0.00%	6.28%		
Total	4.18%	0.95%	24.85%	8.04%	24.55%	13.73%	0.40%	23.30%		

Table B-4. Total Updated Direct Marine-Related Business Revenue by Business

Business Type	Total Marine Business Volume		Construction Volume		Transportation Volume		Retail Trade Volume		Used Boat Sales Volume		Manufacturing Volume		Wholesale Trade Volume		Finance Volume		Service Volume	
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Boat Dealers	\$636,507,532	\$447,144	\$370,776	\$428,841,742	\$60,940,858	\$5,059,959	\$7,132,443	\$7,985,589	\$125,729,034									
Yacht Brokers	\$507,245,988	\$1,717,131	\$121,289	\$46,442,613	\$369,944,934	\$2,799,009	\$1,612,616	\$1,604,933	\$83,003,496									
Marinas	\$318,025,361	\$2,481,068	\$1,639,864	\$85,799,068	\$5,367,101	\$631,747	\$1,409,803	\$648,269	\$220,048,438									
Boat Yards	\$184,045,136	\$11,769,545	\$4,823,154	\$25,579,589	\$5,665,993	\$69,421,324	\$3,295,358	\$140,614	\$63,349,557									
Canvas Products/Upholstery	\$86,682,443	\$482,613	\$259,553	\$16,337,973	\$0	\$51,564,113	\$4,693,280	\$353,860	\$12,991,069									
Boat Repairs	\$171,597,151	\$382,862	\$122,158	\$26,176,912	\$3,377,142	\$13,759,143	\$16,717,766	\$0	\$111,061,166									
Outboard Repairs	\$174,332,658	\$104,682	\$128,069	\$16,146,625	\$650,696	\$5,194,887	\$60,199,130	\$0	\$91,908,541									
Marine Equipment/Electronics	\$442,326,823	\$1,380,573	\$645,596	\$271,772,291	\$38,037	\$24,660,500	\$43,625,636	\$457,749	\$99,746,480									
Marine Construction	\$229,592,273	\$215,581,226	\$412,986	\$423,137	\$0	\$2,065,604	\$106,862	\$0	\$11,002,460									
Auto Parts	\$4,879,446	\$0	\$0	\$2,574,192	\$0	\$69,946	\$1,000,925	\$0	\$1,234,380									
Tackle/Dive Equipment	\$136,715,611	\$55,850	\$3,454,448	\$85,532,734	\$0	\$412,147	\$2,115,679	\$0	\$45,144,746									
Marine/Sporting Goods Retail	\$186,439,288	\$73,362	\$220,089	\$163,212,664	\$594,070	\$1,211,412	\$10,660,348	\$481,145	\$9,986,205									
Wholesaler	\$669,376,421	\$0	\$1,981,958	\$26,199,369	\$0	\$11,373,094	\$562,825,919	\$0	\$66,996,068									
Boat Manufacturer	\$820,359,162	\$1,266,994	\$84,846	\$10,622,325	\$14,559,388	\$781,375,989	\$191,103	\$75,737	\$12,182,778									
Equipment Manufacturer	\$281,199,199	\$5,963	\$1,987	\$6,182,984	\$0	\$248,067,381	\$24,389,920	\$0	\$2,550,958									
Ski/Boating Instruction	\$11,461,886	\$0	\$54,062	\$0	\$0	\$0	\$0	\$0	\$11,407,823									
Boat Trailers	\$25,494,083	\$0	\$424,997	\$18,199,280	\$0	\$275,824	\$1,913,791	\$0	\$4,680,189									
A/C Heating	\$44,787,570	\$41,301	\$0	\$9,971,194	\$0	\$7,829,843	\$0	\$0	\$26,945,231									
Signs	\$2,281,659	\$0	\$0	\$426,193	\$0	\$66,786	\$1,385,862	\$0	\$402,817									
Water Transportation	\$67,312,587	\$343,440	\$4,429,032	\$15,615	\$0	\$2,385,692	\$296,654	\$0	\$59,842,157									
Clubs/Associations	\$23,840,126	\$1,523,404	\$271,322	\$2,752,988	\$146,566	\$146,566	\$0	\$0	\$18,999,279									
Engineering/Surveyors	\$66,661,499	\$2,089,348	\$4,583,733	\$178,623	\$474,646	\$1,631,887	\$0	\$0	\$57,703,261									
Consultants	\$12,723,027	\$24,944	\$12,513	\$0	\$0	\$1,403,198	\$0	\$0	\$11,282,371									
Government	\$16,291,418	\$0	\$694,016	\$0	\$0	\$0	\$0	\$0	\$15,597,402									
Legal Services	\$2,895,971	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,895,971									
Insurance	\$30,526,038	\$0	\$0	\$0	\$0	\$0	\$0	\$144,601	\$30,381,437									
Interior Design	\$8,733,040	\$70,199	\$0	\$3,508,202	\$0	\$3,318,297	\$120,723	\$0	\$1,715,621									
Businesses/Personal Services	\$58,882,680	\$72,312	\$0	\$828,938	\$0	\$0	\$950,364	\$4,049,144	\$52,981,920									
Storage	\$7,961,321	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$7,908,713									
Boating Services	\$155,554,542	\$409,413	\$29,956,054	\$62,946,136	\$270,242	\$4,046,555	\$286,345	\$5,260,879	\$52,378,929									
Auto/Cycle Dealers	\$65,530,377	\$0	\$0	\$40,776,572	\$740,875	\$4,146,380	\$3,109,786	\$1,998,448	\$14,758,316									
Auto Repair	\$881,767	\$0	\$0	\$509,142	\$0	\$712	\$114,173	\$0	\$257,740									
General Manufacturing	\$174,653,447	\$139,524	\$0	\$1,794,106	\$0	\$169,328,799	\$2,160,527	\$0	\$1,230,492									
Camp/Resort/Lodging	\$7,733,317	\$0	\$0	\$1,717,704	\$0	\$3,046	\$0	\$0	\$6,012,567									
Restaurant/Seafood Market	\$99,024,219	\$0	\$0	\$53,562,364	\$0	\$0	\$39,245,168	\$0	\$6,216,677									
Miscellaneous Retail/Other	\$22,443,265	\$0	\$0	\$21,238,132	\$0	\$337,366	\$524,172	\$0	\$343,596									
Charter Boats/Rentals	\$131,439,953	\$0	\$1,960,683	\$14,951,801	\$1,587,456	\$0	\$0	\$0	\$112,940,009									
Port Tenants	\$908,993,515	\$0	\$643,969,058	\$0	\$0	\$0	\$0	\$0	\$265,024,464									
Total	\$6,795,431,797	\$240,462,898	\$700,622,242	\$1,445,273,816	\$464,358,005	\$1,412,587,209	\$790,084,351	\$23,200,967	\$1,718,842,360									

The values presented in Table B-4 are the total business volume of marine-related businesses. For instance, the \$1.445 billion in retail sales, the \$464.4 million in used boat sales, and the \$790.1 million in wholesale sales are the amounts that consumers paid (consumer prices) to businesses to purchase goods, rather than the total economic benefit of the retail sector. Regional impact models are developed using producer prices. In order to use the values in Table B-4 in a regional impact model, the consumer prices must be converted to producer prices. This is done within the model using margins that represent the difference between producer prices and consumer prices. When a product is purchased at the retail level, the consumer is paying for the manufacturing, distribution, transportation, and marketing of the product. For instance, if a consumer pays \$100 for an item, he may be paying \$50 for the manufacture of the product, \$5 for the transportation of the product to the wholesaler, \$15 to the wholesaler for his services, \$5 to transport the item to the retailer, and only \$25 to the retailer. If the manufacturer and wholesaler are located outside of the economy being evaluated, then only the retail portion or the retail margin (\$25) will result in an economic benefit to the local economy; the remaining portion of the sale (\$75) will “leak” out of the economy and actually result in economic benefits in another economy.

To illustrate, when a boat dealer in the District sells a boat and motor for \$30,000, that total amount would appear in the marine-related database used in this analysis and in the gross retail sales as reported in FDOR’s Kind Code 28. But only a portion of the \$30,000, the retail margin (which for boat and automobile dealers is approximately 15 to 18 percent of the purchase price), will remain in the local economy and generate benefits. The boat dealer will use most of the proceeds from the sale to pay the manufacturer for the boat and motor. Because the boat and motor may be manufactured outside of the District, most of the proceeds of the sale will immediately leave the local economy. The money remaining after the retailer pays the manufacturer is the retail margin, which is used to pay for items such as wages, rent, utilities, business services, and retained profits. Only the retail margin, 15 to 18 percent of the purchase price in the case of boat dealers, will result in economic stimulus to the local economy. All retail and wholesale trade activity must be margined in this manner to accurately estimate the benefit to the District’s economy.

Economic Benefits Generated by Marine-Related Businesses

The 2009 estimated direct marine-related business activity in the District was used in conjunction with the IMPLAN regional economic impact model to estimate the total (direct, indirect, and induced) benefits of the District's Waterways. The benefits were measured as changes in business volume, personal income, employment, and tax revenues. As illustrated in Table B-5, sales to consumers (by marine-related businesses in the District) generate a total of \$10.783 billion in business volume (sales), \$2.746 billion in personal income (wages), and 60,332 jobs. State and local tax revenues were estimated at \$465.4 million. Tax revenues were not presented in Table B-5, by business activity.

The \$10.783 billion in total business volume generated by marine-related businesses is distributed as a direct benefit of \$7.06 billion, an indirect benefit of \$1.869 billion, and an induced benefit of \$1.851 billion. The \$2.746 billion in personal income includes a direct benefit of \$1.481 billion and indirect and induced benefits of \$1.265 billion. The 60,332 man-years of employment generated by marine-related businesses include 32,488 direct jobs, 13,447 indirect jobs, and 14,397 induced jobs. The \$465.4 million in state and local tax revenues includes \$252.0 million generated by direct benefits, \$93.3 million generated by indirect benefits, and \$120.1 million generated by induced benefits.

Nearly one-third of the total economic benefits are generated by the service industry, including \$2.964 billion in business sales, \$862.4 million in personal income, and 19,425 jobs. The second largest benefits are generated by retail trade, with \$2.71 billion in sales, \$696.2 million in personal income, and 17,198 jobs.

**Table B-5. Summary of Economic Benefits of
Marine-Related Businesses in the District,
Under Current Existing Conditions**

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	249.2	94.9	103.5	447.6	85.2	35.5	33.1	153.7	1,711	672	806	3,188
Manufacturing	1,452.6	598.5	416.2	2,467.3	286.8	197.6	133.1	617.5	5,822	3,708	3,238	12,768
Transportation	724.4	274.6	193.7	1,192.7	108.3	117.1	62.0	287.4	1,344	2,307	1,507	5,158
Wholesale Trade	830.4	52.0	75.8	958.1	69.0	19.1	24.3	112.4	1,360	375	590	2,325
Retail Trade	2,007.0	233.6	469.6	2,710.1	465.6	80.4	150.2	696.2	11,881	1,666	3,651	17,198
Finance	23.9	8.3	10.7	42.9	9.4	3.0	3.4	15.8	131	56	83	270
Services	1,775.1	607.3	581.2	2,963.6	456.1	220.4	185.9	862.4	10,239	4,663	4,522	19,425
Total	7,062.7	1,869.1	1,850.6	10,782.5	1,480.5	673.0	592.0	2,745.6	32,488	13,447	14,397	60,332

Purchases of Non-Marine-Related Items

The direct economic benefits generated by marine-related businesses, as estimated above, do not take into account purchases by recreational boaters and fishermen who purchase non-marine-related items for consumption while using the Waterways. These impacts primarily include the purchase of gas for boats and vehicles and the purchase of food, drinks, and ice consumed during boating and fishing trips.

To estimate the economic benefits of non-marine-related items purchased from businesses not located on the Waterways, a randomly generated sample of 2,880 registered boat owners within the District was drawn from the Florida Department of Highway Safety and Motor Vehicles boat owner registration database and sent a questionnaire to determine their boating related spending and use patterns. A total of 784 completed questionnaires were returned by boaters residing within the District’s boundaries, of which 31 indicated that they no longer own a boat, 122 indicated that they did not use their boat at all, or did not use their boat on the District’s Waterways in the past 12 months, and 11 did not respond to certain questions, resulting in a total of 620 questionnaires with usable data.

Results from the usable surveys were entered into a database and queried by boat size to determine frequency of use by county and spending patterns for such items as gas, food, drinks, ice, bait, hoist/launch, and other items. Respondents were also asked to differentiate the location of the purchase of these items as being either from establishments located on the Waterways or from establishments not located on the Waterways. This was intended to prevent double counting, because purchases made on the Waterways would have been included in the estimated marine-related business benefits presented in the previous section.

These expenditures per trip, which were distributed by boat size, were applied to the number of registered pleasure boats in each boat size class in each county. The number of trips taken per year, by boat size, as obtained from the survey of boat owners, was applied to the total expenditures per trip for each boat size class. The total expenditures for each boat size class were then summed to estimate the total expenditures for each county. The estimated total expenditures for each of the 12 counties were aggregated to estimate the total expenditures for the District. The total expenditures on non-marine-related items at establishments not located on the District's Waterways include \$177.9 million for gasoline and \$97.0 million for food, drinks, and ice.

Economic Benefits Generated by Purchases of Non-Marine-Related Items

The \$274.9 million in retail purchases (\$177.9 million for gasoline sales and \$97.0 million for food, drinks, and ice) by recreational boaters from establishments not located on the District's Waterways were estimated to generate total economic benefits of \$400.0 million in business volume, \$96.8 million in personal income, 2,086 jobs, and \$41.0 million in tax revenues. As illustrated in Table B-6, the sales generated by these purchases include \$273.3 million in direct benefits and \$126.7 million in indirect and induced benefits. The total personal income includes \$54.6 million in direct benefits and \$41.1 million in indirect and induced benefits. The 2,086 jobs include 1,181 direct jobs, 404 indirect jobs, and 502 induced jobs. State and local tax revenues include \$34.1 million generated by direct activities, \$2.7 million generated by indirect activities, and \$4.2 million generated by induced activities. The \$34.1 million in tax revenues generated by direct activities includes \$21.3 million in fuel taxes generated by the sale of \$177.9 million in gasoline. The fuel tax revenues were estimated outside of the IMPLAN model and were based on the amount of gasoline sold, assuming an average price of \$2.70 per gallon, and the prevailing fuel tax per gallon. The fuel tax in 2010 for counties within the District's boundaries ranged from \$0.286 to \$0.346 per gallon, including \$0.16 per gallon in state levied taxes. The state levied taxes include \$0.12 per gallon in retail sales tax. To avoid double counting of gasoline retail sales taxes that are included in the fuel tax, the sales tax generated by direct activities estimated in the IMPLAN model were not incorporated into the tax revenue estimate.

Table B-6. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in the District, Under Current Existing Conditions

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$273.30	\$62.14	\$64.51	\$399.96
Personal Income (Millions)	\$54.63	\$20.49	\$20.64	\$95.76
Employment	1,181	404	502	2,086
Tax Revenues (Millions)	\$34.05	\$2.71	\$4.19	\$40.95

Combined Economic Benefits of the Waterways

The total economic benefits of the Waterways include the benefits generated by marine-related businesses in the District (presented in Table B-5) and the purchase of non-marine-related items for consumption on the District’s Waterways (presented in Table B-6). A summary of these benefits is presented in Table B-7. Total benefits consist of \$11.182 billion in business volume, \$2.841 billion in personal income, 62,418 jobs, and \$506.2 million in tax revenue. Total business volume benefits consist of \$7.336 billion in direct sales and \$3.846 billion in indirect and induced sales. Total personal income benefits consist of \$1.535 billion in direct wages and \$1.306 billion in indirect and induced wages. Total employment benefits consist of 33,668 direct jobs and 28,750 indirect and induced jobs. State and local tax revenues include \$286.1 million generated by direct activities, \$96.1 million generated by indirect activities, and \$124.3 million generated by induced activities. The \$286.1 million generated by direct activity includes \$21.3 million in fuel taxes generated by gasoline sales.

Table B-7. Summary of Total Economic Benefits of the Waterways in the District, Under Current Existing Conditions

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$7,336.0	\$1,931.3	\$1,915.1	\$11,182.4
Personal Income (Millions)	\$1,535.2	\$693.5	\$612.7	\$2,841.3
Employment	33,668	13,851	14,899	62,418
Tax Revenues (Millions)	\$286.1	\$96.1	\$124.3	\$506.4

Commercial Fishing Activity in Miami-Dade County

The economic benefits of commercial fishing in Biscayne Bay, for species dependent on the Bay but caught elsewhere in Miami-Dade County, were addressed in the April 2005 *Biscayne Bay Economic Study* by Hazen and Sawyer for the South Florida Water Management District.

For commercial fishing and species dependent on the bay, IMPLAN was used to estimate direct, indirect, and induced business volume, personal income, and employment generated by the ex-vessel values of commercial fish harvests. In addition, IMPLAN was used to estimate the benefits of expenditures for vessel purchases and refurbishments and the benefits of the marketing and retailing of marine landings.

The economic benefits for commercial fishing were taken directly from the *Biscayne Bay Economic Study* and incorporated into the original analysis. For this update, the direct benefits presented in the 2005 *Biscayne Bay Economic Study* were updated to current values using the same methodology used to update the direct marine-related activities and the purchase of non-marine-related items. These updated direct benefits were then input into the IMPLAN model to estimate the current benefit of commercial fishing in the county.

The *Biscayne Bay Economic Study* and the original analysis included economic benefits generated by commercial fisheries landings, capital investments by commercial fishers for vessel costs and vessel refurbishments (maintenance and repair), and the wholesale and retail activity associated with marketing the Bay and Bay-dependent catches. For this update, vessel costs and vessel refurbishments were not included in this analysis as these benefits are captured in the marine-related business benefits discussed above.

In 2004, the direct benefits of commercial fishing presented in the original analysis, excluding capital investments by commercial fishers, were estimated at \$9.3 million (see Table B-8). These values were updated to current values using the estimated increase in gross sales of all FDOR Kind Codes for the State of Florida. From 2004 to 2009, reported gross sales for the State of Florida increased by 12.6 percent, from \$707.9 billion in 2004 to \$796.8 billion in 2009. Total direct commercial fishing activity in the county is estimated to have increased from \$9.3 million in 2004 to \$10.5 million in 2009.

Table B-8. Total Direct Biscayne Bay-Related Commercial Fishing Business Volume in Miami-Dade County, by Business Activity 2004 and 2009

Business Activity	2004 Business Volume	2009 Business Volume
Commercial Fishing	\$3,914,950	\$4,406,527
Wholesale Trade	\$2,425,558	\$2,730,121
Eating and Drinking Establishments	\$2,834,944	\$3,190,911
Government - State, Local, Federal	\$116,904	\$131,583
Total	\$9,292,356	\$10,459,142

Economic Benefits Generated by Commercial Fishing in Miami-Dade County

The \$10.5 million in updated direct commercial fishing activities were input into the appropriate industrial sector of the IMPLAN model to estimate total current economic benefits. As can be seen in Table B-9, direct commercial fishing activity is estimated to generate total economic benefits of \$18.0 million in business volume, \$6.6 million in personal income, 206 jobs, and \$1.0 million in tax revenues. The total business volume benefits include \$10.7 million in direct benefits and \$7.3 million in indirect and induced benefits. The total personal income includes \$4.1 million in direct benefits and \$2.5 million in indirect and induced benefits. The 206 jobs include 149 direct jobs and 58 indirect and induced jobs. State and local tax revenues include \$0.6 million generated by direct activities and \$0.41 million generated by indirect and induced activities.

Table B-9. Summary of Economic Benefits of Commercial Fishing in Miami-Dade County

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$10.69	\$3.04	\$4.27	\$17.99
Personal Income (Millions)	\$4.11	\$1.11	\$1.38	\$6.61
Employment	149	22	36	206
Tax Revenues (Millions)	\$0.61	\$0.14	\$0.27	\$1.02

Summary of Total Economic Benefits Under Current Existing Conditions

Economic Benefits Generated by Marine-Related Businesses

Sales to consumers by marine-related businesses in the District generate a total of \$10.782 billion in business volume, \$2.746 billion in personal income, 60,332 jobs, and \$465.4 million in tax revenues.

Economic Benefits Generated by Purchases of Non-Marine-Related Items

The \$274.9 million in retail purchases by recreational boaters from establishments not located on the Waterways were estimated to generate economic benefits of \$400.0 million in business volume, \$95.8 million in personal income, 2,086 jobs, and \$41.0 million in tax revenues.

Economic Benefits Generated by Commercial Fishing in Miami-Dade County

Total business volume benefits resulting from commercial fishing activities are estimated at \$18.0 million in business volume, \$6.6 million in personal income, 206 jobs, and \$1.0 million in tax revenues.

Total Economic Benefits

As presented in Table B-10, current total economic benefits to the District resulting from waterway activities, including sales by marine-related businesses, boater purchases of non-marine-related items, and commercial fishing and related activities, are estimated at \$11.20 billion in business volume, \$2.848 billion in personal income, 62,625 jobs, and \$507.4 million in tax revenues.

It should be noted that the District-wide benefits include \$835.1 million in business volume, \$472.8 million in personal income, 9,081 jobs, and \$36.6 million in tax revenues in excess of the summation of the benefits of the 12 counties within the District. This is due to the fact that Input-Output multipliers are typically larger when more economic activity is incorporated into the local transactions matrix. The more that imports are internalized, the larger the calculated multipliers become. In other words, larger study areas, or larger economies, such as multiple county areas or a state, would be expected to generate a greater percent of the goods purchased within its borders (a smaller portion of their purchases would be imported), thereby

generating greater total benefits than a single county study area. Therefore, when the direct business benefits generated in all 12 counties are applied to the District-level model, the benefits would be expected to be greater than the sum of benefits from the 12 counties.

Table B-10. Summary of Total Economic Benefits Resulting from Waterway Activities, Under Current Existing Conditions

Activity	Business Sales (Millions of Dollars)	Personal Income (Millions of Dollars)	Employment (Jobs)	Tax Revenues (Millions of Dollars)
Marine Business Activity	\$10,782.46	\$2,745.57	60,332	\$465.43
Purchase of Non-Marine Items	\$399.96	\$95.76	2,086	\$40.95
Commercial Fishing	\$17.99	\$6.61	206	\$1.02
Total	\$11,200.42	\$2,847.93	62,625	\$507.40

Economic Benefits Assuming a Cessation of Maintenance

If maintenance of the District’s Waterways was to cease, it is believed that shoaling would eventually result in an effective vessel draft limitation of three feet. This, in turn, would result in a reduction of marine-related business generated by vessels drafting in excess of three feet.

Expected Marine-Related Business Volume

For this analysis, total business volume, assuming three-foot draft restrictions, was updated from the original analyses for each county to current values. This was accomplished by applying the percent of business sales, by business type, that are expected to be retained under the three-foot draft scenario (as obtained from the original analyses) to the 2009 updated current total business volume. The resulting updated total business volume for each county, by business type, was distributed to individual business activities using the distribution established in the original analyses, then the 12 counties were aggregated to estimate the District total.

Table B-11 presents the total 2009 marine-related business volume for each business type, the percent of existing business that would be retained if vessel drafts were limited to three feet MLW on the Waterways (as presented in the original analyses), and the resulting total

business volume that would be retained with three feet of vessel draft, distributed by business activity.

As can be seen from Table B-11, 53 percent of all business activity in the District would be retained by marine-related businesses if vessel drafts were limited to three feet MLW. Total marine-related business revenue is expected to be \$3.634 billion if vessel drafts were reduced to three feet MLW, a reduction of \$3.162 billion from the \$6.795 billion in current business activity.

Economic Benefits Generated by Marine-Related Businesses

Assuming vessel draft restrictions of three feet MLW on the District's Waterways, the \$3.634 billion of marine-related business revenue in the District would be expected to generate total benefits of \$5.762 billion in business volume, \$1.433 billion in personal income, and 30,429 jobs (Table B-12). State and local tax revenues are estimated at \$239.4 million. The \$5.762 billion in business volume expected to be generated by marine-related business includes a total direct benefit of \$3.776 billion and combined indirect and induced benefits of \$1.986 billion. The \$1.433 billion in personal income includes a direct benefit of \$741.8 million and combined indirect and induced benefits of \$691.0 million. The 30,429 jobs generated by marine-related businesses include 15,326 direct jobs, 7,591 indirect jobs, and 7,513 induced jobs. State and local tax revenues are estimated to be distributed as \$125.4 million generated by direct benefit activities, \$51.4 million generated by indirect benefit activities, and \$62.6 million generated by induced benefit activities.

Comparing current economic benefits to economic benefits expected to occur if vessel drafts were restricted to three feet MLW indicates that the county would realize a total decrease in business volume of \$5.021 billion, a decrease in personal income of \$1.313 billion, a decrease of 29,903 jobs, and a decrease of \$226.0 million in tax revenues.

Table B-11. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming Three-Foot Vessel Draft Restrictions on the Waterways

Business Type	Total Existing Marine Business Volume	Percent of Business to Remain	Total Marine Business Volume With 3' Drafts	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	Service Volume
Boat Dealers	\$636,507,532	39.08%	\$248,716,818	\$178,853	\$244,658	\$170,685,853	\$22,796,736	\$2,082,645	\$2,947,703	\$4,303,535	\$45,476,847
Yacht Brokers	\$507,245,988	22.55%	\$114,399,276	\$568,042	\$17,967	\$7,751,548	\$84,742,148	\$395,654	\$231,165	\$399,960	\$20,292,793
Marinas	\$318,025,361	29.97%	\$95,306,825	\$793,371	\$369,350	\$32,846,085	\$1,931,709	\$220,183	\$786,119	\$232,111	\$38,098,069
Boat Yards	\$184,045,136	13.93%	\$25,630,771	\$1,742,234	\$384,661	\$1,611,112	\$371,160	\$12,772,307	\$45,481	\$140,614	\$8,563,210
Canvas Products/Upholstery	\$86,682,443	61.99%	\$53,735,578	\$319,384	\$124,241	\$10,236,096	\$0	\$32,837,952	\$2,359,508	\$225,418	\$7,632,979
Boat Repairs	\$171,597,151	41.68%	\$71,520,830	\$329,392	\$56,516	\$12,335,728	\$1,619,671	\$9,712,397	\$8,662,108	\$0	\$38,805,023
Outboard Repairs	\$174,332,658	43.61%	\$76,034,258	\$63,403	\$101,989	\$8,254,950	\$156,489	\$2,987,176	\$14,455,010	\$0	\$50,015,224
Marine Equipment/Electronics	\$442,326,823	48.92%	\$216,406,528	\$433,317	\$309,718	\$134,898,022	\$13,448	\$13,691,966	\$18,800,876	\$266,117	\$47,993,041
Marine Construction	\$229,592,273	45.05%	\$103,425,642	\$98,034,286	\$178,886	\$254,780	\$0	\$968,388	\$69,788	\$0	\$3,919,504
Auto Parts	\$4,879,446	84.26%	\$4,111,426	\$0	\$0	\$2,191,906	\$0	\$62,292	\$838,154	\$0	\$1,019,076
Tackle/Dive Equipment	\$136,715,611	66.70%	\$91,185,298	\$52,443	\$1,982,969	\$57,735,811	\$0	\$320,149	\$1,291,995	\$0	\$29,801,953
Marine/Sporting Goods Retail	\$186,439,288	53.04%	\$98,884,563	\$34,357	\$85,939	\$85,670,373	\$371,044	\$756,595	\$5,482,494	\$80,624	\$6,403,124
Wholesaler	\$669,376,421	73.70%	\$493,355,498	\$0	\$1,331,471	\$13,869,949	\$0	\$7,416,895	\$424,894,953	\$0	\$45,842,230
Boat Manufacturer	\$820,359,162	44.53%	\$365,315,787	\$1,040,962	\$42,176	\$1,586,859	\$2,146,427	\$348,154,364	\$146,248	\$36,345	\$12,162,402
Equipment Manufacturer	\$281,199,199	56.89%	\$159,976,456	\$5,071	\$1,691	\$1,716,028	\$0	\$149,945,223	\$7,282,957	\$0	\$1,025,483
Ski/Boating Instruction	\$11,461,886	15.47%	\$1,772,706	\$0	\$37,181	\$0	\$0	\$0	\$0	\$0	\$1,735,526
Boat Trailers	\$25,494,083	80.33%	\$20,479,892	\$0	\$212,498	\$14,338,736	\$0	\$275,824	\$1,428,065	\$0	\$4,224,768
A/C Heating	\$44,787,570	19.93%	\$8,925,009	\$13,540	\$0	\$2,315,035	\$0	\$2,145,794	\$0	\$0	\$4,450,644
Signs	\$2,281,659	64.60%	\$1,473,986	\$0	\$0	\$195,221	\$0	\$33,213	\$1,019,989	\$0	\$225,565
Water Transportation	\$67,312,587	83.47%	\$56,186,765	\$26,940	\$3,023,487	\$13,379	\$0	\$1,919,094	\$254,179	\$0	\$50,949,681
Clubs/Associations	\$23,840,126	48.77%	\$11,627,546	\$66,390	\$226,138	\$1,895,906	\$116,833	\$16,833	\$0	\$0	\$9,205,450
Engineering/Surveyors	\$66,661,499	44.07%	\$29,377,669	\$141,133	\$1,454,445	\$133,472	\$96,466	\$1,095,530	\$0	\$0	\$26,456,631
Consultants	\$12,723,027	50.71%	\$6,452,380	\$15,719	\$7,879	\$0	\$0	\$701,600	\$0	\$0	\$5,727,181
Government	\$16,291,418	98.25%	\$16,007,105	\$0	\$694,016	\$0	\$0	\$0	\$0	\$0	\$15,313,090
Legal Services	\$2,895,971	98.14%	\$2,842,132	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,842,132
Insurance	\$30,526,038	43.31%	\$13,220,405	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interior Design	\$8,733,040	20.09%	\$1,754,727	\$44,594	\$0	\$775,804	\$0	\$528,177	\$19,119	\$136,756	\$13,083,650
Business/Personal Services	\$38,882,680	57.98%	\$34,140,935	\$17,453	\$0	\$723,784	\$0	\$0	\$778,186	\$2,222,368	\$30,399,137
Storage	\$7,961,321	87.06%	\$6,930,772	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$6,878,164
Boating Services	\$155,554,542	20.33%	\$31,625,473	\$106,878	\$3,445,753	\$4,261,143	\$129,059	\$2,193,755	\$38,259	\$625,771	\$20,824,841
Auto/Cycle Dealers	\$65,530,377	97.87%	\$64,132,396	\$0	\$0	\$39,937,783	\$740,877	\$4,146,380	\$3,109,786	\$1,718,852	\$14,478,720
Auto Repair	\$881,767	87.75%	\$773,720	\$0	\$0	\$469,596	\$0	\$378	\$75,465	\$0	\$28,281
General Manufacturing	\$174,653,447	22.48%	\$39,268,225	\$96,267	\$0	\$955,752	\$0	\$36,399,634	\$1,023,019	\$0	\$793,552
Camp/Resort/Lodging	\$7,733,317	83.72%	\$6,474,274	\$0	\$0	\$1,443,621	\$0	\$3,046	\$0	\$0	\$5,027,609
Restaurant/Seafood Market	\$99,024,219	78.31%	\$77,548,461	\$0	\$0	\$48,623,823	\$0	\$0	\$26,612,077	\$0	\$2,312,561
Miscellaneous Retail/Other	\$22,443,265	91.80%	\$20,603,651	\$0	\$0	\$19,469,759	\$0	\$319,651	\$493,942	\$0	\$320,301
Charter Boats/Rentals	\$131,439,953	42.04%	\$55,256,018	\$0	\$1,413,876	\$3,430,986	\$906,194	\$0	\$0	\$0	\$49,504,982
Port Tenants	\$908,993,515	100.00%	\$908,993,515	\$0	\$643,969,058	\$0	\$0	\$0	\$0	\$0	\$265,024,462
Total	\$6,795,431,797	53.48%	\$3,633,873,315	\$104,124,030	\$659,716,563	\$680,681,510	\$116,138,259	\$632,203,098	\$523,146,647	\$10,388,469	\$907,444,922

Table B-12. Summary of Economic Benefits of Marine-Related Businesses in the District, Assuming Vessel Draft Restrictions of Three Feet

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	107.9	40.8	45.2	194.0	37.4	15.3	14.5	67.2	752	290	352	1,394
Manufacturing	650.0	260.9	189.7	1,100.6	134.6	86.3	60.7	281.6	2,615	1,612	1,476	5,703
Transportation	682.1	259.0	181.7	1,122.9	101.0	110.5	58.1	269.6	1,240	2,177	1,414	4,831
Wholesale Trade	549.8	34.2	48.3	632.3	43.5	12.7	15.4	71.6	800	247	375	1,422
Retail Trade	837.5	101.5	196.3	1,135.2	193.3	34.9	62.8	291.0	5,177	724	1,526	7,427
Finance	10.7	3.7	4.8	19.2	4.2	1.3	1.5	7.1	59	25	37	121
Services	937.5	320.2	299.7	1,557.4	227.8	121.0	95.9	444.7	4,684	2,516	2,332	9,531
Total	3,775.5	1,020.3	965.7	5,761.5	741.8	382.1	308.9	1,432.8	15,326	7,591	7,513	30,429

Expected Purchases of Non-Marine-Related Items

Vessel draft restrictions of three feet MLW will impact the sale of non-marine-related items to recreational boaters and fishermen. The extent of this impact was estimated based on the survey of registered boat owners in the District and the distribution of registered vessels by size. The current sales of non-marine-related items to recreational boaters were estimated at \$274.9 million (\$177.9 million for gasoline sales and \$97.0 million for food, drink, and ice). Vessel draft restrictions of three feet will prevent larger vessels from utilizing the District’s Waterways. As a result, retail sales of non-marine-related items from businesses not located on the District’s Waterways are expected to drop to \$196.0 million (including \$134.3 million for gasoline sales and \$61.7 million in food, drink, and ice sales), a reduction of \$78.9 million from existing conditions.

Economic Benefits Generated by Purchases of Non-Marine-Related Items

As illustrated in Table B-13, the expected \$196.0 million in retail sales of gas, food, drinks, and ice to recreational boaters from businesses not located on the District’s Waterways would generate benefits of \$286.7 million in business volume, \$69.3 million in personal income, 1,498 jobs, and \$30.0 million in tax revenues. Compared to existing conditions, this is a reduction of about \$113.3 million in business volume, \$26.4 million in personal income, 588 jobs, and \$10.9 million in tax revenues. Tax revenues generated under this scenario include \$15.9 million in fuel taxes distributed as \$7.9 million in state levied taxes and \$8.0 million in locally levied taxes.

Table B-13. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in the District, Assuming Vessel Draft Restrictions of Three Feet

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$194.79	\$45.18	\$46.70	\$286.67
Personal Income (Millions)	\$39.51	\$14.87	\$14.94	\$69.32
Employment	842	293	363	1,498
Tax Revenues (Millions)	\$25.03	\$1.97	\$3.03	\$30.03

Combined Economic Benefits of the Waterways

The total combined economic benefits expected to be generated with three-foot vessel draft restrictions on the Waterways by marine-related businesses and from the purchases of non-marine-related items from businesses not located on the Waterways are presented in Table B-14. The combined benefits include \$6.048 billion in business volume, \$1.502 billion in personal income, 31,928 jobs, and \$269.4 million in tax revenues. The \$269.4 million in state and local tax revenues includes \$15.9 million in fuel taxes generated by gasoline sales to boaters. These benefits are a reduction of \$5.134 billion in business volume, \$1.339 billion in personal income, 30,491 jobs, and \$237.0 million in tax revenues compared to existing conditions on the Waterways and account for 46 to 49 percent of the existing benefits of the District’s Waterways.

Table B-14. Summary of Total Economic Benefits of the Waterways in the District, Assuming Vessel Draft Restrictions of Three Feet

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$3,970.3	\$1,065.4	\$1,012.4	\$6,048.2
Personal Income (Millions)	\$781.3	\$397.0	\$323.9	\$1,502.1
Employment	16,168	7,883	7,877	31,928
Tax Revenues (Millions)	\$150.4	\$53.3	\$65.7	\$269.4

Economic Benefits Generate by Commercial Fishing in Miami-Dade County

The Biscayne Bay Economic Study did not estimate the impacts for varying Intracoastal Waterway depths. However, the depth of the District’s Waterways should have a minimal effect on the overall production of fisheries in the region. Therefore, the benefits to commercial fishing

were assumed to equal those estimated under current conditions, including \$18.0 million in total business volume, \$6.6 million in total personal income, 206 jobs, and \$1.0 million in tax revenues.

Total Economic Benefits

Total economic benefits to the District under the reduced maintenance scenario, including sales by marine-related businesses, boater purchases of non-marine-related items, and commercial fishing and related activities, are estimated at \$6.066 billion in business volume, \$1.509 billion in personal income, 32,134 jobs, and \$270.5 million in tax revenues (Table B-15). This is a decrease of \$5.134 billion in business volume, \$1.339 billion in personal income, 30,491 jobs, and \$237.0 million in tax revenues compared to current existing conditions

Table B-15. Summary of Total Economic Benefits Resulting from Waterway Activities, Assuming Vessel Draft Restrictions of Three Feet

Activity	Business Sales (Millions of Dollars)	Personal Income (Millions of Dollars)	Employment (Jobs)	Tax Revenues (Millions of Dollars)
Marine Business Activity	\$5,761.48	\$1,432.82	30,429	\$239.39
Purchase of Non-Marine Items	\$286.67	\$69.32	1,498	\$30.03
Commercial Fishing	\$17.99	\$6.61	206	\$1.02
Total	\$6,066.15	\$1,508.75	32,134	\$270.45

Economic Benefits Assuming a Higher State of Maintenance

The full implementation of the District’s Dredge Material Management Plan would result in a higher state of maintenance of the Waterways and an increase in vessel draft restrictions in the District to 10 to 12 feet MLW. This increase in draft allowance would permit deeper draft vessels to fully utilize the Waterways in the District. This, in turn, would increase the business volume of marine-related businesses in the District. The sale of non-marine-related items by businesses not located on the District’s Waterways would not experience a significant impact under this maintenance scenario because deepening the Waterways would result in increased use by deeper draft vessels (drafting between 6.5 to 10 feet) that are typically stored in the water and tend not to be trailered. Owners of those vessels typically do not purchase many items from

businesses not located on the Waterways, but rather purchase almost all of their supplies from businesses with waterway access.

Expected Marine-Related Business Volume

Total business volume assuming 10 to 12-foot draft restrictions was updated for each county to current values by applying the expected percent increase in business sales, by business type, under the 10 to 12-foot draft scenario (as obtained from the original analyses) to the updated current total business volume as presented in Table B-2. The resulting updated total business volume, by business type, was distributed to individual business activities using the distribution established in the original analyses. The updated values for the 12 counties within the District's boundaries were aggregated to estimate the District total.

Table B-16 presents the total 2009 marine-related business volume for each business type, the expected percent increase in existing business that would result if vessel drafts were increased in accordance with the DMMP, the resulting total business volume assuming 10 to 12-foot vessel drafts, and the business volume assuming 10 to 12-foot vessel drafts distributed by business activity.

As can be seen from the table, business activity would be expected to increase by 12 percent if vessel drafts were increased to 10 to 12 feet MLW. Total marine-related business revenue is expected to be \$7.596 billion, an increase of \$773.9 million from the \$6.795 billion in existing business activity.

Economic Benefits Generated by Marine-Related Business

If maintenance of the Waterways was increased to reflect the full implementation of the District's Dredge Material Management Plan, resulting in increased vessel drafts to 10 to 12 feet MLW, marine-related businesses in the District would be expected to generate a total of \$12.035 billion in business volume, \$3.078 billion in personal income, and 67,858 jobs (Table B-17). State and local tax revenues were estimated at \$524.6 million. The sales expected to be generated by marine-related businesses under this scenario include a direct benefit of \$7.897 billion and combined indirect and induced benefits of \$4.138 billion. The total personal income generated under this maintenance scenario includes a direct benefit of \$1.673 billion and combined indirect and induced benefits of \$1.405 billion. Total employment benefits include

Table B-16. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming 10 to 12-Foot Vessel Draft Restrictions on the Waterways

Business Type	Total Marine										Service Volume
	Total Existing Marine Business Volume	Percent Increase in Business	Business Volume With 10'-12' Drafts	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	
Boat Dealers	\$636,507,532	15.64%	\$736,087,269	\$513,252	\$399,562	\$495,286,598	\$71,372,900	\$5,510,889	\$8,264,601	\$8,863,719	\$145,875,748
Yacht Brokers	\$507,245,988	24.75%	\$632,788,051	\$2,284,088	\$155,805	\$7,987,233	\$459,323,517	\$3,197,545	\$2,034,653	\$2,169,993	\$105,635,268
Marinas	\$318,025,361	19.47%	\$379,939,991	\$2,931,876	\$2,158,641	\$98,189,469	\$6,224,751	\$747,459	\$1,590,878	\$797,644	\$267,299,250
Boat Yards	\$184,045,136	33.94%	\$246,515,661	\$17,273,017	\$6,228,796	\$32,248,737	\$6,548,912	\$85,693,032	\$4,775,850	\$140,614	\$93,606,702
Canvas Products/Upholstery	\$86,682,443	12.16%	\$97,219,933	\$560,668	\$280,725	\$18,010,396	\$0	\$7,712,657	\$5,448,799	\$364,472	\$14,842,103
Boat Repairs	\$171,597,151	15.60%	\$198,364,509	\$397,935	\$146,937	\$28,700,066	\$3,584,501	\$14,559,431	\$18,254,761	\$0	\$132,720,839
Outboard Repairs	\$174,332,658	20.71%	\$210,434,782	\$123,229	\$141,187	\$19,014,850	\$773,891	\$6,173,196	\$77,548,842	\$0	\$106,659,568
Marine Equipment/Electronics	\$442,326,823	17.61%	\$520,199,754	\$1,737,409	\$748,763	\$318,794,191	\$46,950	\$29,110,792	\$52,613,478	\$526,388	\$116,621,744
Marine Construction	\$229,592,273	20.29%	\$276,174,102	\$258,464,775	\$480,712	\$477,789	\$0	\$2,322,690	\$113,751	\$0	\$14,314,380
Auto Parts	\$4,879,446	8.04%	\$5,271,893	\$0	\$2,762,817	\$0	\$0	\$73,772	\$1,080,115	\$0	\$1,355,185
Tackle/Dive Equipment	\$136,715,611	5.63%	\$144,412,719	\$61,315	\$3,673,710	\$90,239,857	\$0	\$427,908	\$2,196,571	\$0	\$47,813,348
Marine/Sporting Goods Retail	\$186,439,288	12.20%	\$209,190,786	\$89,700	\$261,561	\$183,722,386	\$682,304	\$1,490,098	\$11,989,792	\$534,500	\$10,420,456
Wholesaler	\$669,376,421	7.61%	\$720,317,764	\$0	\$2,059,441	\$30,399,748	\$0	\$12,193,543	\$599,863,277	\$0	\$75,801,747
Boat Manufacturer	\$820,359,162	2.33%	\$839,459,188	\$1,336,718	\$86,819	\$10,848,600	\$14,932,159	\$799,801,189	\$193,987	\$76,343	\$12,183,365
Equipment Manufacturer	\$281,199,199	8.89%	\$306,193,292	\$6,143	\$2,041	\$7,273,898	\$0	\$267,717,862	\$27,965,437	\$0	\$3,227,888
Ski/Boating Instruction	\$11,461,886	3.98%	\$11,918,637	\$0	\$54,062	\$0	\$0	\$0	\$0	\$0	\$11,864,574
Boat Trailers	\$25,494,083	8.34%	\$27,619,066	\$0	\$53,1246	\$19,899,267	\$0	\$275,824	\$2,126,289	\$0	\$4,786,438
A/C Heating	\$44,787,570	18.39%	\$53,026,078	\$47,562	\$0	\$11,593,289	\$0	\$8,966,652	\$0	\$0	\$32,418,568
Signs	\$2,281,659	4.27%	\$2,379,165	\$0	\$0	\$450,613	\$0	\$69,132	\$1,412,021	\$0	\$47,401
Water Transportation	\$67,312,587	25.20%	\$84,273,112	\$500,981	\$5,360,149	\$15,998	\$0	\$3,019,865	\$303,936	\$0	\$75,072,196
Clubs/Associations	\$23,840,126	8.44%	\$25,852,568	\$1,599,457	\$275,222	\$3,060,488	\$161,437	\$161,437	\$0	\$0	\$20,594,533
Engineering/Surveyors	\$66,661,499	17.09%	\$78,051,420	\$2,559,498	\$5,982,421	\$247,162	\$475,111	\$1,803,785	\$0	\$0	\$66,983,446
Consultants	\$12,723,027	44.38%	\$18,369,842	\$26,937	\$13,516	\$0	\$0	\$2,070,206	\$0	\$0	\$16,259,181
Government	\$16,291,418	0.81%	\$16,423,840	\$0	\$694,016	\$0	\$0	\$0	\$0	\$0	\$15,729,825
Legal Services	\$2,895,971	0.00%	\$2,895,971	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,895,971
Insurance	\$30,526,038	9.38%	\$33,390,401	\$0	\$0	\$0	\$0	\$0	\$0	\$152,446	\$33,237,955
Interior Design	\$8,733,040	36.30%	\$11,903,562	\$74,188	\$0	\$4,892,570	\$0	\$4,723,923	\$149,498	\$0	\$2,063,386
Business/Personal Services	\$58,882,680	11.64%	\$65,738,509	\$110,138	\$0	\$861,560	\$0	\$0	\$1,022,775	\$4,414,450	\$59,329,581
Storage	\$7,961,321	0.05%	\$7,965,470	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$7,912,862
Boating Services	\$155,554,542	21.50%	\$188,996,613	\$470,214	\$39,111,233	\$75,370,870	\$344,829	\$4,731,751	\$353,155	\$6,635,088	\$61,979,486
Auto/Cycle Dealers	\$65,530,377	1.71%	\$66,648,762	\$0	\$0	\$41,447,602	\$740,875	\$4,146,380	\$3,109,786	\$2,222,125	\$14,981,993
Auto Repair	\$881,767	4.68%	\$923,063	\$149,205	\$0	\$525,018	\$0	\$868	\$129,656	\$0	\$267,521
General Manufacturing	\$174,653,447	2.67%	\$179,322,195	\$0	\$0	\$1,955,039	\$0	\$173,581,454	\$2,355,909	\$0	\$1,280,587
Camp/Resort/Lodging	\$7,733,317	2.94%	\$7,960,883	\$0	\$0	\$1,912,096	\$0	\$3,284	\$0	\$0	\$6,045,503
Restaurant/Seafood Market	\$99,024,219	2.14%	\$101,140,717	\$0	\$0	\$54,477,207	\$0	\$0	\$40,443,115	\$0	\$6,220,383
Miscellaneous Retail/Other	\$22,443,265	3.74%	\$23,282,061	\$0	\$0	\$22,014,668	\$0	\$360,588	\$550,531	\$0	\$356,280
Charter Boats/Rentals	\$131,439,953	8.55%	\$142,677,492	\$0	\$2,058,015	\$15,202,381	\$1,674,739	\$0	\$0	\$0	\$123,742,329
Port Tenants	\$908,993,515	1.54%	\$923,017,823	\$0	\$655,149,776	\$0	\$0	\$0	\$0	\$0	\$267,868,057
Total	\$6,795,431,797	11.79%	\$7,596,346,943	\$291,318,309	\$726,054,354	\$1,647,935,072	\$566,886,877	\$1,490,647,213	\$865,891,462	\$26,897,784	\$1,980,715,646

36,871 direct jobs, 14,846 indirect jobs, and 16,141 induced jobs. The \$524.6 million in state and local tax revenues includes \$287.3 million generated by direct benefits, \$102.7 million generated by indirect benefits, and \$134.6 million generated by induced benefits.

Table B-17. Summary of Economic Benefits of Marine-Related Businesses in the District, Assuming Vessel Draft Restrictions of 10-12 Feet

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	301.9	115.2	124.8	542.0	102.7	43.0	39.9	185.5	2,063	814	972	3,849
Manufacturing	1,532.8	630.4	440.0	2,603.3	304.0	208.2	140.8	653.0	6,145	3,904	3,424	13,472
Transportation	750.7	284.5	200.9	1,236.1	112.5	121.3	64.3	298.1	1,398	2,390	1,563	5,351
Wholesale Trade	910.1	57.0	83.8	1,050.8	76.5	21.0	26.8	124.3	1,525	411	652	2,588
Retail Trade	2,327.8	268.8	542.3	3,138.8	538.0	92.5	173.5	804.0	13,663	1,917	4,217	19,797
Finance	27.7	9.7	12.4	49.8	10.9	3.5	4.0	18.4	152	65	96	313
Services	2,045.7	697.7	670.6	3,414.0	528.2	252.2	214.5	995.0	11,924	5,345	5,217	22,486
Total	7,896.7	2,063.2	2,074.8	12,034.7	1,672.8	741.6	663.7	3,078.2	36,871	14,846	16,141	67,858

Economic Benefits Generated by Purchases of Non-Marine-Related Items

This maintenance scenario should not significantly impact the sale of non-marine-related items by businesses that are not located on the Waterways. These benefits should be equivalent to those under current Waterways conditions. Under this assumption, retail sales of non-marine-related items should generate total economic activity equal to \$400.0 million in business volume, \$95.8 million in personal income, and 2,086 jobs (Table B-18). The \$41.0 million in tax revenues generated under this scenario includes \$21.3 million in fuel taxes distributed as \$10.8 million in state levied taxes and \$10.7 million in locally levied taxes.

Table B-18. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in the District, Assuming Vessel Draft Restrictions of 10-12 Feet

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$273.30	\$62.14	\$64.51	\$399.96
Personal Income (Millions)	\$54.63	\$20.49	\$20.64	\$95.76
Employment	1,181	404	502	2,086
Tax Revenues (Millions)	\$34.05	\$2.71	\$4.19	\$40.95

Combined Economic Benefits of the Waterways

The combined total benefits of marine-related businesses and purchases of non-marine-related items from businesses not located on the District’s Waterways under this scenario are presented in Table B-19. Combined benefits include \$12.435 billion in business volume, \$3.174 billion in personal income, 69,944 jobs, and \$565.6 million in tax revenues. State and local tax revenues include \$21.3 million in fuel taxes generated by gasoline sales to boaters.

Table B-19. Summary of Total Economic Benefits of the Waterways in the District, Assuming Vessel Draft Restrictions of 10-12 Feet

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$8,170.0	\$2,125.3	\$2,139.3	\$12,434.6
Personal Income (Millions)	\$1,727.5	\$762.1	\$684.4	\$3,173.9
Employment	38,051	15,250	16,643	69,944
Tax Revenues (Millions)	\$321.4	\$105.4	\$138.8	\$565.6

The combined business volume generated from the District’s Waterways assuming 10 to 12-foot vessel draft restrictions includes a direct benefit of \$8.170 billion, an indirect benefit of \$2.125 billion, and an induced benefit of \$2.139 billion. Combined personal income generated under this scenario consists of \$1.727 billion in direct benefits, \$762.1 million in indirect benefits, and \$684.4 million in induced benefits. Combined employment includes 38,051 direct jobs, 15,250 indirect jobs, and 16,643 induced jobs. State and local tax revenues include \$321.4 million generated by direct activities, \$105.4 million generated by indirect activities, and \$138.8 million generated by induced activities.

Economic Benefits Generated by Commercial Fishing in Miami-Dade County

The depth of the Intracoastal Waterway should have a minimal effect on the overall production of fisheries in the region. Therefore, the benefits to commercial fishing were assumed to equal those estimated under current conditions, or \$18.0 million in total business volume, \$6.6 million in total personal income, 206 jobs, and \$1.0 million in tax revenues.

Total Economic Benefits

Total economic benefits to the District under the higher state of maintenance scenario generated by marine-related businesses sales, boater purchases of non-marine-related items, and commercial fishing and related activities, are estimated at \$12.453 billion in business volume, \$3.181 billion in personal income, 70,151 jobs, and \$566.6 million in tax revenues (Table B-20). This is an increase of \$1.252 billion in business volume, \$332.6 million in personal income, 7,526 jobs, and \$59.2 million in tax revenues compared to existing conditions.

Table B-20. Summary of Total Economic Benefits Resulting from Waterway Activities, Assuming Vessel Draft Restrictions of 10 to 12 Feet

Activity	Business Sales (Millions of Dollars)	Personal Income (Millions of Dollars)	Employment (Jobs)	Tax Revenues (Millions of Dollars)
Marine Business Activity	\$12,034.67	\$3,078.16	67,858	\$524.63
Purchase of Non-Marine Items	\$399.96	\$95.76	2,086	\$40.95
Commercial Fishing	\$17.99	\$6.61	206	\$1.02
Total	\$12,452.63	\$3,180.52	70,151	\$566.60

The Impact of the 2007-2009 U.S. Economic Recession

In December 2007, the U.S. economy entered a recession that would last 18 months, until June 2009, the longest recession since World War II. The impact of the recession was evident in the FDOR recorded gross sales throughout Florida and in the marine industries as measured by Kind Code 28. The downturn in the economy, as evidenced in the decrease in total gross sales in the State in general and specifically in the decrease in gross sales in Kind Code 28, indicated a need to estimate the impact of the recession on marine-related businesses. To estimate the impact of the recession, the trend in gross sales of Kind Code 28 established over the 20-year period prior to the onset of the recession was used to estimate the theoretical gross sales in each county had the recession not occurred and gross sales had continued to increase at the rates experienced over the previous 20-year period. These gross sales, assuming the recession did not occur, were used to estimate the non-recession change in direct sales in each county and the total economic benefits of the District's Waterways assuming no recession. These values were compared to the estimated total economic benefits based on the change in actual reported gross sales for Kind Code 28 in 2009 to estimate the total impact of the recession on marine-related business in each county.

Estimating Gross Sales Assuming That the Recession Did Not Occur

Figure B-1 graphically illustrates the gross sales for Kind Code 28 for the District from 1986 through 2009. Gross sales peaked in 2006 at \$3.689 billion and declined to \$2.291 billion in 2009.

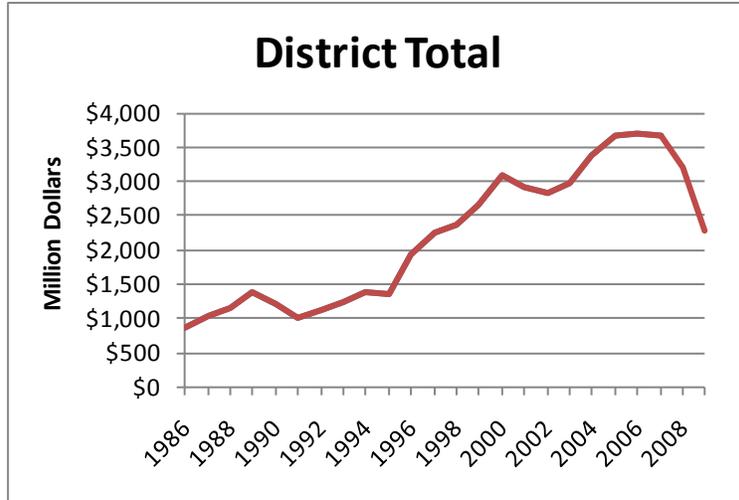


Figure B-1. District Total, FDOR Reported Gross Sales of Kind Code 28, 1986 Through 2009

A trend line exhibiting the gross sales for Kind Code 28 from 1986 to 2007 was estimated for each of the District's 12 counties. The trend line was based on polynomial equations, which were used to estimate the gross retail sales for Kind Code 28 for each county for 2009 assuming that the recession did not occur. Anomalies in the FDOR data for three counties (Flagler, Indian River, and St. Johns) prevented an accurate estimate of the trend in gross sales.

Port operations are influenced less by local marine-related sales and more by macro-economic factors within the region served by the port. For this reason, the direct impact of port operations was updated to current values using the percent change in reported gross sales of all Kind Codes for the State of Florida.

Figure B-2 graphically illustrates the gross sales for all Kind Codes for the State from 1986 through 2009. Gross sales peaked in 2007 at \$901 billion and declined to \$796 billion in 2009.

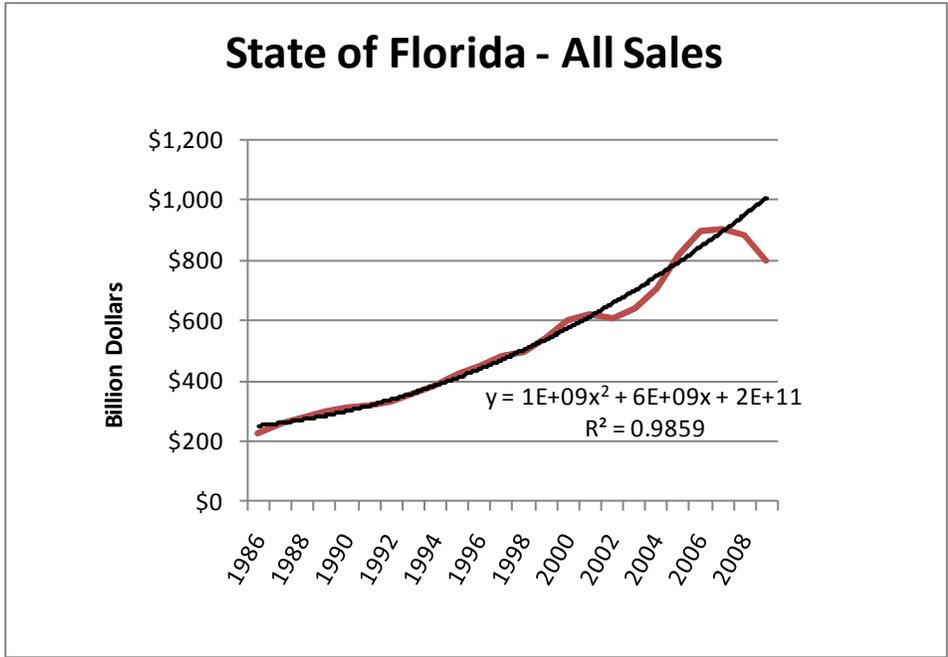


Figure B-2. State of Florida, Total FDOR Reported Gross Sales of All Kind Codes, 1986 Through 2009

The trend line exhibited by the gross sales of all Kind Codes in the state from 1986 to 2007 is described by the following polynomial equation:

$$Y = 1E+09x^2 + 6E+09x + 2E+11$$

Where:

Y = expected value

x = known value (year, expressed as year for which expected value is being estimated minus the base year of 1986)

E+ = times 10 raised to the power following the “+” sign

With an R^2 value of 0.9859.

The polynomial equation describing the gross sales of all Kind Codes for the State was used to estimate the gross sales for the State for 2009 assuming that the recession did not occur. Excluding the impact of the recession, total gross sales in 2009 in the State should have trended slightly over \$920 billion, 15 percent greater than actual reported sales. This percent increase was used to update the direct impacts of port operations in each county.

The gross sales reported in Kind Code 28 in the year that the original analyses were conducted were compared to the estimated theoretical gross sales in each county if the recession had not occurred to calculate the percent change between the two values. This percent change was applied to the direct marine-related business activity (as presented in the original analyses) to estimate the direct current benefit of marine-related businesses in each county if the recession had not occurred. The 12 county values were aggregated and are presented in Table B-21 (for the three counties that the impact of the recession could not be estimated, the current benefits were included). If the recession had not occurred, total direct marine-related business sales would have been \$11.929 billion in 2009. The updated Table B-21 data were combined with the distribution of marine revenues by type (as described in Table B-3 in this report) to develop updated estimates of total non-recession marine-related business revenues (see Table B-22). These updated values were input into the IMPLAN regional economic impact model to estimate the total (direct, indirect, and induced) benefits of the District's Waterways measured as increases in business volume, personal income, employment, and tax revenues.

If the recession had not occurred, business activity in the District would have been 76 percent greater than estimated for 2009. Total marine-related business revenue, assuming no recession, would have been approximately \$5.133 billion in 2009, an increase of \$6.795 billion from the \$6.795 billion in current business activity.

Economic Benefits Generated by Marine-Related Business

If the recession had not occurred and spending patterns for marine-related goods and services had continued on the trend established over the previous 20-year period, marine-related businesses in the District would be expected to generate a total of \$18.622 billion in business volume, \$4.831 billion in personal income, and 107,173 jobs (Table B-23). State and local tax revenues would have been \$818.9 million. This is an increase of \$7.840 billion in business volume, \$2.086 billion in personal income, 46,841 jobs, and \$353.4 million in tax revenues compared to estimated existing conditions. The sales expected to be generated by marine-related businesses under this scenario include a direct benefit of \$12.124 billion and combined indirect and induced benefits of \$6.498 billion. The total personal income generated under this maintenance scenario includes a direct benefit of \$2.640 billion and combined indirect and induced benefits of \$2.191 billion. Total employment benefits include 58,875 direct jobs,

**Table B-21. Total Marine-Related Business Volume in the District,
Aggregated by Business Type, 2009,
Assuming the 2007-2009 U.S. Economic Recession Did Not Occur**

Business Type	2009 Total Marine Business Volume
Boat Dealers	\$1,155,514,466
Yacht Brokers	\$910,514,341
Marinas	\$574,892,856
Boat Yards	\$341,817,529
Canvas Products/Upholstery	\$159,112,704
Boat Repairs	\$327,311,189
Outboard Repairs	\$321,679,299
Marine Equipment/Electronics	\$791,409,201
Marine Construction	\$416,954,039
Auto Parts	\$8,585,671
Tackle/Dive Equipment	\$255,249,589
Marine/Sporting Goods Retail	\$346,483,901
Wholesaler	\$1,203,019,885
Boat Manufacturer	\$1,730,859,894
Equipment Manufacturer	\$523,719,709
Ski/Boating Instruction	\$20,783,756
Boat Trailers	\$47,167,468
A/C Heating	\$79,959,310
Signs	\$4,044,604
Water Transportation	\$121,328,369
Clubs/Associations	\$42,885,323
Engineering/Surveyors	\$133,384,380
Consultants	\$22,237,733
Government	\$30,442,429
Legal Services	\$5,024,163
Insurance	\$55,448,626
Interior Design	\$15,355,829
Business/Personal Services	\$100,982,741
Storage	\$14,016,240
Boating Services	\$280,734,916
Auto/Cycle Dealers	\$116,754,470
Auto Repair	\$1,472,991
General Manufacturing	\$236,059,252
Camp/Resort/Lodging	\$13,349,837
Restaurant/Seafood Market	\$194,046,906
Miscellaneous Retail/Other	\$42,052,379
Charter Boats/Rentals	\$234,592,409
Port Tenants	\$1,049,555,000
Total	\$11,928,803,403

Table B-22. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Business Type	Total Marine Business Volume	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	Service Volume
Boat Dealers	\$1,155,514,466	\$877,501	\$662,017	\$780,059,431	\$110,986,989	\$8,837,142	\$12,815,747	\$16,643,197	\$224,632,460
Yacht Brokers	\$910,514,341	\$2,998,944	\$215,364	\$86,719,331	\$662,357,034	\$4,969,985	\$2,964,751	\$2,961,043	\$147,327,947
Marinas	\$574,892,856	\$4,225,928	\$4,197,906	\$148,144,732	\$9,028,343	\$1,116,041	\$3,196,019	\$1,140,309	\$403,843,569
Boat Yards	\$341,817,529	\$20,064,428	\$8,222,393	\$44,955,119	\$9,916,080	\$140,723,646	\$5,841,481	\$140,614	\$111,973,764
Canvas Products/Upholstery	\$159,112,704	\$868,259	\$442,479	\$32,985,141	\$0	\$94,132,307	\$8,218,008	\$603,251	\$21,863,298
Boat Repairs	\$327,311,189	\$934,136	\$211,577	\$47,074,241	\$5,917,052	\$26,908,460	\$29,458,337	\$0	\$216,807,363
Outboard Repairs	\$321,679,299	\$270,427	\$241,550	\$29,845,859	\$1,089,741	\$9,710,346	\$107,173,402	\$0	\$173,347,925
Marine Equipment/Electronics	\$791,409,201	\$2,397,184	\$1,146,335	\$485,676,150	\$100,599	\$43,360,335	\$79,886,788	\$841,559	\$178,000,313
Marine Construction	\$416,954,039	\$390,207,344	\$960,924	\$612,628	\$0	\$3,499,804	\$186,632	\$0	\$21,486,713
Auto Parts	\$8,585,671	\$0	\$0	\$4,551,428	\$0	\$124,198	\$1,752,176	\$0	\$2,157,864
Tackle/Dive Equipment	\$255,249,589	\$97,697	\$6,148,083	\$163,333,302	\$0	\$725,183	\$3,821,760	\$0	\$81,123,533
Marine/Sporting Goods Retail	\$346,483,901	\$130,264	\$390,794	\$302,480,310	\$1,349,636	\$2,418,791	\$18,657,386	\$1,294,270	\$19,762,460
Wholesaler	\$1,203,019,885	\$0	\$3,519,210	\$46,914,979	\$0	\$19,248,347	\$1,014,099,431	\$0	\$119,237,891
Boat Manufacturer	\$1,730,859,894	\$2,212,787	\$224,408	\$18,811,008	\$26,159,920	\$1,653,622,686	\$387,645	\$202,552	\$29,238,887
Equipment Manufacturer	\$523,719,709	\$10,588	\$3,529	\$11,747,521	\$0	\$458,835,933	\$47,649,184	\$0	\$5,472,945
Ski/Boating Instruction	\$20,783,756	\$0	\$129,703	\$0	\$0	\$0	\$0	\$0	\$20,654,052
Boat Trailers	\$47,167,468	\$0	\$781,345	\$34,090,803	\$0	\$661,748	\$3,420,596	\$0	\$8,212,974
A/C Heating	\$79,959,310	\$72,710	\$0	\$17,642,688	\$0	\$13,902,851	\$0	\$0	\$48,341,059
Signs	\$4,044,604	\$0	\$0	\$753,377	\$0	\$18,588	\$2,460,769	\$0	\$711,870
Water Transportation	\$121,328,369	\$908,329	\$7,887,313	\$26,620	\$0	\$4,343,718	\$505,728	\$0	\$107,656,688
Clubs/Associations	\$42,885,323	\$2,597,061	\$474,984	\$5,297,811	\$260,247	\$260,247	\$0	\$0	\$33,994,973
Engineering/Surveyors	\$133,384,380	\$4,965,734	\$9,987,834	\$328,394	\$1,255,342	\$3,431,549	\$0	\$0	\$13,415,524
Consultants	\$22,237,733	\$24,944	\$12,513	\$0	\$0	\$2,491,551	\$0	\$0	\$19,708,723
Government	\$30,442,429	\$0	\$1,866,889	\$0	\$0	\$0	\$0	\$0	\$28,575,541
Legal Services	\$5,024,163	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,024,163
Insurance	\$55,448,626	\$0	\$0	\$0	\$0	\$0	\$0	\$388,973	\$55,059,654
Interior Design	\$15,355,829	\$119,673	\$0	\$6,166,228	\$0	\$5,887,072	\$205,806	\$0	\$2,977,052
Business/Personal Services	\$100,982,741	\$126,292	\$0	\$1,391,388	\$0	\$0	\$1,602,037	\$7,189,755	\$90,673,267
Storage	\$14,016,240	\$0	\$0	\$93,412	\$0	\$0	\$0	\$0	\$13,922,828
Boating Services	\$280,734,916	\$1,083,986	\$55,945,787	\$112,037,112	\$471,973	\$7,264,048	\$370,089	\$9,341,339	\$94,220,604
Auto/Cycle Dealers	\$116,754,470	\$0	\$0	\$73,226,380	\$1,992,941	\$7,362,409	\$5,521,807	\$3,103,036	\$25,547,897
Auto Repair	\$1,472,991	\$0	\$0	\$691,311	\$0	\$1,916	\$293,331	\$0	\$486,432
General Manufacturing	\$236,059,252	\$243,676	\$0	\$3,698,381	\$0	\$226,250,309	\$3,188,540	\$0	\$2,678,347
Camp/Resort/Lodging	\$13,349,837	\$0	\$0	\$2,720,566	\$0	\$8,193	\$0	\$0	\$10,621,078
Restaurant/Seafood Market	\$194,046,906	\$0	\$0	\$97,571,393	\$0	\$0	\$81,014,043	\$0	\$15,461,454
Miscellaneous Retail/Other	\$42,052,379	\$0	\$0	\$39,933,936	\$0	\$599,035	\$930,732	\$0	\$588,679
Charter Boats/Rentals	\$234,592,409	\$0	\$0	\$26,140,192	\$2,818,723	\$0	\$0	\$0	\$200,866,132
Port Tenants	\$1,049,555,000	\$0	\$743,548,699	\$0	\$0	\$0	\$0	\$0	\$306,006,310
Total	\$11,928,803,403	\$435,437,891	\$851,988,986	\$2,625,701,169	\$833,704,619	\$2,740,816,438	\$1,435,622,226	\$43,849,898	\$2,961,682,215

22,963 indirect jobs, and 25,334 induced jobs. The \$818.9 million in state and local tax revenues includes \$446.2 million generated by direct benefits, \$161.4 million generated by indirect benefits, and \$211.3 million generated by induced benefits.

Table B-23. Summary of Economic Benefits of Marine-Related Businesses in the District, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	451.3	171.9	187.6	810.8	154.6	64.2	60.0	278.8	3,100	1,217	1,461	5,778
Manufacturing	2,818.6	1,165.4	805.1	4,789.1	552.5	384.6	257.5	1,194.6	11,296	7,225	6,264	24,785
Transportation	880.9	332.2	237.9	1,450.9	135.2	141.6	76.1	352.9	1,706	2,790	1,851	6,347
Wholesale Trade	1,434.4	94.8	138.2	1,667.3	125.8	34.9	44.2	204.9	2,501	685	1,075	4,260
Retail Trade	3,435.0	423.8	852.2	4,710.9	845.0	145.8	272.7	1,263.4	21,567	3,022	6,627	31,216
Finance	45.2	15.7	20.2	81.1	17.8	5.7	6.5	30.0	248	105	157	511
Services	3,058.5	1,038.1	1,015.4	5,112.0	809.5	372.2	324.8	1,506.6	18,458	7,918	7,900	34,276
Total	12,123.9	3,241.9	3,256.4	18,622.2	2,640.4	1,149.0	1,041.7	4,831.2	58,875	22,963	25,334	107,173

Purchases of Non-Marine-Related Items

The survey of registered boat owners conducted as part of this analysis included questions concerning the impact that the recession had on the number of boating trips taken over the previous 12-month period and the amount spent on each boating trip. Review of the responses concerning the amount of money boaters would have spent per boating trip, had the recession not occurred, revealed that the question may not have been answered in a consistent manner. It appears that the question was answered in one of four ways: (1) reporting the additional amount (above the amount actually spent) that would have been spent on the average trip had the recession not occurred (which was the intent of the question); (2) reporting the additional amount (above the amount actually spent) that would have been spent on all trips for the entire previous 12-month period had the recession not occurred; (3) reporting the total amount (including the amount actually spent) that would have been spent on the average trip if the recession had not occurred; (4) reporting the total amount (including the amount actually spent) that would have been spent on all trips for the entire previous 12-month period had the recession not occurred. Because of the inconsistent manner in which the question was answered, the recession-related expenditure data was not used in the analysis. The impact of the recession was based solely on the number of additional trips that would have occurred without the recession.

To ensure adequate response in each boat size classification, the responses from counties were combined when estimating the average impact of the recession on number of trips of each

boat size class. The average number of additional trips that boaters would have taken, by boat size, were added to the number of trips per year that were taken, to obtain the total number of trips, per boater, per year had the recession not occurred. The total number of trips per boater was applied to the number of registered pleasure boats in each boat size class in each county that used the Waterways over the past 12 months to estimate the total number of trips on the Waterways per year. The total number of trips on the Waterways per year was applied to the total expenditures per trip for each boat size class. The total expenditures, assuming that the recession had not occurred, of non-marine items at establishments not located on the Waterways include \$250.7 million for gasoline and \$134.2 million for food, drinks, and ice.

Economic Benefits Generated by Purchases of Non-Marine-Related Items

As illustrated in Table B-24, the expected \$384.9 million in retail sales of gas, food, drinks, and ice to recreational boaters from businesses not located on the Waterways would generate benefits of \$560.2 million in business volume, \$134.3 million in personal income, and 2,923 jobs. State and local tax revenues would have been \$57.5 million, including \$47.8 million generated by direct activities that includes \$29.9 million in fuel taxes. Compared to existing conditions, these benefits would have been an increase of \$160.2 million in business volume, \$38.5 million in personal income, 836 jobs, and \$16.5 million in tax revenues.

Table B-24. Summary of Economic Benefits of Non-Marine-Related Items Purchased By Boaters in the District, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$382.55	\$87.18	\$90.46	\$560.19
Personal Income (Millions)	\$76.59	\$28.74	\$28.94	\$134.27
Employment	1,653	566	704	2,923
Tax Revenues (Millions)	\$47.78	\$3.80	\$5.87	\$57.45

Combined Economic Benefits of the Waterways

The combined total benefits of marine-related businesses and purchases of non-marine-related items from businesses not located on the Waterways under the “No Recession” scenario are presented in Table B-25. Combined benefits would have included \$19.182 billion in

business volume, \$4.965 billion in personal income, 110,095 jobs, and \$876.3 million in state and local tax revenues. State and local tax revenues would have included \$29.9 million in fuel taxes generated by the sale of gasoline. In other words, the recession has resulted in a decrease of \$8.0 billion in business volume, \$2.124 billion in personal income, 47,677 jobs, and \$369.9 million in tax revenues compared existing conditions.

Table B-25. Summary of Total Economic Benefits of the Waterways in the District, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$12,506.5	\$3,329.1	\$3,346.9	\$19,182.4
Personal Income (Millions)	\$2,717.0	\$1,177.7	\$1,070.7	\$4,965.4
Employment	60,528	23,529	26,038	110,095
Tax Revenues (Millions)	\$493.9	\$165.2	\$217.2	\$876.3

Commercial Fishing Activity in Miami-Dade County

The direct economic benefits of commercial fishing in Miami-Dade County, as presented in the original analysis, were updated to current values based on the reported change in gross sales in Florida. The gross sales reported for all Kind Codes in the State of Florida in the year that the original analysis was conducted (2004) was compared to the estimated theoretical gross sales in the county if the recession had not occurred to calculate the percent change between the two values. This percent change was applied to the direct commercial fishing activity (as presented in the original analysis) to estimate the direct current benefit of these industries if the recession had not occurred. These updated direct benefits were then input into the IMPLAN model to estimate the current benefit of commercial fishing in the county.

In 2004, the direct benefits of commercial fishing presented in the original analysis, excluding ship building and repair costs, were estimated at \$9.3 million (see Table B-26). These values were updated to current values using FDOR gross sales data for all Kind Codes for the State of Florida. The reported gross sales for the State of Florida for all Kind Codes increase by 12.5 percent, from \$707.9 billion in 2006 to the theoretical gross sales in the county if the recession had not occurred of \$920.0 billion in 2009. Total direct commercial fishing activity in the county, assuming that the recession had not occurred, is estimated to have increased from \$9.3 million in 2004 to \$12.1 million in 2009.

Table B-26. Total Direct Biscayne Bay-Related Commercial Fishing Business Volume in Miami-Dade County, by Business Activity 2004 and 2009, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Business Activity	2004	2009
	Business Volume	Business Volume
Commercial Fishing	\$3,914,950	\$5,087,927
Wholesale Trade	\$2,425,558	\$3,152,291
Eating and Drinking Establishments	\$2,834,944	\$3,684,335
Government - State, Local, Federal	\$116,904	\$151,930
Total	\$9,292,356	\$12,076,482

Economic Benefits Generated by Commercial Fishing in Miami-Dade County

The \$12.1 million in updated direct commercial fishing activities, if the recession had not occurred, were input into the appropriate industry sector of the IMPLAN model to estimate total current economic benefits. As can be seen in Table B-27, the direct commercial fishing activity is estimated to generate total economic benefits of \$20.8 million in business volume, \$7.6 million in personal income, 238 jobs, and \$1.2 million in tax revenues. The total business volume benefits include \$12.3 million in direct benefits and \$8.4 million in indirect and induced benefits. The total personal income includes \$4.8 million in direct benefits and \$2.9 million in indirect and induced benefits. The 238 jobs include 175 direct jobs and 63 indirect and induced jobs. State and local tax revenues include \$0.7 million generated by direct activities and \$0.5 million generated by indirect and induced activities.

Table B-27. Summary of Economic Benefits of Commercial Fishing in Miami-Dade County Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$12.34	\$3.50	\$4.93	\$20.78
Personal Income (Millions)	\$4.75	\$1.28	\$1.60	\$7.63
Employment	175	25	38	238
Tax Revenues (Millions)	\$0.71	\$0.16	\$0.31	\$1.18

Summary of Total Economic Benefits Assuming the Recession Did Not Occur

Economic Benefits Generated by Marine-Related Businesses

Sales by marine-related businesses in the District generate a total of \$18.898 billion in business volume, \$4.831 billion in personal income, 107,173 jobs, and \$818.9 million in tax revenues.

Economic Benefits Generated by Purchases of Non-Marine-Related Items

The \$384.9 million in retail purchases by recreational boaters from establishments not located on the Waterways were estimated to generate economic benefits of \$560.2 million in business volume, \$134.3 million in personal income, 2,923 jobs, and \$57.5 million in tax revenues.

Economic Benefits Generated by Commercial Fishing in Miami-Dade County

Total business volume benefits resulting from commercial fishing activities are estimated at \$20.8 million in business volume, \$7.6 million in personal income, 238 jobs, and \$1.2 million in tax revenues.

Total Economic Benefits

As presented in Table B-28, current total economic benefits to the District resulting from waterway activities, including sales by marine-related businesses, boater purchases of non-marine-related items, and commercial fishing and related activities, are estimated at \$19.479 billion in business volume, \$4.973 billion in personal income, 110,333 jobs, and \$877.5 million in tax revenues. This is a difference of \$8.278 billion in business volume, \$2.125 billion in personal income, 47,708 jobs, and \$370.1 million in tax revenues compared to existing conditions.

Table B-28. Summary of Total Economic Benefits Resulting from Waterway Activities, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur

Activity	Business Sales (Millions of Dollars)	Personal Income (Millions of Dollars)	Employment (Jobs)	Tax Revenues (Millions of Dollars)
Marine Business Activity	\$18,897.57	\$4,831.18	107,173	\$818.87
Purchase of Non-Marine Items	\$560.19	\$134.27	2,923	\$57.45
Commercial Fishing	\$20.78	\$7.63	238	\$1.18
Total	\$19,478.53	\$4,973.07	110,333	\$877.50