



OFFICE OF ECONOMIC  
& DEMOGRAPHIC RESEARCH

# Economic Evaluation of Florida's Investment in Beaches

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Identifying the State's Brand, Calculating the Return on Investment of  
Beach Restoration and Assessing the Risk of Disasters

January 2015  
Revised

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## EXECUTIVE SUMMARY

### ***Introduction...***

At the request of Speaker Will Weatherford, the Office of Economic and Demographic Research (EDR) undertook an economic evaluation of the state's investment in beach management and restoration projects. The evaluation:

- identifies the strength of the relationship between Florida's beaches and the state's attractiveness as a tourism destination, including the impact on the state's brand;
- calculates the state's overall return on investment from its current expenditures on beach management and restoration projects; and
- assesses the impact of the potential shocks such as major storm damage or other disasters, including a discussion of the state's economic risk.

See APPENDIX A for a copy of the letter from the Speaker.

This analysis develops a return on investment for the Beach Management and Restoration Program and evaluates the key factors that affect this return. The state's return on investment includes all direct, indirect and induced effects of the state's investment in the Beach Management and Restoration program. This measure does not address issues of overall effectiveness or societal and ecological benefit; instead, it focuses on tangible financial gains or losses to state revenues.

The review period covers Fiscal Years 2010-11, 2011-12, and 2012-13. In this report, EDR assumes that the Beach Management and Restoration program is one of two direct investments made by the state to support Florida's brand related to beaches, and that the two (advertising the brand and program investment) generate tourists.

### ***Overall Results and Conclusion...***

EDR determined that the state's brand is made up of nine features that attract visitors. Beaches are the most important feature of Florida's brand, accounting for 25.5% of the state's attractiveness to visitors. The state appropriates funds yearly to repair storm damage and ensure the high quality of the beaches.

The state's investment in the Beach Management and Restoration Program generated a positive return on investment of **5.4**. The ROI was estimated using tax revenues resulting from visitor spending induced by the state's investment in beaches. A return of greater than 1 means that the tax revenue generated by tourists to the state of Florida more than covers the state's expenditure on beaches.

Factors that affect the positive return on investment are:

- Tourists purchase many products that are taxable.
- Money generated from the purchase of tourism-related products is generally kept within the local economy.
- The investment in Florida's beaches is relatively low compared to the amount of economic activity generated by tourists.

If the state were to increase its investment in beaches, it does not necessarily mean that the ROI will increase or that Florida would gain additional tourists. Maintaining the beaches at a level of high quality is important, but once the beaches have reached that level, there are diminishing economic returns to beach investment. This is because additional spending on beaches that are not in need of maintenance will attract little to no additional visitors. Similarly, if the state were to reduce or eliminate funding for beaches, the result would not necessarily be an immediate reduction in tourism. Rather, any reduced tourism would likely occur over time, if at all, depending on the degree of erosion to Florida's beaches.

Hurricanes, tropical storms and other shocks have a negative effect on the attractiveness of the state to visitors and state tax revenues. Depending on the magnitude of the shock, the state may need to spend additional dollars to restore the beaches while also experiencing reduced revenues.

In summary, the state invested \$44 million in the Beach and Management Restoration Program during the review period resulting in an average increase in GDP of \$2.4 billion per year. This, in turn, increased the overall collection of state revenues by \$237.9 million over the three year period.

## OVERVIEW OF BEACH RESTORATION AND ROI

### ***Background and Purpose...***

Recognizing the importance of beaches, the Florida Legislature created a comprehensive beach management and planning program in 1986. Managed by the Department of Environmental Protection (DEP), the program provides funding for beach and inlet management projects. This funding is provided by the state to local governments to protect, preserve and restore Florida's beaches.

No other state and very few countries can boast such an abundance of high quality beaches. With 825 miles of sandy coastline, Florida's beaches are primarily responsible for attracting approximately 18.6 million tourists to the state each fiscal year. In addition to providing a valuable economic resource, the beach and dune system protects coastal development from storms and protects critical habitats for a variety of wildlife species.

According to the Florida Department of Environmental Protection, over 485 miles, or approximately 57% of the state's beaches, are experiencing erosion. Beaches are naturally prone to ongoing erosion; however, storms, such as hurricanes, can also cause significant damage to beaches. Beach nourishment restores the eroded beaches. Maintenance and nourishment is then required to maintain the pristine nature of the beaches.

### ***Program Description...***

The Department of Environmental Protection's Beach Management Funding Assistance Program<sup>1</sup> was established for the purpose of working together with local, state and federal governmental entities to achieve the protection, preservation and restoration of Florida's beaches. The Florida Department of Environmental Protection has a strategic beach management plan for the restoration and maintenance of areas it has designated as critically eroded. The state currently does not fund projects that provide only recreational benefits. In order to receive funding, the projects must have a need for beach erosion control or beach nourishment.

Under the program, the state provides an amount up to 50 percent of the project's costs to Florida's county and municipal governments, community development districts or special taxing districts for beach management and restoration projects located on the Gulf of Mexico, Atlantic Ocean or Straits of Florida. Eligible activities include beach restoration and nourishment activities, project design and engineering studies, environmental studies and monitoring, inlet management planning, inlet sand transfer, dune restoration and protection activities and other activities related to beach erosion prevention that are consistent with the adopted Strategic Beach Management Plan. Project costs are shared between the state and local governments. Many project costs qualify for federal funding in areas authorized by Congress.

Beach and inlet management projects follow four phases – feasibility, design, construction and post-construction monitoring. The Beach Management Funding Process runs from June until DEP submits its Local Government Funding Request (LGFR) to the Legislature in January. Any funds appropriated are for the fiscal year beginning in July. The funding request includes projects at various stages in development and may include new projects for areas that have never been nourished as well as ongoing projects that

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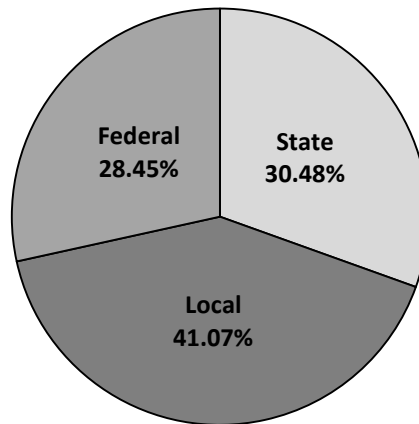
<sup>1</sup> The Beach Management Funding Assistance Program is authorized by Section 161.101, F.S.

periodically renourish beaches. Beach management projects are evaluated on a case by case basis. DEP annually reviews and ranks all projects requested by eligible governmental entities for the next fiscal year, and maintains a project listing in priority order. The projects are ranked on a variety of factors, including but not limited to the severity of erosion, threat to upland structures, recreational and economic benefits, the availability of federal funds, the extent of local government financial commitment, previous state commitment, mitigation of inlet effects, innovative technologies, enhancing sea turtle refuges and significance of the project.<sup>2</sup>

**Federal and Local Investment...**

The federal government and local governments have a vested interest in beach management and restoration. The federal government funds certain projects to reduce storm damage and mitigate coastal erosion.<sup>3</sup> Beach management projects authorized by Congress for federal financial participation are cost shared between state and local governments such that Florida funds up to 50% of the non-federal share. In total, the funding shares for projects are split approximately 28.5% federal, 30.5% state and 41.0% local. The funding split for individual projects can be different depending on the extent of local and federal involvement. Many beaches with high impact storm damage receive federal funding which may reduce the need for local or state funds; however, not all projects are federally funded. For projects that are not federally funded, the local or state share is much higher. See Figure 1 for the federal, state and local shares of total beach restoration expenditures.

**Figure 1. Approximate Beach Restoration Expenditures**



Source: DEP Current Project Requests for Funding

**Explanation of Return on Investment...**

In this report, the term “return on Investment” (ROI) is synonymous with economic benefit, and is used in lieu of the statutory term. This measure does not address issues of overall effectiveness or ecological or societal benefit; instead, it focuses on tangible financial gains or losses to state revenues and is ultimately conditioned by the state’s tax policy.

<sup>2</sup> For a detailed discussion of the Beach Management Funding Assistance program, including a discussion of the ranking criteria see OPPAGA report No. 14-12.

<sup>3</sup> See U.S. Army Corp of Engineers report EM 1110-2-1100, June 2006.

The ROI is developed by summing state revenues generated by a program less state expenditures invested in the program, and dividing that calculation by the state's investment. It is most often used when a project is to be evaluated strictly on a monetary basis, and externalities and social costs and benefits—to the extent they exist—are excluded from the evaluation. The basic formula is:

$$\frac{(\text{Increase in State Revenue} - \text{State Investment})}{\text{State Investment}}$$

Since EDR's Statewide Model<sup>4</sup> is used to develop these computations and to model the induced and indirect effects, EDR is able to simultaneously generate State Revenue and State Investment from the model so all feedback effects mirror reality. The result (a net number) is used in the final ROI calculation.

As used by EDR for this analysis, the returns can be categorized as follows:

- **Greater Than One (>1.0)**...the program more than breaks even; the return to the state produces more revenues than the total cost of the investment.
- **Equal To One (=1.0)**...the program breaks even; the return to the state in additional revenues equals the total cost of the investment.
- **Less Than One, But Positive (+, <1)**...the program does not break even; however, the state generates enough revenues to recover a portion of its cost of the investment.
- **Less Than Zero (-, <0)**...the program does not recover any portion of the investment cost, and state revenues are less than they would have been in the absence of the program because taxable activity is shifted to non-taxable activity or the state is paying more than the return it receives.

The numerical ROI can be interpreted as return in tax revenues for each dollar spent by the state. For example, a ROI of 2.5 would mean that \$2.50 in tax revenues is received back from each dollar spent by the state.

The basic formula for return on investment is always calculated in the same manner, but the inputs used in the calculation can differ depending on the needs of the investor. Florida law requires the return to be measured from the state's perspective as the investor, in the form of state tax revenues. In this regard, the ROI is ultimately shaped by the state's tax code.

All of the issues contained in this report shape EDR's calculation of ROI. Some of them are further addressed in the assumptions and findings.

### ***Methodology...***

EDR used the Statewide Model to estimate the return on investment for the program under review. The Statewide Model is a dynamic computable general equilibrium (CGE) model that simulates Florida's economy and government finances.<sup>5</sup> Among other things, it captures the indirect and induced economic activity resulting from the direct program effects. This is accomplished by using large amounts of data specific to the Florida economy and fiscal structure. Mathematical equations<sup>6</sup> are used to account for

<sup>4</sup> See section on Methodology for more details.

<sup>5</sup> The statewide economic model was developed using GEMPACK software with the assistance of the Centre of Policy Studies (CoPS) at Monash University (Melbourne, Australia). For further details, see: <http://edr.state.fl.us/Content/statewide-policy-analysis-tools/index.cfm>

<sup>6</sup> These equations represent the behavioral responses to economic stimuli – to changes in economic variables.

the relationships (linkages and interactions) between the various economic agents, as well as likely responses by businesses and households to changes in the economy.<sup>7</sup> The model also has the ability to estimate the impact of economic changes on state revenue collections and state expenditures in order to maintain a balanced budget by fiscal year.

When using the Statewide Model to evaluate economic programs, the model is shocked<sup>8</sup> using static analysis to develop the initial or direct effects attributable to the programs funded by the state. In this analysis, the annual direct effects (shocks) of the program took the form of:

- Removal of the program funding from the state budget.
- Removal of expenditures attributable to visitors.

The model was then used to estimate the additional—indirect and induced—economic effects generated by the program. This includes the supply-side responses to tourism activity, where the supply-side responses are changes in investment and labor supply arising from that activity. Indirect effects are the changes in employment, income, and output by local supplier industries that provide goods and services to support the direct economic activity. Induced effects are the changes in spending by households whose income is affected by the direct and indirect activity.

All of these effects can be measured by changes (relative to the baseline) in the following outcomes:

- State government revenues and expenditures
- Jobs
- Personal income
- Florida Gross Domestic Product
- Gross output
- Household consumption
- Investment
- Population

EDR's calculation of the return on investment used the model's estimate of net state revenues and expenditures. Other required measures for this report include the number of jobs created, the increase or decrease in personal income and the impact on gross state product, all of which are included in the model results.

Spending associated with in-state tourism is not included in the return on investment analysis. The tangible economic benefits of tourism on the economy are primarily the result of an influx of new spending by out-of-state visitors.

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<sup>7</sup> The business reactions simulate the supply-side responses to the new activity (e.g., changes in investment and labor supply).

<sup>8</sup> In economics, a shock typically refers to an unexpected or unpredictable event that affects the economy, either positive or negative. In this regard, a shock refers to some action that affects the current equilibrium or baseline path of the economy. It can be something that affects demand, such as a shift in the export demand equation; or, it could be something that affects the price of a commodity or factor of production, such as a change in tax rates. In the current analyses, a shock is imposed to simulate the effect of tourist-related spending in the economy.



In-state residents do not generate new spending; rather, in-state resident tourism leads to reduced spending in other sectors of the economy. In other words, residents will substitute limited disposable income of one purchase for another: a day at the beach versus a day at an amusement park.

***Key Assumptions...***

The following key assumptions are used in the Statewide Model to determine the outcomes of the program under review. Some of the assumptions are used to resolve ambiguities in the literature, while others conform to the protocols and procedures adopted for the Statewide Model.

1. The analysis assumes all data provided by VISIT FLORIDA and the Department of Environmental Protection was complete and accurate. The data was not independently audited or verified by EDR.
2. The analysis assumes that given the time span under review, applying discount rates would not prove material to the outcome.
3. The analysis assumes that any state expenditure made for beach management and restoration projects is a redirection from the general market basket of goods and services purchased by the state. Similarly, any revenue gains from increased business activities are fully spent by the state.
4. The analysis assumes the relevant geographic region is the whole state, not individual counties or regions. The model accounts and makes adjustments for the fact that industries within the state cannot supply all of the goods, services, capital, and labor needed to produce the state's output.
5. This analysis assumes that not all visitors to the state of Florida come as a result of Florida's beaches and that other factors influence visitors' destination decisions.
6. This analysis assumes that while some visitors to the state come as a result of Florida's beaches, not all beach visitors are attributable to the beach management and restoration program spending.
7. This analysis assumes that a portion of the state spending on beaches does not stay within Florida. Many of the firms responsible for the construction phase of beach restoration are located outside of the state.

## FLORIDA BEACHES AND THE STATE BRAND

### ***Purpose...***

EDR was tasked with identifying the strength of the relationship between Florida's beaches and the state's attractiveness as a tourism destination, including the impact on the state's brand. Consumers have many destination choices, and what sets one location apart from others is a strong and clearly defined image or brand. Preferences for particular tourism destinations are largely dependent on the positive perceptions of those destinations. According to Larry Dwyer:

“The infrastructure in which a country's tourism industry relies, such as its roads, railways, airports and terminals, accommodation facilities, shopping, entertainment, restaurants, currency exchange facilities, telecommunications and so on are major determinants of its overall destination competitiveness including destination 'experience'.”<sup>9</sup>

The State of Florida has many features that appeal to visitors. From beaches and state parks to theme parks and sporting events, Florida provides tourists with a variety of enticing attractions. These features naturally have varying degrees of attractiveness to visitors, but collectively make up the state's brand.

### ***Data and Methodology...***

In order to evaluate the relationship between Florida's beaches and the state's attractiveness as a tourism destination, EDR surveyed the various local governments and/or their respective Destination Marketing Organizations (DMO) that levy the Tourist Development Tax authorized in s. 125.0104(3), Florida Statutes. Respondents were given a list of 10 tourism related activities<sup>10</sup> and asked to rank the activities in order of importance with 1 being highest, or the primary reason that tourists visit the respondent's area. Responses were received from representatives of 28 DMOs, including those representing Florida's most popular tourist destinations. Due to limited responses and limited activities in certain counties, only the top three activities were considered in our rankings.

The attractiveness rankings were then quantified by giving 3 points to each primary feature, 2 points to each secondary feature and 1 point to each tertiary feature. This accounts for the attractiveness of activities within each area, but does not consider that each geographic area draws in a different number of tourists. Tourist counts were unavailable for the exact locations of the respondents. The count of motel and hotel rooms in each county, however, is available from the Department of Business and Professional Regulation (DBPR) and serves as a reasonable proxy for the number of visitors.

Weighting the previously quantified rankings by the number of accommodations in each area provides a measure with which each feature can be ranked over all geographic areas. Taking each measure as a percent of the total provides a strong concept of the state's brand and each feature's contribution to it. The results are shown in Table 1.

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<sup>9</sup> Dwyer, Larry, Peter Forsyth and Wayne Dwyer, *Tourism Economic and Policy*. (Buffalo, NY: Channel View Publications, 2010)

<sup>10</sup> The ten activities were: Access to International Destinations, Amusement Parks/Themed Attractions, Beaches, Festivals/Cultural/Annual Rally Events, Historical Significance, Outdoor Recreation, Retail/Dining/Nightlife, Sporting Events, State/Federal Parks/Nature Sites and Television/Feature Film Locations.

**Table 1. Features of Florida that Attract Tourists**

<b>Feature</b>	<b>Portion of State Brand</b>
Beaches	25.5%
Theme Park	24.3%
Retail/Dining/Nightlife	21.8%
Outdoor Recreation	7.1%
Access to International Ports or Airports	6.7%
Sports	6.0%
Festivals	4.3%
Parks/Natural Site	2.7%
Historical Significance	1.6%

*Source: EDR analysis of self-conducted survey results*

**Results...**

The results indicate that beaches are the most important feature of Florida’s brand and have the strongest effect in terms of attracting tourists. The beaches are followed closely by theme parks and retail, dining and nightlife, after which there is a significant drop to the remaining six features. It may be noted that, while beaches are the most attractive feature to visitors, they generally do not directly generate revenue. Instead, they facilitate an array of expenditures that collectively comprise the cost of the tourism experience. In addition, most visitors do not engage in only one feature, but it is a combination of features, or the state’s brand as a whole, that draws tourists to Florida.

These features are the product that Florida has to offer its potential visitors. Beach restoration is essentially a form of quality control for that product, and VISIT FLORIDA and other advertising sources market the product to consumers. In conjunction, these are the tools that sell Florida to visitors. Understanding all of the tools used to induce tourism is important when determining a return on investment, specifically when crediting tourism revenue to the various programs in a mutually exclusive manner.

## RETURN ON THE STATE'S INVESTMENT IN BEACH RESTORATION

**Purpose...**

EDR was tasked with calculating the state's overall return on investment (ROI) from its current expenditures on beach management and restoration projects. To accurately evaluate this ROI, two pieces of information are required: the amount of money the state has spent on beach restoration over a period and the additional revenue received by the state over that period. To remain consistent with EDR's other ROI projects, beach restoration was evaluated over a three year period. Specifically, the three year period includes Fiscal Years 2010-11, 2011-12, and 2012-13.

**Data and Methodology...**

Beach restoration is a lengthy process, generally lasting multiple years from first determining the need for the project to the project's completion. This makes legislative appropriations for a given year a poor indicator of the state's full investment in beach restoration for that year. Frequently, appropriations for restoration made in one year will be spent gradually over the next six years. Instead of appropriations, actual expenditure data, collected from the LASPBS ledgers and verified by the Florida Department of Environmental Protection (DEP), are used to indicate the state's investment in beach restoration for a given year. For the three year period, these expenditures, broken down by year of appropriation, can be seen in Table 2.

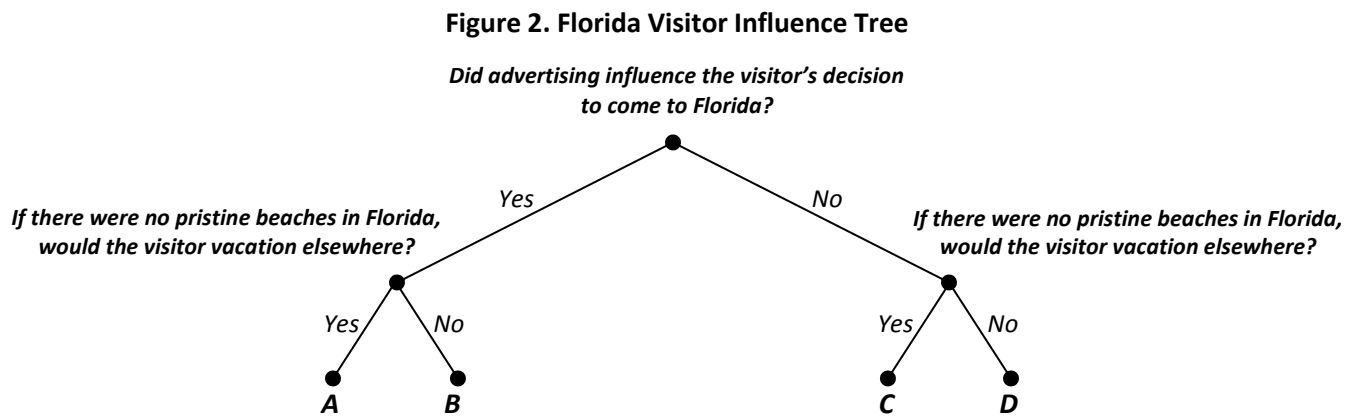
**Table 2. Actual State Expenditures on Beach Restoration**

Fiscal Year Funds Were Appropriated	Actual Expenditures by Fiscal Year		
	FY 10-11	FY 11-12	FY 12-13
FY04-05	\$2,048.64		
FY05-06	\$690,742.06	\$121,575.24	\$162,585.81
FY06-07	\$3,892,199.07	\$5,275,730.63	\$445,149.18
FY07-08	\$4,089,792.26	\$727,222.37	\$660,459.12
FY08-09	\$1,157,970.10	\$5,330,690.48	\$3,254,281.89
FY09-10	\$653,058.46	\$1,106,891.39	\$924,505.09
FY10-11	\$1,980,574.33	\$2,407,347.29	\$3,465,693.54
FY11-12		\$1,001,820.50	\$3,924,456.53
FY12-13			\$2,682,635.63
<b>Total Expenditures</b>	<b>\$12,466,384.92</b>	<b>\$15,971,277.90</b>	<b>\$15,519,766.79</b>

*Source: LASPBS Ledger*

Determining the increase in revenue to the state from beach restoration is a much more challenging process. Additional revenue resulting from beach restoration comes from international and domestic tourists. Data regarding international and domestic visitor counts, their spending habits and activity choices were made available to EDR by VISIT FLORIDA. This data is used to develop a total tourism revenue figure, which can then be credited to beach restoration and other tourism drivers in a mutually exclusive manner.

Consider the question, “what influences a visitor’s decision to come to Florida?” A portion of the visitors come because they saw an advertisement for some feature of the state’s brand, while the remaining came for non-advertising related reasons. Some fraction of both groups comes to visit the beaches in Florida but would not have visited if there were no beaches or if the beaches were not pristine. In this case, the pristine condition of the beaches is accomplished by restoration and maintenance. A decision tree illustrating this breakdown can be seen in Figure 2.



Visitors to the state are categorized into four mutually exclusive groups: group A consists of visitors who came to Florida as a result of advertising efforts and would have vacationed elsewhere if there were no pristine beaches in Florida, group B consists of visitors who came to Florida as a result of advertising efforts and would have come regardless of the beaches, group C consists of visitors who came to Florida regardless of advertising efforts but would have vacationed elsewhere if there were no pristine beaches in Florida and group D consists of visitors who came to Florida regardless of advertising efforts and would have come regardless of the beaches. For the purposes of this study, only the visitors of groups A and C are of interest because those visitors were influenced by Florida’s pristine beaches. Table 3 provides a breakout of advertising related beach visitors (group A) and non-advertising related beach visitors (group C). The number of beach visitors and their spending are results of EDR’s study evaluating the ROI of state advertising dollars.<sup>11</sup> For the relevant methodology from that study, see APPENDIX B.

**Table 3. Total Beach Visitors and Spending**

	<b>FY 2010-2011</b>	<b>FY 2011-2012</b>	<b>FY 2012-2013</b>
Advertising related beach visitors	9,327,421	9,625,638	10,243,074
Non-advertising related beach visitors	7,921,503	8,131,931	8,391,405
<b>Total Beach Visitors</b>	<b>17,248,924</b>	<b>17,757,569</b>	<b>18,634,480</b>
<b>Total beach visitor spending credited to the state’s investment in beaches</b>	<b>\$1,770,413,796</b>	<b>\$1,788,264,102</b>	<b>\$2,011,342,436</b>

<sup>11</sup> See EDR 2015 report on the *Return on Investment for VISIT FLORIDA* for a detailed description of the data used.

The visitors that make up group A are influenced by a greater number of factors than those of group C, and thus a smaller fraction of the increased revenue from group A visitors can be credited to beach restoration than of the increased revenue from group C visitors. Additionally, the state’s investment only represents approximately 30% of the total beach restoration expenditures. The majority of beach restoration is funded by the federal and local governments and thus the majority of beach induced tourism revenue is credited to those sources. See Figure 1 for a breakdown of the state, local and federal share of total beach restoration expenditures.

For the visitors of group C, it is then assumed that approximately 30% of their spending is credited to the state’s investment in beach restoration. For group A, however, it is assumed that approximately 3% of their spending can be credited to the State’s investment in beach restoration because they were also influenced by advertising. Using 30% of the group A revenue would cause a portion of the tourism revenue to be double counted towards beach restoration and advertising and would thus overstate the ROI from beach restoration and the ROI of a similar study EDR conducted regarding state funded advertising. Table 3 illustrates how the share of tourism revenue credited to state funded beach restoration is determined for Fiscal Year 2012-13.

**Table 4. Funding Required to Induce Beach Visitors (FY2012-13)**

<b>Funding Source</b>	<b>Group A</b>	<b>Group C</b>
State Beach Restoration	\$15,519,767	\$15,519,767
Fed/Local Beach Restoration*	\$35,391,334	\$35,391,334
Advertising**	\$511,176,127	\$0.00
<b>Total Spent to Induce Tourist Group</b>	<b>\$562,087,228</b>	<b>\$50,911,101</b>
<b>State Beach Restoration Share of Total</b>	<b>2.76%</b>	<b>30.48%</b>

Sources: LASPBS Ledger, DEP Current Project Requests for Funding and EDR Visitor Study

\*Fed/Local spending is imputed from the actual state expenditures and the state share of total restoration spending

\*\*Estimate based on 2012 actual advertising spending.

The EDR study of state funded advertising provides a yearly tourist breakdown of ad-related visitors, beach visitors, and international and domestic spending habits derived from data provided by VISIT FLORIDA. The study provides a total dollars spent figure for the visitors of group A and group C. Using the above methodology, this value can be further reduced to represent the amount of tourism revenue generated that is credited to the state’s expenditure on beach restoration. This results in state beach restoration being credited for \$1.8 billion of tourist spending in Fiscal Year 2010-11, \$1.8 billion in Fiscal Year 2011-12 and \$2.0 billion in Fiscal Year 2012-13, as shown on Table 3.

**Results...**

With the direct benefit and direct cost to the state estimated, the state’s return on investment from beach restoration was determined using EDR’s statewide economic model. It is calculated that, for every dollar spent by the state of Florida on beach restoration between Fiscal Year 2010-2011 and Fiscal Year 2012-2013, \$5.40 of additional tax revenue was generated, or an ROI of 5.4. Additional economic impacts of the tourism revenue generated due to the state’s investment in beach restoration over the three year period can be seen below in Table 5. A guide to interpreting these indicators can be found in APPENDIX C.

**Table 5. Statewide Economic Model Impact Projections**

	FY2010 - 2011	FY2011 - 2012	FY2012 - 2013	Total
State Payments in the Window \$ (M)	12.5	16.0	15.5	44.0
Total Net State Revenues \$ (M)	78.3	75.4	84.2	237.9
Return-on-Investment by Year	6.3	4.7	5.4	
Return-on-Investment for the 3 year period				5.4

		FY2010 - 2011	FY2011 - 2012	FY2012 - 2013	Total		Average per Year
Personal Income	Nominal \$ (M)	2,425.7	2,391.5	2,586.3	7,403.5		2,467.9
Real Disposable Personal Income	Fixed 2009 \$ (M)	2,079.1	2,001.6	2,130.8	6,211.4		2,070.5
Real Gross Domestic Product	Fixed 2009 \$ (M)	2,481.3	2,322.3	2,418.6	7,222.2		2,407.4
Consumption by Households and Government	Fixed 2009 \$ (M)	2,027.0	2,013.9	2,163.2	6,204.1		2,068.0
Real Output	Fixed 2009 \$ (M)	3,161.9	2,867.1	2,950.6	8,979.6		2,993.2
		FY2010 - 2011	FY2011 - 2012	FY2012 - 2013	Minimum	Maximum	Average per Year
Total Employment	Jobs	18,592	16,117	14,993	14,993	18,592	16,567.2
Population	Persons	864	3,536	7,040	864	7,040	3,813.3

**Comments...**

It is worth noting that, unlike many economic incentive programs, an ROI of 5.4 does not necessarily indicate that the state would increase the ROI or gain new tourists from additional restoration funding. Recall that beach restoration is essentially quality control for a product Florida offers to visitors. Additional quality control does not create additional product, or, in this case, more spending on restoration does not create new beaches. It is necessary, however, to maintain a certain level of beach quality or else visitors will travel elsewhere. Similarly, if the state were to reduce or eliminate funding for beaches, the result would not necessarily be an immediate reduction in tourism. Rather, any reduced tourism would likely occur over time, if at all, depending on the degree of erosion or damage to Florida's beaches.

This analysis considers tourism as the only economic return from beach restoration. It may also be worth considering the impact on ad valorem collections from beach front properties. Beach restoration may increase the value of these properties, generating greater ad valorem revenues for local governments while reducing disposable income of the property owners from higher taxes. The overall effect on the economy is indeterminate. Regardless, state revenues likely benefits very little, if at all, from increased ad valorem revenues and thus the direct effects are not included in the statewide model.

## ASSESSING THE ECONOMIC RISK OF DISASTERS

### ***Purpose...***

EDR was tasked with assessing the impact of potential shocks such as major storm damage or other disasters, including a discussion of the state's economic risk. A number of hurricanes have impacted Florida's beaches in recent history, and the BP oil spill is a prime example of a non-natural disaster that can affect the state's beaches. This analysis utilizes available data relating to beach restoration for Fiscal Years 2003-2004 through 2013-2014.

### ***Storm History and Appropriations...***

Due to the lengthy application process for beach restoration, funds are often appropriated for restoration of beaches that were damaged by hurricanes or storms that occurred in the summer and fall of the previous fiscal year. During the 2004 hurricane season, Florida was impacted by one category 3, two category 4 and one category 5 hurricanes (Jeanne, Charley, Frances and Ivan, respectively.) All four hurricanes hit in 2004, making it one of the worst storm years in recent history. This led to a special session by the Florida Legislature, and \$64.6 million was appropriated for beach restoration to repair damage from the storms. The 2005 hurricane season included 2 tropical storms, (Arlene and Tammy,) two category 4 and two category 5 hurricanes impacting Florida (Dennis, Wilma, Katrina and Rita, respectively.) Many of these storms impacted the state from a distance or were weaker at the time of impact, resulting in less damage to the beaches than the previous year. The 2005 storms led to an appropriation of \$11.3 million for beach restoration to repair damage from those storms. Lastly, the 2012 hurricane season included two tropical storms, (Beryl and Debby,) one category 1 and one category 3 hurricane impacting Florida (Isaac and Sandy, respectively.) Florida's beaches primarily incurred damage from Debby and Sandy and \$33.6 million was appropriated to mitigate the damage from those storms. These three appropriations for storm damage give a rough estimate of the beach restoration cost to the state from a low, medium and high damage storm season.

### ***Non-storm Disasters...***

In addition to hurricanes, manmade disasters can strike and damage the beaches. On April 20, 2010 the Deepwater Horizon oil drilling rig caught fire and burst in the Gulf of Mexico, spilling approximately 4.9 million barrels worth of oil into the gulf over the course of the 87-day spill. While this did not result in beach restoration in the traditional sense, tar balls on the beach led to negative publicity and many tourists decided to travel elsewhere. The negative publicity was felt statewide as many travelers from abroad were unaware that the gulf oil spill did not affect the east coast beaches of the state. In a 2012 report conducted by the University of Florida and sponsored by the Florida Legislature,<sup>12</sup> approximately 14% of gulf coast visitors cancelled their trips to Florida in response to the oil spill.

### ***Methodology and Results...***

Using the same percentage of visitors canceling a trip and the total revenue generated from beach restoration, an estimated loss in revenue can be determined. Recall that in estimating the ROI from the state's spending on beach restoration, a value of tourism revenue resulting from state beach restoration was determined. In the case of a disaster, the value of tourism revenue resulting from local government and federal government spending on beach restoration must also be considered. Applying the same methodology that was used to determine the level of tourism spending in the ROI analysis, it is estimated that, for Fiscal Year 2012-2013, \$921.1 million in visitor spending in Florida would have been

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<sup>12</sup> "Contract for Analytical Services Related to the Deepwater Horizon Disaster: Estimation of lost indirect and passive use economic values to Floridians," Food and Resource Economics Department, University of Florida. March 30, 2012.



lost. This would have resulted in approximately \$55.3 million in reduced state revenues. This methodology may overstate the revenue loss from an average disaster as it reduces the visitors for the entire year. It does, however, serve as a reasonable estimate of the revenue loss due to a high impact disaster. If instead it is assumed that the approximately 14% of all beach visitors are lost for just 3 weeks surrounding the disaster, the relative loss for Fiscal Year 2012-2013 would be \$53.1 million of visitor spending, or \$3.2 million of state revenues. This serves as a reasonable estimate for the revenue loss due to a low impact disaster. Consider the average of these, \$487.1 million in visitor spending or \$29.2 million in state revenues, to approximate the loss due to a medium impact disaster. Table 5 illustrates the costs to the state from potential shocks, in terms of beach restoration appropriations and state revenues lost, expressed in 2014 dollars. For example, it is estimated that a high-impact disaster would require the state to appropriate \$79.9 million to beach restoration while still losing approximately \$56.8 million in tax revenues.

**Table 6. Estimated Impact of Potential Shocks in Millions of 2014 Dollars**

	<u>High-impact Disaster</u>	<u>Medium-impact Disaster</u>	<u>Low-impact Disaster</u>
<b>Storm-specific Beach Restoration Appropriation</b>	\$79.9	\$33.9	\$13.1
<b>State Tax Revenue Loss from Reduced Visitor Spending</b>	\$56.8	\$30.0	\$3.3

**Further Results...**

In addition to the need for beach restoration appropriations and lost tourism tax revenues, a disaster impacts the state through property damage and variable consumer spending. A report written in 2010 by Milliman, Inc. for the Florida Department of Financial Services<sup>13</sup> addresses many of these additional economic impacts in the scope of a 1-in-100 year hurricane. This would be a high impact storm such that it does more damage than 99% of hurricanes. They estimate that such a storm would result in \$159.5 billion worth of property damage, of which \$80.4 billion would be uninsured. Furthermore, they estimate an initial loss of \$400 million in sales tax collections, due to the disruption in spending habits, followed by an increase in consumer spending, due to recovery and rebuilding, leading to an increase in sales tax collections of \$4.1 billion.

In the event of a major storm, the state could expect to see immediate costs and decreased revenues followed by increased tax collections that far outweigh the initial loss in the short term. However, a previous analysis conducted by EDR<sup>14</sup> has shown that the state spends more money in needed matches and costs for response, clean-up and restoration assistance than is generated by the temporary tax collection increase. The storm repairs also speed-up the typical pace of repairs and renovations, resulting in future losses. See APPENDIX D for additional details.

<sup>13</sup> "A Report on the Economic Impact of a 1-in-100 Year Hurricane on the State of Florida," Milliman, Inc., March 1, 2010.

<sup>14</sup> State of Florida Long-Range Financial Outlook, Fiscal Years 2015-16 through 2017-18, Fall 2014 Report adopted by the Legislative Budget Commission.

## RETURN ON INVESTMENT AS A PROJECT SELECTION CRITERION

### ***Evaluation...***

Finally, EDR was asked to make recommendations for ensuring the consideration of potential returns on the investment as either part of the criteria currently contained within statute or within the ranking process itself, including the feasibility of – and options for – doing so on a project-by-project basis. In theory, the idea of analyzing the return on investment on a project-by-project basis is reasonable, but may be impossible to implement properly in practice.

There are a number of issues to consider before implementing project-by-project ROIs. First, EDR's statewide economic model is not designed to be used regionally within the state and is best used to evaluate investments of \$10 million or greater. It would be an extremely rare occurrence for a beach restoration project to require a state investment of \$10 million. The duty of calculating the project-by-project ROI would fall on the local government where the beach restoration is needed. In most cases this would cause local governments to incur additional expenses, as they likely do not have an economic model capable of calculating an ROI of an individual beach restoration project. Additionally, this would yield project-by-project ROIs that would mostly all be calculated with unique methodologies that could be designed to favor localities, making comparisons arbitrary.

While it may not be feasible to determine return on investment on a project-by-project basis, it is possible to include measures of economic benefit as part of the ranking process. As mentioned in OPPAGA report No. 14-12, measures could include the value of property protected as a result of the project or the value of tourist development tax revenues as a percentage of all county revenues. Alternatively, a comparative measure of each location's attractiveness to visitors can be determined by developing county factors that weight sales tax collections by tourist accommodations. In addition, a possible economic measure could include county employees in tourism-related occupations as a percentage of all employees in the county. It is important to recognize that these measures will rank locations by tax revenues generated by visitors. In this regard, they will not vary project by project but rather county by county.

Finally, from an economic perspective, it is important to quickly address severe storm-related damage. To maintain Florida's brand, potential visitors need to observe recovery occurring quickly after a disaster. Theoretically, recovery (and the positive publicity associated with the recovery) taking place more quickly will result in less tourism revenue loss, thus greater tax revenues to the state.

## APPENDIX A: DIRECTIVE LETTER



### The Florida House of Representatives Office of the Speaker

Will Weatherford  
Speaker

May 19, 2014

Ms. Amy Baker, Coordinator  
Office of Economic & Demographic Research  
111 West Madison Street, Suite 574  
Tallahassee, FL 32399-6588

Mr. Phil Twogood, Coordinator  
Office of Policy Program Analysis and Government Accountability  
111 West Madison Street, Suite 312  
Tallahassee, Florida 32399-1475

Dear Ms. Baker and Mr. Twogood:

I am hereby directing the Office of Economic and Demographic Research (EDR) and Office of Program Policy Analysis and Government Accountability (OPPAGA) to conduct the following studies related to the process and criteria used for selecting and funding beach management and restoration projects.

My understanding is that EDR intends to include a comprehensive review of Florida's tourism industry and the state's brand as part of their VISIT FLORIDA evaluation required by s. 288.0001, *Florida Statutes*. A key part of the review will be attributing shares to the various factors that induce tourists to come to Florida. The final report is due by January 15, 2015, and will include estimates of the state's return on investment for various state funding programs. As part of this review, please include a separate economic evaluation of the state's investment in beach management and restoration projects for the following purposes:

1. Identifying the strength of the relationship between Florida's beaches and the state's attractiveness as a tourism destination, including the impact on the state's brand;
2. Calculating the state's overall return on investment from its current expenditures on beach management and restoration projects; and
3. Assessing the impact of the potential shocks such as major storm damage or other disasters, including a discussion of the state's economic risk.

Additionally, please make recommendations for ensuring the consideration of potential returns on the investment as either part of the criteria currently contained within s. 161.101(14), *Florida Statutes*, or within the ranking process itself, including the feasibility of – and options for – doing so on a project-by-project basis.

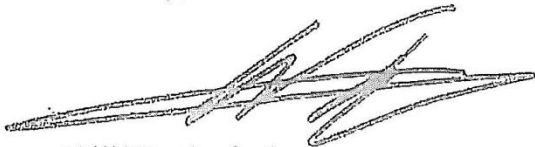
To address concerns about the implementation of the process authorized by s. 161.101, *Florida Statutes*, and operationalized through Rule 62B-36.006, *Florida Administrative Code*, I am hereby directing OPPAGA to examine the Department of Environmental Protections' process for selecting and prioritizing local beach erosion control and inlet management projects. At a minimum, the study should:

1. Review the current statutory criteria and related administrative rules;
2. Examine the funding request application process, information requirements, and timeline; and
3. Evaluate the department's use of each ranking criteria in establishing the annual priority order for beach management and restoration projects.

This study should also make recommendations for improving the criteria, including measurement metrics and the department's ranking process, and should describe the effect of the recommendations on the process at the state and local level. The goal is to evaluate how the statutory criteria are being implemented prior to consideration of including enhanced economic criteria within the prioritization process. OPPAGA's report will be due December 1, 2014.

Thank you for your attention to these matters.

Sincerely,

A handwritten signature in black ink, appearing to read 'Will Weatherford', written over a horizontal line.

Will Weatherford  
Speaker

## APPENDIX B: VISITOR SPENDING METHODOLOGY

Below is an excerpt from EDR’s 2015 report on the Return on Investment for VISIT FLORIDA:

*This analysis assumes that beach restoration is essential to maintaining Florida’s brand. As such, the expenditures associated with beach visitors must be evaluated separately. While other state investments may serve a similar purpose, they have not been separately addressed in this report since they fulfill multiple functions for residents and tourists. Those expenditures would be needed for residents, regardless of tourists.*

*VISIT FLORIDA’s Florida Visitor Study includes information regarding activities visitors undertook while visiting the state. EDR used this activity data to establish an estimate of the number of visitors who come to Florida for beach related activities and the corresponding expenditures associated with their existence. During calendar years 2010-2013, it is estimated that roughly 20 percent of all domestic visitor tourism spending was attributable to the existence of beaches. That is not to say that the spending occurred in and around Florida’s beaches, but that a portion of the overall trip was induced by the beaches.*

*To gauge the number of visitors who visit Florida’s beaches as a result of marketing efforts, EDR applied the percentage of beach spending (roughly 20 percent in each year) to the number of marketing and non-marketing related visitors.*

	2010	2011	2012	2013	Total
Number of Marketing Related Visitors	44,573,368	47,149,798	49,731,373	51,974,211	193,428,751
Number of Non-Marketing Related Visitors	37,741,632	40,158,202	41,679,627	41,688,789	161,268,249
Domestic Beach Spending Activity %	20.53%	20.16%	19.60%	20.66%	
Number of Marketing Related Beach Visitors	9,149,700	9,505,143	9,746,133	10,740,016	39,140,992
Number of Non-Marketing Related Beach Visitors	7,747,331	8,095,675	8,168,187	8,614,623	32,625,816
<b>Total Beach Visitors</b>	<b>16,897,031</b>	<b>17,600,817</b>	<b>17,914,320</b>	<b>19,354,639</b>	<b>71,766,808</b>

*During the review period EDR estimated that 39.1 million visitors visited Florida’s beaches as a result of some form of marketing (state, local, private, etc). Given that EDR’s survey results indicate that Florida’s beaches are the most important feature of the state’s brand and the strongest in terms of attracting tourists, EDR assumed that the beach brand itself was responsible for attracting visitors to the state. As such, spending associated with those visitors could not be attributable directly to VISIT FLORIDA’s marketing efforts.*

*In order to calculate the spending of beach visitors attributable to Florida’s beach branding, EDR used the state’s investment in beach restoration as a proxy of the state’s value of the beach as a brand. This value was estimated to be between 5.34-8.70 percent of total marketing-related expenditures, depending on*

the year during the review period.<sup>15</sup> The dollars produced by this percentage were proportionally subtracted from total visitor spending attributable to VISIT FLORIDA's public marketing spend. The result is the total tourism spending that EDR attributed to VISIT FLORIDA's public marketing efforts during the review period. This spending was then used in the Statewide Model to determine the ROI for VISIT FLORIDA.

**Total Tourism Spending Attributable to VISIT FLORIDA's Public Marketing Spend by Year**

	2010	2011	2012	2013
<b>Total Visitors</b>	<b>3,026,223</b>	<b>3,517,526</b>	<b>5,253,559</b>	<b>5,535,254</b>
Domestic Visitors	2,616,893	3,008,196	4,459,586	4,654,936
International Visitors	409,330	509,330	793,974	880,317
<b>Total Spending</b>	<b>\$ 2,173,112,344</b>	<b>\$ 2,110,621,364</b>	<b>\$ 3,663,875,345</b>	<b>\$ 3,992,137,253</b>
Domestic Spending	\$ 1,784,930,636	\$ 1,543,325,126	\$ 2,809,539,035	\$ 3,041,535,485
International Spending	\$ 388,181,709	\$ 567,296,238	\$ 854,336,310	\$ 950,601,768
<b>Less Beach Spending Attributable to Beach Restoration</b>	<b>\$ 188,993,133</b>	<b>\$ 175,109,352</b>	<b>\$ 187,321,597</b>	<b>\$ 213,285,303</b>
<b>Total Spending Attributable to VISIT FLORIDA Public Marketing Spend</b>	<b>\$ 1,984,119,212</b>	<b>\$ 1,935,512,012</b>	<b>\$ 3,476,553,749</b>	<b>\$ 3,778,851,951</b>

<sup>15</sup> This percentage was calculated by using beach restoration dollars as a share of total marketing funds, treating state, local, and federal beach investment separately. The result was applied to the total number of marketing related beach visitors to calculate the expenditures associated with those visitors.

## APPENDIX C: INTERPRETING ROI INDICATORS

Key terms used in Table 5 are described below:

State Payments – Represents the state’s expenditure on the program in the fiscal year.

Total Net State Revenues – Represents the change in state tax collections from all sources.

Personal Income (Nominal \$(M)) – Income received by persons from all sources. It includes income received from participation in production as well as from government and business transfer payments. It is the sum of compensation of employees (received), supplements to wages and salaries, proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, personal income receipts on assets, and personal current transfer receipts, less contributions for government social insurance.

Real Disposable Personal Income (Fixed 2009 \$(M)) – Total after-tax income received by persons; it is the income available to persons for spending or saving.

Real Gross Domestic Product (Fixed 2009 \$(M)) – A measurement of the state's output; it is the sum of value added from all industries in the state. GDP by state is the state counterpart to the Nation's gross domestic product.

Consumption by Households and Government (Fixed 2009 \$(M)) –The goods and services purchased by persons plus expenditures by governments consisting of compensation of general government employees, consumption of fixed capital (CFC), and intermediate purchases of goods and services less sales to other sectors and own-account production of structures and software. It excludes current transactions of government enterprises, interest paid or received by government, and subsidies.

Real Output (Fixed 2009 \$(M)) – Consists of sales, or receipts, and other operating income, plus commodity taxes and changes in inventories.

Total Employment (Jobs) – This comprises estimates of the number of jobs, full time plus part time, by place of work. Full time and part time jobs are counted at equal weight. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are not included.

Population (Persons) – Reflects first of year estimates of people, includes survivors from the previous year, births, special populations, and three types of migrants (economic, international, and retired)

## APPENDIX D: ADDITIONAL STORM DAMAGE RESOURCES

Below is an excerpt from the State of Florida Long-Range Financial Outlook for Fiscal Years 2015-16 through 2017-18:

### **State Costs for Hurricanes, the Florida Hurricane Catastrophe Fund, and Citizen's Property Insurance**

*Florida's financial stability is vulnerable to the potential impacts of natural disasters, especially major hurricanes. This vulnerability can take several different forms, but one of the most immediate is to the state's long-term financial health.*

*After the 2004 and 2005 hurricanes, the Legislative Office of Economic and Demographic Research undertook an in-depth analysis of the revenue and budgetary impact on state government from weather events of this magnitude. Popular belief has spread the misconception that hurricanes are somehow beneficial to the state from an economic perspective. However, the reality is much more complicated. From past events, there appear to be four distinct phases of activity related to hurricanes—each of which has unique economic responses. The table on the following page details the unique effect of each phase.*

*Contrary to the oft-repeated myth that government makes money during hurricanes, state government typically has expenditures greater than the incremental increase in the revenue estimate and becomes a net loser when all expenditures are taken into account. In reviewing the final impact of the 2004 and 2005 hurricanes, after the state's hurricane-related expenditures are subtracted from the estimated additional revenues, the bottom line for both years was clearly negative. This means that the state had to spend more than the generated revenues.*



## Hurricanes: Economic Phases

Phase	Defining Characteristics	Statewide Economic Consequences
<p><b>Preparatory Phase</b> <i>(approximately 72 hours in advance of the hurricane to landfall)</i></p>	<ul style="list-style-type: none"> <li>• Purchase of Emergency Supplies (canned food, batteries, radios, candles, flashlights, charcoal, gas, propane, water, ice, shutters, boards / plywood, etc.)</li> <li>• Evacuation Expenses               <ul style="list-style-type: none"> <li>○ In-State...hotels and lodging, transport costs like rental cars and gas</li> <li>○ Out-of-State...leakage</li> </ul> </li> </ul>	<p><b>Demand...</b>Localized increase in demand for specific items, and potential non-affected area increase in lodging demand, but largely undetectable</p> <p><b>State Budget...</b>Shifting of costs from normally provided services to emergency management, as well as unanticipated overtime and shelter costs</p> <p><b>State Revenues...</b>Slight uptick, but largely undetectable</p>
<p><b>Crisis Phase</b> <i>(landfall to several weeks after landfall)</i></p>	<ul style="list-style-type: none"> <li>• Rescue and relief efforts (largely public, charitable, or free)</li> <li>• Roads closed due to debris</li> <li>• Private structures and public infrastructure damaged</li> <li>• Utility disruptions</li> <li>• Businesses and non-essential parts of government closed</li> <li>• Temporary homelessness</li> <li>• Violence and looting</li> </ul>	<p><b>Demand...</b>Localized decrease in overall demand; significance depends on the event</p> <p><b>State Budget...</b>Government agencies provide goods and services and incur new expenditures that may or may not be matched at a later time by the federal government</p> <p><b>State Revenues...</b>Detectable downtick; significance depends on the event</p>
<p><b>Recovery Phase</b> <i>(subsequent to the Crisis Phase and generally lasting up to two or three years)</i></p>	<ul style="list-style-type: none"> <li>• Increased spending related to deductibles, repair, and replacement               <ul style="list-style-type: none"> <li>○ Private Savings / Loans</li> <li>○ State Spending</li> <li>○ FEMA and Federal Spending</li> <li>○ Insurance Payments</li> </ul> </li> <li>• Competition for scarce resources (contractors, roofers, supplies, construction workers, building materials, debris removal, etc.)</li> </ul>	<p><b>Demand...</b>Localized increase in overall demand, and prices likely increase for some items</p> <p><b>Employment...</b>Will temporarily see gains as relief and recovery workers move into the area</p> <p><b>State Budget...</b>Reallocation of state and local government spending to the affected area</p> <p><b>State Revenues...</b>Discernible and significant uptick</p>
<p><b>Displacement Phase</b> <i>(subsequent to the Recovery Phase and lasting from two to six years)</i></p>	<ul style="list-style-type: none"> <li>• Reduction in normal purchasing behavior for items that were bought or replaced ahead of schedule</li> <li>• Demographic and labor shifts related to dislocated households and economic centers</li> </ul>	<p><b>Demand...</b>Localized decrease in overall demand, but largely undetectable at the state level</p> <p><b>State Revenues...</b>Slight downtick, but largely undetectable</p>