

# **New Miami Science Museum - Economic Impacts Analysis**

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## **Executive Summary**

### **Economic Impacts Potential of the New Miami Science Museum**

The new Miami Science Museum to be located in Museum Park will create substantial economic impacts for the City of Miami and Miami-Dade County. The direct expenditures for museum construction, and later for ongoing operations and by museum visitors will create indirect and induced spending as the initial expenditures are re-spent, and employees re-spend their wages locally.<sup>1</sup> This analysis includes separate estimates of the economic impacts that would occur in the City of Miami and Miami Dade County. The County economic impacts analysis includes the economic activity of the City. These County economic impacts are not additive with the estimates of the economic impacts specific to the City of Miami.

**Construction Period Economic Impacts.** Construction of the Miami Science Museum will result in a one-time positive impact based on its \$300 million total hard, soft and owner's project costs. The estimated one-time City of Miami total (direct, indirect and induced) economic impacts include: \$488.7 million in expenditures of which \$183.6 million would be wages and salaries; and 3,635 total full time and part time person-years of employment. The impacts to Miami-Dade County are larger because it includes direct spending in areas beyond the City of Miami, and there is a higher multiplier effect in the County than that of the smaller City of Miami. The one-time total Miami-Dade County impacts are estimated at \$616.9 million in expenditure of which approximately \$183.6 million would be wages and salaries; and 4,516 total full time and part time person-years of employment.

**Economic Impacts Due To Ongoing Operations.** The ongoing operations of the Miami Science Museum, and the off-site spending of resident and tourist visitors associated with their visit, will generate total (direct, indirect and induced) annual economic impacts to the City of Miami estimated at nearly \$60.5 million in expenditures, of which \$26.6 million would be wages and salaries; and 635 jobs. As noted, the higher economic impacts to Miami-Dade County are based on additional direct spending in areas beyond the City of Miami, and a higher County multiplier effect than that of the City. The total (direct, indirect and induced) annual museum operating impacts to Miami-Dade County are estimated at \$95.4 million in expenditures, of which \$38.2 million in wages and salaries; and a total of 914 jobs.

**Fiscal Revenue Generation.** The new Miami Science Museum will be developed by a not-for-profit organization. The project will be located on a site owned by the City of Miami so direct ad valorem and excise taxes are not anticipated for the museum. However, recurring sales taxes, excise taxes, gasoline tax, and other taxes and fees for city services such as utilities and parking related to museum employees, visitors and from the multiplier effect economic activity should be anticipated. These would flow to the City and County.

The community development and educational benefits of the new Miami Science Museum may have the most profound and long-lasting impacts on the community. This project will enhance the knowledge of and interest in science and technology and will enhance the City of Miami as a place to live and work, thus improving all aspects of the local economy and community.

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<sup>1</sup> The economic multipliers used in this analysis are from a customized computer run of their IMPLAN Input-Output Model for the City of Miami and Miami Dade County. All estimates in 2010 value of the dollar. Employment estimates include full time and part time employment. This analysis assumes full build-out and stabilized operations for the new Miami Science Museum according to the March 2010 Summary Business Plan and other data provided by the Miami Science Museum

## REPORT CONDITIONS

In preparing this analysis, the following conditions were assumed. This study is qualified in its entirety by these conditions.

1. This economic impact memorandum is based on a stable year of operations and assumes that there will be no physical constraints to impede visitors to the facility, such as major construction activity, changes in economic and social conditions due to events including, but not limited to, major recessions, major environmental problems or disasters that would negatively affect operations and visitation.
2. Every reasonable effort has been made in order that the data contained in this study reflect the most accurate and timely information possible, and it is believed to be reliable. This study is based on information provided by the Miami Science Museum and its consultants; from its market studies and operating plans, related economic impact studies, visitor profiles and tourism data as footnoted in the report; and the estimates, assumptions and other information developed by ConsultEcon, Inc. from its independent research efforts and general knowledge of the industry. No responsibility is assumed for inaccuracies in reporting by the client, its agents and representatives, or any other data source used in the preparation of this study. No warranty or representation is made that any of the projected values or results contained in this study will actually be achieved. There will usually be differences between forecasted or projected results and actual results because events and circumstances usually do not occur as expected. Other factors not considered in the study may influence actual results.
3. Possession of this report does not carry with it the right of publication. This report will be presented to third parties in its entirety, or the entirety of the executive summary, and no abstracting of the report will be made without first obtaining permission of ConsultEcon, Inc., which consent will not be unreasonably withheld. This report may not be used for any purpose other than that for which it was prepared.
4. Outputs of computer models used in this report are rounded. These outputs may therefore slightly affect totals and summaries. Dollar values are expressed in current value of the dollar unless otherwise noted. This report was prepared during March 2010. It represents data available at that time.

## INTRODUCTION - CITY OF MIAMI

The following provides an assessment of the economic benefits of the construction and ongoing operations of the new Miami Science Museum to be located in Museum Park. The economic impact analysis focuses on the direct, indirect and induced impacts in the City of Miami. These economic benefits include the initial economic impacts due to construction, a one-time impact. In addition, the ongoing economic benefits of the project will include increased direct employment, wages and salaries and increased spending (economic activity) in the City of Miami above current levels. In turn this increased direct new spending “multiplies” in the City’s economy creating indirect and induced spending as the initial expenditures are re-spent, and employees (supported by direct spending) re-spend their wages in the City’s economy. Besides these increased spending and employment impacts above current levels, the project will create substantial educational and quality of life benefits to the area. These educational and quality of life benefits enhance the economic competitiveness of the City of Miami and the region as a whole. This analysis presents all dollar amounts in the current 2010 value of the dollar unless otherwise noted. This analysis assumes full build-out and stabilized operations for the new Miami Science Museum according to the March 2010 Summary Business Plan and other data provided by the Miami Science Museum.

The Miami Science Museum has the potential to create substantial economic impacts to the City of Miami. This analysis includes the following data and analyses.

- ◆ **Construction Period Impacts** – An analysis of the one-time economic impacts of project construction. These direct spending estimates are then analyzed for their indirect and induced “multiplier” effects to estimate the total economic impacts of the construction period. This includes the one-time total economic activity (expenditures); total employment (full-time and part-time person-years of employment); and total earnings.
- ◆ **Economic Impacts of Ongoing Operations** – An analysis of the annual direct spending by the Miami Science Museum and the spending by visitors outside the Museum but in conjunction with their visit. These direct spending estimates are then analyzed for their indirect and induced “multiplier” effects to estimate the total economic impacts of facility operations. This includes total economic activity (expenditures); total employment (full-time and part-time); and total earnings.
- ◆ **Fiscal Impacts of Ongoing Operations** – A discussion of potential annual taxes generated in selected categories due to the project.
- ◆ **Community and Revitalization Benefits** – An assessment of the Miami Science Museum project’s quality of life and general economic development benefits create for the City of Miami and the region as a whole.

## DESCRIPTION OF PROJECT ECONOMIC BENEFITS

### Direct Economic Activity

The economic benefits resulting from the construction and operations of the Miami Science Museum will be based on the following direct economic activity.

- ◆ **Direct Construction Employment and Construction Expenditures.** Construction and fit-out of the new Miami Science Museum will result in a one-time positive impact on the regional economy during its construction period. The impacts will include direct employment during the construction period for construction and workers engaged in pre-opening activities; and expenditures in the City economy due to construction and project ramp-up. In turn, these direct expenditures in the City economy will “multiply” to create indirect and induced employment, wages and output. In addition, other non-recurring fees associated with construction and development would occur. Construction period effects are a one-time impact of the project.
- ◆ **Direct Spending by the Miami Science Museum.** As a major new “business” in the City of Miami, the Miami Science Museum will play an active role in the local economy and create job opportunities for local residents. Expenditures of the Miami Science Museum will include salaries, wages and fringe benefits as well as operating costs such as utilities, marketing, supplies and materials, professional services and printed materials among many others.
- ◆ **Visitor Spending in the Local Economy.** The on-going operations of the Miami Science Museum as it attracts visitors from resident and visitor markets will form a stream of economic benefits to the City of Miami and local economy. The Miami Science Museum will help to attract new visitors who would otherwise not visit to the City of Miami, contribute to longer stays in the area, and help to retain leisure expenditures of residents that would otherwise be made elsewhere. The Miami Science Museum will be of a scale and stature, and its length of stay sufficient to be a primary trip purpose or principal recreational activity for the day of the visit. In this analysis, student groups are assumed to have minimal spending outside of the Miami Science Museum that occurs in Miami.

In addition to the on-site spending at the Miami Science Museum (for tickets and gifts, for example), visitors also spend for goods and services off-site in conjunction with their visit. Off-site spending by visitors to the Miami Science Museum in conjunction with their visit would include overnight accommodations (on the day of the Miami Science Museum visit) for some tourists, food, transportation and retail purchases, as well as spending at other recreational and cultural attractions. In this regard, the Miami Science Museum acts as a facilitator of local economic development by providing a gathering place for residents and visitors, thereby, supporting business activity proximate to the facility. A large portion of the visitor spending associated with a visit to the facility will be net new to the local and regional economies.

Net new spending may be derived from one or more of the following sources.

- Satisfying the demand for cultural, educational and recreational activities due to increases in population or shifts in demographic make-up.

- Satisfying the demand for cultural, educational and recreational activities due to increases in per capita income of residents.
- Replacement of spending that would be otherwise spent outside the City of Miami.
- Responding to shifts in the interests and desires of consumers.
- Grant and gift monies awarded to the facility that would otherwise go to areas outside of the local and/or regional economies.
- Replacement of spending that is “going out of favor.” In other words, visitors will take advantage of the leisure and educational opportunities offered at the Miami Science Museum because they are no longer interested in pursuing other activities.
- Attracting visitors from geographic areas outside of the areas of analysis; this may be a primary or secondary trip purpose, or may be an activity undertaken while visiting the area. Contributing to the capacity, quality and breadth of tourism offerings attracts outside or “new” expenditures to the geographies being evaluated.

## **Indirect and Induced Economic Activity**

As the direct spending due to the Miami Science Museum flows to local businesses, the money is, in turn, re-spent by the businesses for personnel, business expenses and the costs of goods sold (for retail and food service sales that are for goods produced in the local economy). The portion of spending that supports wages and salaries (employment) is, in turn, re-spent by the employees for housing, retail, services, and other categories in the local economy. Subsequent rounds of spending occur with the total effect on an area’s economy of the initial round of new direct spending estimated through analysis and factors estimating the total “multiplier” effect. IMPLAN<sup>2</sup> provides mathematical factors for discrete geographies for an array of spending types that result in an estimate of total economic impacts from new spending due to demand created by an economic unit such as the Miami Science Museum. This includes direct, indirect and induced economic activity. Categories of measurement include expenditures, earnings, and employment.

## **Fiscal Revenue Generation**

The Miami Science Museum will generate net new taxes for state and local governments. Fiscal revenue impacts in selected non-recurring and recurring tax categories will include the following:

- ◆ The new Miami Science Museum will be developed by a not-for-profit organization. The project will be located on a site owned by the City of Miami. It has been defined by the City

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<sup>2</sup> IMPLAN (IMpact Analysis for PLANning) was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management to assist the Forest Service in land and resource management planning. The IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis (1980) and the rectangular format recommended by the United Nations.

of Miami Commission as a “project of a government agency” and it is anticipated that it will receive a waiver from permit and impact fees for construction. However, in the event the waiver is not granted, building permit fees and impact fees may apply. These would be one-time non-recurring fiscal revenues.

- ◆ Recurring sales taxes from direct taxable visitor spending at the Miami Science Museum, and sales, gasoline, and tourist development taxes on visitor spending outside the facility but in conjunction with a visit.
- ◆ Recurring sales taxes, ad valorem taxes, excise taxes gasoline tax, and other taxes and fees for city services such as utilities and parking paid through the personal spending and due to the properties owned by employees of the Miami Science Museum.
- ◆ Recurring sales taxes, ad valorem taxes, excise taxes gasoline tax, and other taxes and fees for city services such as utilities and parking paid through the personal spending and due to the properties owned by employed persons indirectly supported by project economic impacts.
- ◆ Recurring sales taxes, ad valorem taxes, excise taxes gasoline tax, and other taxes and fees for city services such as utilities and parking paid by the commercial businesses supported by the direct and indirect economic activity generated by the Miami Science Museum.

## **CONSTRUCTION PERIOD IMPACTS**

Construction of the Miami Science Museum will result in a one-time positive impact to the City of Miami and the region’s economy. The impacts will include direct employment for construction workers during the construction period, and indirect and induced employment, wages and output. Based on the project development cost estimate provided by Oppenheim Lewis and the Miami Science Museum, total hard, soft and owner’s project costs are estimated at \$300 million. Of this amount an estimated 60 percent of construction expenditures and 68 percent of the soft and owner’s cost expenditures are estimated to be made in the City of Miami, As planning proceeds, this amount would be refined; with any changes affecting the estimate of construction period economic impacts.

Data in **Tables City 1** and **City 2** present the results of the construction period impact analysis for the City of Miami. The direct impact data are presented as direct expenditures for construction and the number of direct full-time equivalent person-years of employment it would create. In addition to the direct expenditures and employment in the City of Miami economy, there will be “multiplier” effects creating indirect and induced expenditures, earnings (wages and income), and employment. The total economic effect includes direct, indirect, and induced expenditures in the City of Miami, earnings (wages and income), and employment due to the

construction of the Miami Science Museum. Construction is a one-time event, and not an ongoing project impact. The following discusses the results of the construction impact analyses.

**Table City 1  
Estimated Construction Period Impacts in the City of Miami - Hard Costs  
New Miami Science Museum**

<i>Estimated Development Expenditures</i> <sup>1/</sup>	\$300,000,000		
<i>Estimated Construction (Hard Costs) Expenditures For Museum within City of Miami</i> <sup>2/</sup>	\$120,000,000		
<i>Estimated Avg. Annual Construction Wages &amp; Overhead</i> <sup>3/</sup>	\$56,600		
<i>Direct Person-Years of Construction Related Employment</i>	678		
		<i>Multipliers</i> <sup>4/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>5/</sup>
<b>Applicable Multipliers, City of Miami</b>	1.5420	0.5625	12.1200
		<i>Total Direct, Indirect &amp; Induced</i> <sup>6/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>7/</sup>
<b>Total Indirect and Induced Impacts in the City of Miami</b>	\$185,045,400	\$67,498,560	1,445
<b>Plus Total Direct Impacts</b>	\$120,000,000	\$30,699,840	678
<b>Estimated Total Economic Impacts in the City of Miami</b>	<b>\$305,045,400</b>	<b>\$98,198,400</b>	<b>2,123</b>

1/ Total development of new Miami Science Museum, including hard and soft costs, is estimated to be \$300 million, based on estimates prepared by Miami Science Museum. This analysis includes portion of the total \$200 million in construction costs (hard costs) associated with the Museum that would be spent in the City of Miami.

2/ 60% of construction expenditures assumed to be made in the City of Miami.

3/ Construction wages and overhead are estimated to equal 40% of total construction costs. All workers are assumed to have 25% overhead costs in addition to annualized salary. Average annual 2008 mean construction wages of \$44,950 for Miami-Dade County are based on Census of Employment and Wages from Labor Market Statistics at the Florida Agency of Workforce Innovation. Adjusted for inflation (0.7%) to February 2010 dollars results in a wage of \$45,250.

4/ See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

5/ In jobs per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

6/ The total effects shown include the direct spending in City of Miami for the construction of the Museum.

7/ Includes full time and part time jobs at a ratio similar to the mix of the economy as a whole.

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

**Table City 2  
Estimated Construction Period Impacts in the City of Miami – Soft and Owner’s Costs  
New Miami Science Museum**

<i>Estimated Development Expenditures</i> <sup>1/</sup>	\$300,000,000		
<i>Estimated Soft &amp; Owner's Costs Expenditures For Museum within City of Miami</i> <sup>2/</sup>	\$68,400,000		
<i>Estimated Avg. Annual Architecture and Engineering Related Wages &amp; Overhead</i> <sup>3/</sup>	\$79,500		
<i>Direct Person-Years of Construction Related Employment</i>	516		
		<i>Multipliers</i> <sup>4/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>5/</sup>
<b>Applicable Multipliers, City of Miami</b>	1.6847	0.7647	14.6543
		<i>Total Direct, Indirect &amp; Induced</i> <sup>6/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>7/</sup>
<b>Total Indirect and Induced Impacts in the City of Miami</b>	\$115,231,291	\$52,302,470	996
<b>Plus Total Direct Impacts</b>	\$68,400,000	\$32,817,600	516
<b>Estimated Total Economic Impacts in the City of Miami</b>	<b>\$183,631,291</b>	<b>\$85,120,070</b>	<b>1,512</b>

1/ Total development of new Miami Science Museum, including hard and soft costs, is estimated to be \$300 million, based on estimates prepared by Miami Science Museum. This analysis includes portion of the total soft and owners costs of \$100 million spent in the City of Miami associated with the development of the Museum.

2/ Over 68% of soft and owner's costs assumed to be made in the City of Miami.

3/ Architecture and engineering wages and overhead are estimated to equal 75% of total soft and owner's costs. All workers are assumed to have 25% overhead costs in addition to annualized salary. Average annual 2008 mean architecture and engineering wages of \$63,190 for Miami-Fort Lauderdale-Miami Beach, FL metropolitan statistical area are based on data from the Bureau of Labor Statistics. Adjusted for inflation (0.7%) to February 2010 dollars results in a wage of \$63,612.

4/ See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

5/ In jobs per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

6/ The total effects shown include the direct spending in City of Miami for the construction of the Museum.

7/ Includes full time and part time jobs at a ratio similar to the mix of the economy as a whole.

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

**Direct Construction Period Expenditures and Employment**

Direct construction and development activity from the Miami Science Museum is projected to directly support 1,194 full-time equivalent construction and development-related person-years of employment (including 678 person years of employment from expenditures for hard construction costs and 516 person years of employment from from expenditures for soft and owner’s costs). These include a mix of full-time and part-time person-years of employment during the development period. Total direct in-City wages and salaries from construction are estimated at \$63.5 million (including \$30.7 million from project hard costs and \$32.8 million from soft and

owner's costs). These include construction workers, and workers engaged in project planning. It should be noted that the estimated direct effects are a subset of the estimated total economic impacts.

### **Total Construction Period Economic Impacts**

Additional indirect and induced employment is expected to be created during, and subsequent to, the development phase as well, due to the multiplier effects from expenditures for the construction of the project. These are also one-time effects. The economic multipliers used in this analysis to estimate indirect and induced economic impacts were supplied by the IMPLAN from a customized computer run of their IMPLAN Input-Output Model for the City of Miami.

Indirect and induced project development effects would occur in a single one- to two-year period following an initial direct expenditure. The one-time total economic impact (which includes the above direct impacts and indirect and induced effects) of construction is estimated at the City level. The impacts would include approximately \$488.7 million in expenditures (economic activity) in the City economy (including \$305.0 million for hard costs and \$183.6 from soft and owner's costs), of which approximately \$183.6 million would be wages and salaries (including \$98.2 million from project hard costs and \$85.1 million from soft and owner's costs).

An estimated 3,635 total full time and part time person-years of employment at a ratio similar to the mix of the economy as a whole (including the above direct employment and indirect and induced employment) are estimated to be supported due to project development.

### **ECONOMIC IMPACTS DUE TO ONGOING OPERATIONS**

The ongoing operations of the Miami Science Museum, as it attracts visitors from resident and visitor markets, will form a stream of economic benefits to the City of Miami. A portion of the spending due to the new Miami Science Museum operations will be net new to the City of Miami.

## Estimates of Visitor Spending

The estimate of visitor spending that will occur at the new Miami Science Museum, or as part of a visit, is based on the projections by the Miami Science Museum and the Museum's operations analysis, and from secondary data on visitor spending in the Greater Miami and Beaches area<sup>3</sup>. This data is used in profiling the likely characteristics and spending patterns of visitors to the Miami Science Museum. Estimated spending patterns were prepared for three types of visitors: tourists on overnight trips using commercial accommodations, people on overnight trips staying with friends and relatives; and local and longer range day trips. Students in groups were excluded from the off-site spending estimates. These data were analyzed by spending category according to typical spending patterns for leisure travelers in this area. Data in **Table City 3** present these data and analyses. Only amounts spent off-site are estimated. On-site spending is factored through the operating budget of the Miami Science Museum. The proposed operating budget of the Miami Science Museum is included within this "baseline direct spending" analysis.

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<sup>3</sup> Data: Synovate Miami 2008.

**Table City 3  
Calculations of Estimated Visitor Spending Potential  
New Miami Science Museum**

<i>Source of Visitation</i>	<b>Stay with Friends &amp; Relatives</b>			<b>Total</b>
	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>&amp; Relatives</b>	
Primary Resident Market - City of Miami	100%	0%	0%	100%
Secondary Resident Market - Outside of City of Miami but within Miami-Dade County	97%	1%	2%	100%
Tourists	10%	65%	25%	100%
<i>Estimated Distribution Of Visitors By Origin <sup>1/</sup></i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Stable Year Total</b>
Primary Resident Market - City of Miami	92,400	-	-	92,400
Secondary Resident Market - Outside of City of Miami but within Miami-Dade County	203,797	2,101	4,202	210,100
Tourists	16,500	107,250	41,250	165,000
<b>Total Attendance without Student Groups</b>	<b>312,697</b>	<b>109,351</b>	<b>45,452</b>	<b>467,500</b>
Students	82,500			82,500
<b>Total Attendance with Student Groups</b>	<b>395,197</b>			<b>550,000</b>
<i>Potential Current Year Per Person Spending (in addition to on-site spending at Miami Science Museum) <sup>2/3/</sup></i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Average Per Capita</b>
Accommodations	\$0.00	\$75.00	\$0.00	\$17.54
Food & Beverage (In addition to Miami Science Museum)	10.00	35.00	17.50	16.58
Retail (In addition to Miami Science Museum)	20.00	40.00	30.00	25.65
Ground Transportation (Largely Gas)	12.50	10.00	10.00	11.67
Entertainment/Recreation (In addition to Miami Science Museum)	5.00	10.00	7.50	6.41
Other	10.00	20.00	15.00	12.83
<b>Total</b>	<b>\$57.50</b>	<b>\$190.00</b>	<b>\$80.00</b>	<b>\$90.68</b>
<i>Spending Matrix (In addition to on-site spending at Miami Science Museum)</i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Total</b>
Accommodations	\$0	\$8,201,325	\$0	\$8,201,325
Food & Beverage (In addition to Miami Science Museum)	3,126,970	3,827,285	795,410	7,749,665
Retail (In addition to Miami Science Museum)	6,253,940	4,374,040	1,363,560	11,991,540
Ground Transportation (Largely Gas)	3,908,713	1,093,510	454,520	5,456,743
Entertainment/Recreation (In addition to Miami Science Museum)	1,563,485	1,093,510	340,890	2,997,885
Other	3,126,970	2,187,020	681,780	5,995,770
<b>Total</b>	<b>\$17,980,078</b>	<b>\$20,776,690</b>	<b>\$3,636,160</b>	<b>\$42,392,928</b>
<b>Estimate of Current Dollar Stable Gross Operating Expenses For New Miami Science Museum</b>				<b>Future Stable Year, Current \$</b>
<b>Gross Expenditures</b>				
Total Salaries <sup>4/</sup>				\$6,302,273
Fringe / Benefits Costs <sup>5/</sup>				1,223,384
Cost of Goods Sold <sup>6/</sup>				847,207
Other Operating Expenses				10,593,491
<b>Total</b>				<b>\$18,966,355</b>

1/ This analysis utilizes the Miami Science Museum's stabilized year attendance potential of 550,000 and an assumption that 70% of visitors are from the "resident" market and 30% are tourists from outside the resident area, or outside of Miami-Dade County. It is also assumed that 42% of the total visitors are from the "primary" resident market area, or the City of Miami, and that 28% are from outside of the City of Miami but within Miami-Dade County.

2/ Spending data from Visit Florida indicate an average per person daily expenditure of \$245 for overnight visitors to Greater Miami and the Beaches in 2008. It should be noted that these include people in commercial accommodations, day trippers and those staying with friends and relatives. These data are adjusted to reflect the anticipated Miami Science Museum audience and travel patterns assumed to be associated with its visitors.

3/ Visitors on day trips or staying with friends and relatives would have lower spending patterns. Day trip visitors estimated to spend half as much as Hotel / Motel in Food & Beverage, Retail, Entertainment/Recreation and Other. Visitors staying with friends and relatives estimated to spend three-fourths as much as Hotel / Motel in Food & Beverage, Retail, Entertainment/Recreation.

4/ Estimate from FY16 future dollar budget of \$9.16 million for salaries and benefits adjusted to 2010 dollars based on 21.7% inflation rate assumption from 2010 to 2016 from the Miami Science Museum. Assumes benefits are approximately 19.4% of salary cost. Costs assume 93 full-time employees and 62 part-time employees based on data from the Miami Science Museum.

5/ Estimate based on 19.4% of total salaries based on data from Miami Science Museum.

6/ Based on retail sales per attendee of \$3.75 in 2016 and 50% cost of goods sold. Adjusted to 2010 dollars based on 21.7% inflation rate assumption from 2010 to 2016 from the Miami Science Museum.

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc.

### Location of Spending

Due to the direct economic activity discussed above, additional indirect and induced economic activity occurs in the area. The location in which the spending occurs effects the distribution of total economic activity by geographic area. In this analysis, the City of Miami is considered the “local economy” and Miami-Dade County as a whole is the “regional economy.” Data in **Table City 4** provide estimated distribution of visitor spending between the City of Miami and Miami-Dade County, less the City of Miami. That is, visitors on day-trips may have lunch in the City of Miami, or outside of the City; some overnight visitors may stay in accommodations in or outside of the City.

The economic development purpose of the project is to stimulate new spending by visitors in the local economy, both within the new Miami Science Museum and at other businesses in the City of Miami and surrounding areas. The sources of the direct impacts of the Miami Science Museum and the subsequent rounds of spending (“multiplier effects”) in the local and regional economy are:

- ◆ The direct spending by the Miami Science Museum through its operating budget. This would occur in the City of Miami and in other areas outside of the City of Miami.
- ◆ The spending of residents and visitors at the new Miami Science Museum for goods and services in conjunction with their visit. This includes overnight visitors and day-trip visitors. It should be noted that these expenditures are for the day of the visit to the new Miami Science Museum. To maintain a conservative analysis, visitor expenditures that occur on other days of the trip are not included in this evaluation.

In total, \$42.4 million in current dollar off-site direct visitor spending is projected to occur annually by museum visitors in conjunction with their visit. Much of this spending would occur in the City of Miami. The Miami Science Museum is proposed to have a budget of approximately \$19.0 million in the 2010 value of the dollar, including retail cost of goods sold (COGS). The Museum estimates that three quarters of the operating budget would be expended in Miami (this includes personnel).

**Table City 4**  
**Estimated Direct Visitor Spending Potential in the City of Miami**  
**and in Miami-Dade County, Outside the City of Miami**  
**New Miami Science Museum**

<b>Distribution of Miami Science Museum Operations Spending</b>				
City of Miami	75%			\$14,224,766
Miami-Dade County, Less City of Miami	15%			\$2,844,953
Outside of Miami-Dade County	10%			\$1,896,635
<b>Total Operations Spending</b>	<b>100%</b>			<b>\$18,966,355</b>
<b>Miami Science Museum Visitor Spending</b>		<b>Off-Site Spending</b>		
			<b>Stay with Friends &amp; Relatives</b>	
	<b>Day Trips</b>	<b>Hotel/Motel</b>		<b>Total</b>
Accommodations	\$0	\$8,201,325	\$0	\$8,201,325
Food & Beverage (In addition to Miami Science Museum)	\$3,126,970	\$3,827,285	\$795,410	7,749,665
Retail (In addition to Miami Science Museum)	\$6,253,940	\$4,374,040	\$1,363,560	11,991,540
Ground Transportation (Largely Gas)	\$3,908,713	\$1,093,510	\$454,520	5,456,743
Entertainment/Recreation (In addition to Miami Science Museum)	\$1,563,485	\$1,093,510	\$340,890	2,997,885
Other	\$3,126,970	\$2,187,020	\$681,780	5,995,770
<b>Total Off-Site Spending</b>	<b>\$17,980,078</b>	<b>\$20,776,690</b>	<b>\$3,636,160</b>	<b>\$42,392,928</b>
<b>Estimated Distribution of Off-Site Visitor Spending</b>				
			<b>Stay with Friends &amp; Relatives</b>	
	<b>Day Trips</b>	<b>Hotel/Motel</b>		
<b>Accommodations</b>				
City of Miami		40%		
Miami-Dade County, Less City of Miami		60%		
<b>Food &amp; Beverage</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Retail</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Ground Transportation</b>				
City of Miami	40%	50%	50%	
Miami-Dade County, Less City of Miami	60%	50%	50%	
<b>Entertainment/Recreation</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Other</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Estimated Direct Spending</b>				
			<b>Stay with Friends &amp; Relatives</b>	
	<b>Day Trips</b>	<b>Hotel/Motel</b>		<b>Total</b>
<b>Off-Site Spending in City of Miami</b>				
Accommodations	\$0	\$3,280,530	\$0	\$3,280,530
Food & Beverage (In addition to Miami Science Museum)	1,876,182	2,296,371	477,246	4,649,799
Retail (In addition to Miami Science Museum)	3,752,364	2,624,424	818,136	7,194,924
Transportation	1,563,485	546,755	227,260	2,337,500
Entertainment/Recreation (In addition to Miami Science Museum)	938,091	656,106	204,534	1,798,731
Other	1,876,182	1,312,212	409,068	3,597,462
<b>Total Off-Site Spending in City of Miami</b>	<b>\$10,006,304</b>	<b>\$10,716,398</b>	<b>\$2,136,244</b>	<b>\$22,858,946</b>
<b>Operations Spending Miami Science Museum in City of Miami</b>				\$14,224,766
<b>Total Miami-Dade County Spending</b>				<b>\$37,083,712</b>
			<b>Stay with Friends &amp; Relatives</b>	
	<b>Day Trips</b>	<b>Hotel/Motel</b>		<b>Total</b>
<b>Off-Site Spending in Miami-Dade County, Outside City of Miami</b>				
Accommodations	\$0	\$4,920,795	\$0	\$4,920,795
Food & Beverage	1,250,788	1,530,914	318,164	3,099,866
Retail (In addition to Miami Science Museum)	2,501,576	1,749,616	545,424	4,796,616
Transportation	2,345,228	546,755	227,260	3,119,243
Recreation (In addition to Miami Science Museum)	625,394	437,404	136,356	1,199,154
Other	1,250,788	874,808	272,712	2,398,308
<b>Total Off-Site Spending Outside of Broward County</b>	<b>\$7,973,774</b>	<b>\$10,060,292</b>	<b>\$1,499,916</b>	<b>\$19,533,982</b>
<b>Operations Spending By Miami Science Center</b>				\$2,844,953
<b>Total Spending in Miami-Dade County, Outside City of Miami</b>				<b>\$22,378,935</b>
<b>Total Spending in Miami-Dade County</b>				<b>\$59,462,647</b>

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.  
 Source: ConsultEcon, Inc.

### **Net New Direct Miami Science Museum Visitor Spending in City of Miami Economy**

The analyses in **Table City 5** estimate the percentage of visitor spending that would be net new to the City of Miami economy. The Miami Science Museum's annual operations spending is considered net new, as it is a unique entity in the city whose spending would not be readily replaced by that of any other entity in the City of Miami. For visitor spending, this analysis distinguishes net new spending that occurs in the area's economy due to the project, from spending that might otherwise occur. This distinction accounts for "substitution" of spending at the Miami Science Museum for other spending opportunities in the City of Miami. The Miami Science Museum will draw on existing tourism markets; but will help to grow these markets and expand spending by area visitors because of its unique offerings. As an expanded and new high-profile educational and cultural attraction, the Miami Science Museum will help to grow the area's economy and will attract net new spending and subsequent multiplier effects. Overall, of the visitor spending associated with a visit, a major portion is attributed to net new spending at both the local level. A reasonable estimate is 50 percent of such associated spending on the day of the museum visit is attributable to the major daily activity -- the Miami Science Museum visit.

Input-output modeling theory also indicates that only the retail margin component of a producer's price (the portion captured by the local retail or restaurant establishments) will have a significant impact to the local economy. The remaining components of the producer's price go to manufacturing (cost of goods sold), transportation, and warehousing costs outside of the economic unit being analyzed. Therefore, margins for selected spending categories were estimated based on the Bureau of Economic Analysis' input-output commodity composition tables of personal consumption expenditures in producers' and purchasers' prices, along with the consultant's judgment. The application of retail margins to consumer expenditures in certain expenditure categories has the effect of lowering the amount of new dollars that are recirculated in the economic unit under evaluation for a given consumer expenditure.

Data in Table 5 summarize the estimates of net new spending as corrected for retail margins for the City of Miami. Given these analyses and assumptions, the project is estimated to create approximately \$22.6 million in net new direct expenditures as corrected for retail margins in the City of Miami. These are the components of direct spending with multiplier effects. The resulting multiplier effects plus the overall direct net new spending constitutes the total economic impacts.

**Table City 5  
Estimated Economic Impacts of the New Miami Science Museum  
on City of Miami**

	Estimated Total Spending	Total Spending Adjusted to Retail Margin	Estimated Percent Net New to City of Miami	Estimated Net New Spending in City of Miami	Estimated Net New Spending in City of Miami Adjusted to Retail Margin
<b>Estimated Miami Science Museum Operating Expenditures in City of Miami</b>					
	\$14,224,766	\$14,224,766	100%	\$14,224,766	\$14,224,766
<b>Estimated Direct Off-Site Spending in City of Miami</b>					
Accommodations	\$3,280,530	\$3,280,530	50%	\$1,640,265	\$1,640,265
Food & Beverage (Retail Margin 75%)	4,649,799	3,487,349	50%	2,324,900	1,743,675
Retail (Retail Margin 50%)	7,194,924	3,597,462	50%	3,597,462	1,798,731
Transportation (Retail Margin 25% on gasoline which is 75% of total)	2,337,500	1,022,656	50%	1,168,750	511,328
Entertainment/Recreation	1,798,731	1,798,731	50%	899,366	899,366
Other	3,597,462	3,597,462	50%	1,798,731	1,798,731
<b>Total Off-Site</b>	<b>\$22,858,946</b>	<b>\$16,784,191</b>		<b>\$11,429,473</b>	<b>\$8,392,095</b>
<b>Total Direct Operating Expenditures and Off-Site Spending</b>	<b>\$37,083,712</b>	<b>\$31,008,957</b>		<b>\$25,654,239</b>	<b>\$22,616,861</b>
<b>Economic Impacts - City of Miami</b>					
		<b>Multipliers <sup>1/</sup></b>			
<b>Total Indirect &amp; Induced</b>	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment <sup>2/</sup></b>		
Accommodations	1.4453	0.5082	11.8080		
Food & Beverage	1.4586	0.5306	18.3616		
Retail	1.4309	0.6603	22.1107		
Transportation (Gasoline Stations)	1.4016	0.4392	13.5304		
Entertainment/Recreation	1.5813	0.4335	12.3229		
Other <sup>3/</sup>	1.5739	0.7583	14.9655		
Museums, Historical Sites, Zoos & Parks <sup>3/</sup>	1.5739	0.7583	14.9655		
	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment</b>		
Accommodations	\$2,370,609	\$833,629	19		
Food & Beverage	2,543,312	925,258	32		
Retail	2,573,844	1,187,707	40		
Transportation (Gasoline Stations)	716,664	224,557	7		
Entertainment/Recreation	1,422,142	389,848	11		
Other <sup>3/</sup>	2,831,077	1,363,949	27		
Miami Science Museum Operations	22,388,786	10,786,413	211		
<b>Total Indirect &amp; Induced</b>	<b>\$34,846,434</b>	<b>\$15,711,361</b>	<b>347</b>		
<b>Plus Net New Direct Effects</b>					
<b>Total In-City Spending Miami Science Museum Operating Spending</b>					
<b>Net new direct City of Miami Spending</b>	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment</b>		
Accommodations	\$1,640,265	\$576,802	13		
Food & Beverage	2,324,900	845,800	29		
Retail	3,597,462	1,660,059	56		
Transportation (Gasoline Stations)	1,168,750	366,212	11		
Entertainment/Recreation	899,366	246,541	7		
Other <sup>3/</sup>	1,798,731	866,588	17		
Miami Science Museum Operations <sup>4/</sup>	14,224,766	6,302,273	155		
<b>Total Direct</b>	<b>\$25,654,239</b>	<b>\$10,864,274</b>	<b>288</b>		
<b>Total Direct, Indirect &amp; Induced</b>	<b>\$60,500,673</b>	<b>\$26,575,635</b>	<b>635</b>		

<sup>1/</sup> See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

<sup>2/</sup> In jobs per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

<sup>3/</sup> For museum operations and for off-site visitor spending for other spending, the multiplier category: Museums, historical sites, zoos, and parks for City of Miami is used as most representative of such activities.

<sup>4/</sup> Employment at Museum preliminary personnel requirement estimate. Employment includes full-time and part-time positions.

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc.

## **Total Economic Impacts of the New Miami Science Museum**

The annual impacts to the City of Miami economy, as noted above, are from direct (first round) net new spending to a given area, and subsequent rounds of spending within the economies. The total economic effect includes direct, indirect and induced expenditures; wages and income; and employment in the regional and local economies.

Data in Table 5 also present the estimates of total on-going annual economic impacts of the Miami Science Museum on the City of Miami. These are presented in current-dollar value. As the multiplier effect works its way through the local economy, the net direct economic activity due to the new Miami Science Museum will generate a total annual impact estimated at nearly \$60.5 million in expenditures, of which \$26.6 million in wages will be generated. A total of 93 full-time and 62 part time employees for a total of 155 on-site jobs are planned for the new facility as Miami Science Museum employees or as outsourced activities employees when it is completed. The total annual direct, indirect and induced effects of visitor spending outside of the museum and the Museum's operations would result in a total of 635 jobs<sup>4</sup> supported in the City of Miami.

The total economic impacts are summarized by data in **Table City 6**. Data in Table City 6 is derived and summarized from calculations in Tables City 3, City 4, and City 5.

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<sup>4</sup> Total jobs include full time and part time employment, assumed to be in ratio with the distribution of jobs between actual full time and part time for the area under consideration as a whole.

**Table City 6**  
**Summary of Estimated Economic Impacts of the New Miami Science Museum**  
**on City of Miami Economy**

<i>Estimated Stable Year Attendance Potential</i>	550,000
<b><i>Direct Spending by Miami Science Museum and Off-Site Visitor Spending</i></b>	
	<b><u>Total Spending In City of Miami</u></b>
<b>Miami Science Museum Operating Expenditures</b>	<u>\$14,224,766</u>
<b><i>Estimated Direct New Off-Site Spending</i></b> <sup>1/</sup>	
Accommodations	\$3,280,530
Food & Beverage	4,649,799
Retail	7,194,924
Transportation	2,337,500
Entertainment/Recreation (In addition to Miami Science Museum)	1,798,731
Other	<u>3,597,462</u>
<b>Total Off-Site</b>	<u><u>\$22,858,946</u></u>
<b>Total Direct On-Site and Off-Site Expenditures</b> <sup>2/</sup>	\$37,083,712
<b><i>Total Direct, Indirect and Induced Effects of Visitor Spending on Expenditures, Earnings and Employment on the Geographic Areas Evaluated</i></b>	
	<b><u>City of Miami</u></b>
Expenditures	\$60,500,673
Earnings	\$26,575,635
Employment (permanent) <sup>2/</sup>	635

1/ Not all off-site spending is net new. Some spending would occur in other locations without the influence of the Miami Science Museum.

2/ Employment includes full-time and part-time jobs.

Note: All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc.

## **FISCAL BENEFITS**

The term “fiscal benefits” refers to the positive impact of the new Miami Science Museum on the finances of the City of Miami. The benefits that it will provide to the City will include initial non-recurring benefits from project construction and once open, recurring benefits from ongoing operations.

### **Non-Recurring Benefits**

The new Miami Science Museum will be developed by a not-for-profit organization. The project will be located on a site owned by the City of Miami. It has been defined by the City of Miami Commission as a “project of a government agency” and it is anticipated that it will receive a waiver from permit and impact fees. However, in the event the waiver is not granted, the following fees discussed below would be paid.

#### **Building Permit Fees**

The City of Miami typically charges \$0.25 building permit fees per square foot for non-residential projects with the fee applying to all space within the structure including its structured parking. The new Miami Science Museum facility will contain 175,000 square feet of enclosed space (not including structured parking and outdoor areas), that would result in a \$43,750 building permit fee if such fees are imposed. Additional fees would be paid by the project’s roofing, electrical, plumbing, mechanical and elevator contractors; however, the plans for the project are not sufficiently formulated to estimate these fees at this time. Finally, the project will pay a solid waste surcharge of \$10,000.

#### **Impact Fees**

Typically, non-residential projects constructed within the City of Miami are required to pay impact fees for police, fire and general services. In addition, supplemental fees are applicable for those projects located within the portion of the City where development activity is governed by the Downtown Miami Development of Regional Impact. The amounts of these and/or any other applicable impact fees have not established.

## **Recurring Benefits**

### **Ad Valorem Taxes**

As a not-for-profit entity, Miami Science Museum would not be required to pay ad valorem taxes on its new facility to the City of Miami, Miami-Dade County or the Miami-Dade County Public School District.

### **Non-Ad Valorem Revenues**

The City of Miami collects utility taxes and franchise fees from the providers of telephone, electric and other services based on their revenues. Upon application, non-profit organizations are exempt from utility service and franchise fees and utility excise taxes. To the extent that additional taxes imposed to cover the cost of operating the City of Miami Storm-Water Management System would apply, the amount collected would be dependent on the amount of these services used. The amount to be used cannot be quantified at this time. The City will also collect parking surcharges from museum visitors and museum staff while working that park a vehicle within a City facility or at a city parking meter.

Many of the visitors to the new Miami Science Museum will make expenditures for food, beverage retail goods and overnight accommodations in conjunction with their visit. These would be taxable purchases and the City of Miami will receive a portion of the total tax proceeds per established State and County revenue sharing formulas. These tax types include: Tourist Development Taxes, Sales and Use Tax, Motor Fuel Tax, Cigarette Tax. Where these purchases are made, and the type of establishment, will affect the amount of revenue that flows to the City of Miami. Data regarding point of purchase and type of establishment (per the tax laws) to support an analysis of this type is not available. Therefore, an estimate of the amount is not made for this report. These taxes in general would occur due to the increased economic activity generated by the new Museum.

## **COMMUNITY AND QUALITY OF LIFE BENEFITS**

### **Expansion of the Regional Tourism Economy and Infrastructure**

Beyond its potential to create direct and multiplier effects on the local economy, the Miami Science Museum will contribute to the profile of Miami as a visitor destination, thus benefiting the area overall. Not only will the new museum provide an additional destination for inducing travelers to visit Miami or extend their stay, but it will also help to transform Museum Park into

a popular and well known south Florida destination. The Miami Science Museum has the potential to be a stimulus to tourism revenues, making a significant contribution in expanding Miami's overall tourism economy while educating, inspiring and entertaining both its residents and visitors.

The community development and educational benefits of the new Miami Science Museum may have the most profound and long-lasting impacts on the community. This project will enhance the knowledge of and interest in science and technology. The Miami Science Museum estimates that nearly 25,000 students from the City of Miami will attend in school groups annually, plus additional attendances while with their families. It will improve community self-esteem and citizenship. The new museum will expand the educational attractions base in the City of Miami and be a source of community pride and identity. The new Miami Science Museum will enhance the City of Miami as a place to live and work, thus improving all aspects of the local economy and community.

## Evaluation of Economic Impacts to Miami-Dade County

### INTRODUCTION - MIAMI-DADE COUNTY

The following provides an assessment of the economic benefits to Miami-Dade County of the construction and ongoing operations of the new Miami Science Museum to be located in Museum Park in the City of Miami. This economic impact analysis focuses on the direct, indirect and induced impacts in Miami-Dade County. This includes the direct spending in all areas of Miami Dade County including the City of Miami and the subsequent rounds of multiplier effects within the County. These economic benefits include the initial economic impacts due to construction, a one-time impact. In addition, the ongoing economic benefits of the project will include increased direct employment, wages and salaries and increased spending (economic activity) in Miami-Dade County above current levels. In turn this increased direct new spending “multiplies” in the County’s economy creating indirect and induced spending as the initial expenditures are re-spent, and employees (supported by direct spending) re-spend their wages in the County’s economy. Besides these increased spending and employment impacts above current levels, the project will create substantial educational and quality of life benefits to the area. These educational and quality of life benefits enhance the economic competitiveness of Miami-Dade County as a whole. This analysis presents all dollar amounts in the current 2010 value of the dollar unless otherwise noted. This analysis assumes full build-out and stabilized operations for the new Miami Science Museum according to the March 2010 Summary Business Plan and other data provided by the Miami Science Museum.

The Miami Science Museum has the potential to create substantial economic impacts to Miami-Dade County. This analysis includes the following data and analyses.

- ◆ **Construction Period Impacts** – An analysis of the one-time economic impacts of project construction. These direct spending estimates are then analyzed for their indirect and induced “multiplier” effects to estimate the total economic impacts of the construction period. This includes the one-time total economic activity (expenditures); total employment (full-time and part-time person-years of employment); and total earnings.
- ◆ **Economic Impacts of Ongoing Operations** – An analysis of the annual direct spending by the Miami Science Museum and the spending by visitors outside the Museum but in conjunction with their visit. These direct spending estimates are then analyzed for their indirect and induced “multiplier” effects to estimate the total economic impacts of facility

operations. This includes total economic activity (expenditures); total employment (full-time and part-time); and total earnings.

- ◆ **Community and Revitalization Benefits** – An assessment of the Miami Science Museum project’s quality of life and general economic development benefits that would accrue to Miami-Dade County.

**DESCRIPTION OF PROJECT ECONOMIC BENEFITS**

**Direct Economic Activity**

The economic benefits resulting from the construction and operations of the Miami Science Museum will be based on the following direct economic activity.

- ◆ **Direct Construction Employment and Construction Expenditures.** Construction and fit-out of the new Miami Science Museum will result in a one-time positive impact on the regional economy during its construction period. The impacts will include direct employment during the construction period for construction and workers engaged in pre-opening activities; and expenditures in the County economy due to construction and project ramp-up. In turn, these direct expenditures in the County economy will “multiply” to create indirect and induced employment, wages and output. In addition, other non-recurring fees associated with construction and development would occur. Construction period effects are a one-time impact of the project.
- ◆ **Direct Spending by the Miami Science Museum.** As a major “business” in Miami-Dade County, the Miami Science Museum will play an active role in the local economy and create job opportunities for local residents. Expenditures of the Miami Science Museum will include salaries, wages and fringe benefits as well as operating costs such as utilities, marketing, supplies and materials, professional services and printed materials among many others.
- ◆ **Visitor Spending in the Local Economy.** The on-going operations of the Miami Science Museum as it attracts visitors from resident and visitor markets will form a stream of economic benefits to Miami-Dade County. The Miami Science Museum will help to attract new visitors who would otherwise not visit to Miami-Dade County, contribute to longer stays in the area, and help to retain leisure expenditures of residents that would otherwise be made elsewhere. The Miami Science Museum will be of a scale and stature, and its length of stay sufficient to be a primary trip purpose or principal recreational activity for the day of the visit. In this analysis, student groups are assumed to have minimal spending outside of the Miami Science Museum that occurs in Miami.

In addition to the on-site spending at the Miami Science Museum (for tickets and gifts, for example), visitors also spend for goods and services off-site in conjunction with their visit. Off-site spending by visitors to the Miami Science Museum in conjunction with their visit would include overnight accommodations (on the day of the Miami Science Museum visit) for some tourists, food, transportation and retail purchases, as well as spending at other recreational and cultural attractions. In this regard, the Miami Science Museum acts as a facilitator of local economic development by providing a gathering place for residents and visitors, thereby, supporting business activity proximate to the

facility. A large portion of the visitor spending associated with a visit to the facility will be net new to the local and regional economies.

Net new spending may be derived from one or more of the following sources.

- Satisfying the demand for cultural, educational and recreational activities due to increases in population or shifts in demographic make-up.
- Satisfying the demand for cultural, educational and recreational activities due to increases in per capita income of residents.
- Replacement of spending that would be otherwise spent outside Miami-Dade County.
- Responding to shifts in the interests and desires of consumers.
- Grant and gift monies awarded to the facility that would otherwise go to areas outside of the local and/or regional economies.
- Replacement of spending that is “going out of favor.” In other words, visitors will take advantage of the leisure and educational opportunities offered at the Miami Science Museum because they are no longer interested in pursuing other activities.
- Attracting visitors from geographic areas outside of the areas of analysis; this may be a primary or secondary trip purpose, or may be an activity undertaken while visiting the area. Contributing to the capacity, quality and breadth of tourism offerings attracts outside or “new” expenditures to the geographies being evaluated.

### **Indirect and Induced Economic Activity**

As the direct spending due to the Miami Science Museum flows to local businesses, the money is, in turn, re-spent by the businesses for personnel, business expenses and the costs of goods sold (for retail and food service sales that are for goods produced in the local economy). The portion of spending that supports wages and salaries (employment) is, in turn, re-spent by the employees for housing, retail, services, and other categories in the local economy. Subsequent rounds of spending occur with the total effect on an area’s economy of the initial round of new direct spending estimated through analysis and factors estimating the total “multiplier” effect. IMPLAN<sup>5</sup> provides mathematical factors for discrete geographies for an array of spending types that result in an estimate of total economic impacts from new spending due to demand created by an economic unit such as the Miami Science Museum. This includes direct, indirect and induced economic activity. Categories of measurement include expenditures, earnings, and employment.

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<sup>5</sup> IMPLAN (IMpact Analysis for PLANning) was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management to assist the Forest Service in land and resource management planning. The IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis (1980) and the rectangular format recommended by the United Nations.

## **CONSTRUCTION PERIOD IMPACTS**

Construction of the Miami Science Museum will result in a one-time positive impact to Miami-Dade County. The impacts will include direct employment for construction workers during the construction period, and indirect and induced employment, wages and output. Based on the project development cost estimate provided by Oppenheim Lewis and the Miami Science Museum, total hard, soft and owner's project costs are estimated at \$300 million. Of this, amount an estimated 66 percent of construction expenditures and 74 percent of the soft and owner's cost expenditures are estimated to be made in Miami-Dade County. As planning proceeds, this amount will be refined; with any changes affecting the estimate of construction period economic impacts.

Data in **Tables County1** and **County 2** present the results of the construction period impact analysis for Miami-Dade County. The direct impact data are presented as direct expenditures for construction and the number of direct full-time equivalent person-years of employment it would create. In addition to the direct expenditures and employment in the Miami-Dade County economy, there will be "multiplier" effects creating indirect and induced expenditures, earnings (wages and income), and employment. The total economic effect includes direct, indirect, and induced expenditures in Miami-Dade County, earnings (wages and income), and employment due to the construction of the Miami Science Museum. Construction is a one-time event, and not an ongoing project impact. The following discusses the results of the construction impact analyses.

**Table County 1  
Estimated Construction Period Impacts in Miami-Dade County - Hard Costs  
New Miami Science Museum**

<i>Estimated Development Expenditures</i> <sup>1/</sup>	\$300,000,000		
<i>Estimated Construction (Hard Costs) Expenditures For Museum within Miami-Dade County</i> <sup>2/</sup>	\$132,000,000		
<i>Estimated Avg. Annual Construction Wages &amp; Overhead</i> <sup>3/</sup>	\$56,600		
<i>Direct Person-Years of Construction Related Employment</i>	746		
		<b>Multipliers</b> <sup>4/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>5/</sup>
<b>Applicable Multipliers, Miami-Dade County</b>	1.9363	0.6777	14.6651
		<b>Total Direct, Indirect &amp; Induced</b> <sup>6/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>7/</sup>
<b>Total Indirect and Induced Impacts in the Miami-Dade County</b>	\$255,587,955	\$89,460,009	1,923
<b>Plus Total Direct Impacts</b>	\$132,000,000	\$33,778,880	746
<b>Estimated Total Economic Impacts in the Miami-Dade County</b>	<b>\$387,587,955</b>	<b>\$123,238,889</b>	<b>2,669</b>

1/ Total development of new Miami Science Museum, including hard and soft costs, is estimated to be \$300 million, based on estimates prepared by Miami Science Museum. This analysis includes portion of the total \$200 million in construction costs (hard costs) associated with the Museum that would be spent in Miami-Dade County.

2/ 66% of construction expenditures assumed to be made in Miami-Dade County.

3/ Construction wages and overhead are estimated to equal 40% of total construction costs. All workers are assumed to have 25% overhead costs in addition to annualized salary. Average annual 2008 mean construction wages of \$44,950 for Miami-Dade County are based on Census of Employment and Wages from Labor Market Statistics at the Florida Agency of Workforce Innovation. Adjusted for inflation (0.7%) to February 2010 dollars results in a wage of \$45,250.

4/ See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

5/ In person years of employment per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

6/ The total effects shown include the direct spending in Miami-Dade County for the construction of the Museum.

7/ Includes full time and part time person years of employment at a ratio similar to the mix of the economy as a whole.

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

**Table County 2  
Estimated Construction Period Impacts in Miami-Dade County – Soft and Owner’s Costs  
New Miami Science Museum**

<i>Estimated Development Expenditures</i> <sup>1/</sup>	\$300,000,000		
<i>Estimated Soft &amp; Owner's Costs Expenditures For Museum within Miami Dade County</i> <sup>2/</sup>	\$74,120,000		
<i>Estimated Avg. Annual Architecture and Engineering Related Wages &amp; Overhead</i> <sup>3/</sup>	\$79,500		
<i>Direct Person-Years of Construction Related Employment</i>	559		
		<b>Multipliers</b> <sup>4/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>5/</sup>
<b>Applicable Multipliers, Miami-Dade County</b>	2.0932	0.8893	17.5000
		<b>Total Direct, Indirect &amp; Induced</b> <sup>6/</sup>	
	<u>Expenditures</u>	<u>Earnings</u>	<u>Employment</u> <sup>7/</sup>
<b>Total Indirect and Induced Impacts in the Miami-Dade County</b>	\$155,148,636	\$65,915,679	1,288
<b>Plus Total Direct Impacts</b>	\$74,120,000	\$35,552,400	559
<b>Estimated Total Economic Impacts in the Miami-Dade County</b>	<b>\$229,268,636</b>	<b>\$101,468,079</b>	<b>1,847</b>

1/ Total development of new Miami Science Museum, including hard and soft costs, is estimated to be \$300 million, based on estimates prepared by Miami Science Museum. This analysis includes portion of the total soft and owners costs of \$100 million spent in the Miami-Dade County associated with the development of the Museum.

2/ Over 74% of soft and owner's costs assumed to be made in Miami-Dade County.

3/ Architecture and engineering wages and overhead are estimated to equal 75% of total soft and owner's costs. All workers are assumed to have 25% overhead costs in addition to annualized salary. Average annual 2008 mean architecture and engineering wages of \$63,190 for Miami-Fort Lauderdale-Miami Beach, FL metropolitan statistical area are based on data from the Bureau of Labor Statistics. Adjusted for inflation (0.7%) to February 2010 dollars results in a wage of \$63,612.

4/ See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

5/ In person years of employment per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

6/ The total effects shown include the direct spending in Miami-Dade County for the construction of the Museum.

7/ Includes full time and part time person years of employment at a ratio similar to the mix of the economy as a whole.

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

**Direct Construction Period Expenditures and Employment**

Direct construction and development activity from the Miami Science Museum is projected to directly support 1,305 full-time equivalent construction and development-related person-years of employment (including 746 person-years of employment from expenditures for hard construction costs and 559 person-years of employment from from expenditures for soft and owner’s costs). These include a mix of full-time and part-time person-years of employment during the development period. Total direct in-County wages and salaries from construction are estimated at \$69.3 million (including \$33.8 million from hard costs and \$35.6 million from soft and owner’s costs). These include construction workers, and workers engaged in project planning. It

should be noted that the estimated direct effects are a subset of the estimated total economic impacts.

## **Total Construction Period Economic Impacts**

Additional indirect and induced employment is expected to be created during, and subsequent to, the development phase as well, due to the multiplier effects from expenditures for the construction of the project. These are also one-time effects. The economic multipliers used in this analysis to estimate indirect and induced economic impacts were supplied by the IMPLAN from a customized computer run of their IMPLAN Input-Output Model for Miami-Dade County.

Indirect and induced project development effects would occur in a single one- to two-year period following an initial direct expenditure. The one-time total economic impact (which includes the above direct impacts and indirect and induced effects) of construction is estimated at the County level. The impacts would include approximately \$616.9 million in expenditures (economic activity) in the County economy (including \$387.6 million for hard costs and \$229.3 from soft and owner's costs), of which approximately \$183.6 million would be wages and salaries (including \$123.3 million from hard costs and \$101.5 million from soft and owner's costs).

An estimated 4,516 total of full time and part time person-years of employment are estimated to be supported due to project development at a ratio similar to the mix of the economy as a whole (including 2,669 person-years of employment from project hard costs and 1,847 person-years of employment from soft and owner's costs).

## **ECONOMIC IMPACTS DUE TO ONGOING OPERATIONS**

The ongoing operations of the Miami Science Museum, as it attracts visitors from resident and visitor markets, will form a stream of economic benefits to Miami-Dade County. A portion of the spending due to the new Miami Science Museum operations will be net new to Miami-Dade County.

## **Estimates of Visitor Spending**

The estimate of visitor spending that will occur at the new Miami Science Museum, or as part of a visit, is based on the projections by the Miami Science Museum and the Museum's operations

analysis, and from secondary data on visitor spending in the Greater Miami and Beaches area<sup>6</sup>. This data is used in profiling the likely characteristics and spending patterns of visitors to the Miami Science Museum. Estimated spending patterns were prepared for three types of visitors: tourists on overnight trips using commercial accommodations, people on overnight trips staying with friends and relatives; and local and longer range day trips. Students in groups were excluded from the off-site spending estimates. These data were analyzed by spending category according to typical spending patterns for leisure travelers in this area. Data in **Table County 3** present these data and analyses. Only amounts spent off-site are estimated. On-site spending is factored through the operating budget of the Miami Science Museum. The proposed operating budget of the Miami Science Museum is included within this “baseline direct spending” analysis.

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<sup>6</sup> Data: Synovate Miami 2008.

**Table County 3  
Calculations of Estimated Visitor Spending Potential  
New Miami Science Museum**

<i>Source of Visitation</i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Total</b>
Primary Resident Market - City of Miami	100%	0%	0%	100%
Secondary Resident Market - Outside of City of Miami but within Miami-Dade County	97%	1%	2%	100%
Tourists	10%	65%	25%	100%
<i>Estimated Distribution Of Visitors By Origin <sup>1/</sup></i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Stable Year Total</b>
Primary Resident Market - City of Miami	92,400	-	-	92,400
Secondary Resident Market - Outside of City of Miami but within Miami-Dade County	203,797	2,101	4,202	210,100
Tourists	16,500	107,250	41,250	165,000
<b>Total Attendance without Student Groups</b>	<b>312,697</b>	<b>109,351</b>	<b>45,452</b>	<b>467,500</b>
Students	82,500			82,500
<b>Total Attendance with Student Groups</b>	<b>395,197</b>			<b>550,000</b>
<i>Potential Current Year Per Person Spending (in addition to on-site spending at Miami Science Museum) 2/ 3/</i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Average Per Capita</b>
Accommodations	\$0.00	\$75.00	\$0.00	\$17.54
Food & Beverage (In addition to Miami Science Museum)	10.00	35.00	17.50	16.58
Retail (In addition to Miami Science Museum)	20.00	40.00	30.00	25.65
Ground Transportation (Largely Gas)	12.50	10.00	10.00	11.67
Entertainment/Recreation (In addition to Miami Science Museum)	5.00	10.00	7.50	6.41
Other	10.00	20.00	15.00	12.83
<b>Total</b>	<b>\$57.50</b>	<b>\$190.00</b>	<b>\$80.00</b>	<b>\$90.68</b>
<i>Spending Matrix (In addition to on-site spending at Miami Science Museum)</i>	<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>	<b>Total</b>
Accommodations	\$0	\$8,201,325	\$0	\$8,201,325
Food & Beverage (In addition to Miami Science Museum)	3,126,970	3,827,285	795,410	7,749,665
Retail (In addition to Miami Science Museum)	6,253,940	4,374,040	1,363,560	11,991,540
Ground Transportation (Largely Gas)	3,908,713	1,093,510	454,520	5,456,743
Entertainment/Recreation (In addition to Miami Science Museum)	1,563,485	1,093,510	340,890	2,997,885
Other	3,126,970	2,187,020	681,780	5,995,770
<b>Total</b>	<b>\$17,980,078</b>	<b>\$20,776,690</b>	<b>\$3,636,160</b>	<b>\$42,392,928</b>
<b>Estimate of Current Dollar Stable Gross Operating Expenses For New Miami Science Museum</b>				<b>Future Stable Year, Current \$</b>
<b>Gross Expenditures</b>				
Total Salaries <sup>4/</sup>				\$6,302,273
Fringe / Benefits Costs <sup>5/</sup>				1,223,384
Cost of Goods Sold <sup>6/</sup>				847,207
Other Operating Expenses				10,593,491
<b>Total</b>				<b>\$18,966,355</b>

1/ This analysis utilizes the Miami Science Museum's stabilized year attendance potential of 550,000 and an assumption that 70% of visitors are from the "resident" market and 30% are tourists from outside the resident area, or outside of Miami-Dade County. It is also assumed that 42% of the total visitors are from the "primary" resident market area, or the City of Miami, and that 28% are from outside of the City of Miami but within Miami-Dade County.

2/ Spending data from Visit Florida indicate an average per person daily expenditure of \$245 for overnight visitors to Greater Miami and the Beaches in 2008. It should be noted that these include people in commercial accommodations, day trippers and those staying with friends and relatives. These data are adjusted to reflect the anticipated Miami Science Museum audience and travel patterns assumed to be associated with its visitors.

3/ Visitors on day trips or staying with friends and relatives would have lower spending patterns. Day trip visitors estimated to spend half as much as Hotel / Motel in Food & Beverage, Retail, Entertainment/Recreation and Other. Visitors staying with friends and relatives estimated to spend three-fourths as much as Hotel / Motel in Food & Beverage, Retail, Entertainment/Recreation.

4/ Estimate from FY16 future dollar budget of \$9.16 million for salaries and benefits adjusted to 2010 dollars based on 21.7% inflation rate assumption from 2010 to 2016 from the Miami Science Museum. Assumes benefits are approximately 19.4% of salary cost. Costs assume 93 full-time employees and 62 part-time employees based on data from the Miami Science Museum.

5/ Estimate based on 19.4% of total salaries based on data from Miami Science Museum.

6/ Based on retail sales per attendee of \$3.75 in 2016 and 50% cost of goods sold. Adjusted to 2010 dollars based on 21.7% inflation rate assumption from 2010 to 2016 from the Miami Science Museum.

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

### Location of Spending

Due to the direct economic activity discussed above, additional indirect and induced economic activity occurs in the area. The location in which the spending occurs effects the distribution of total economic activity by geographic area. In this analysis, Miami-Dade County as a whole is the “regional economy.” Data in **Table County 4** provide estimated distribution of visitor spending between the City of Miami and Miami-Dade County, less the City of Miami. These are the total spending estimates for Miami-Dade County. That is, on the day of their visit to the Miami Science Museum, visitors on day-trips and those staying overnight are assumed to make their expenditures for food, beverages, retail, accommodations, transportation and other attractions in Miami-Dade County. As the primary activity for this day, the associated off-site spending is assumed to be due to the Miami Science Museum. (The portion which is “net new” to the County will be discussed later in the analysis and factored into the economic impacts estimate.)

The economic development purpose of the project is to stimulate new spending by visitors in the local economy, both within the new Miami Science Museum and at other businesses in the City of Miami, and in other areas of Miami Dade County. The sources of the direct impacts of the Miami Science Museum and the subsequent rounds of spending (“multiplier effects”) in the local and regional economy are:

- ◆ The direct spending by the Miami Science Museum through its operating budget. This would occur in the City of Miami, in other areas of Miami Dade County and outside of the County.
- ◆ The spending of residents and visitors at the new Miami Science Museum for goods and services in conjunction with their visit. This includes overnight visitors and day-trip visitors. It should be noted that these expenditures are for the day of the visit to the new Miami Science Museum. To maintain a conservative analysis, visitor expenditures that occur on other days of the trip are not included in this evaluation.

In total, \$42.4 million in current dollar off-site direct visitor spending is projected to occur annually in Miami-Dade County by museum visitors in conjunction with their visit. The Miami Science Museum is proposed to have a budget of approximately \$19.0 million in the 2010 value of the dollar, including retail cost of goods sold (COGS). The Museum estimates that three quarters of the operating budget would be expended in City of Miami (this includes personnel) and it is estimated an additional 15 percent of the operating budget will be expended elsewhere in Miami-Dade County.

**Table County 4  
Estimated Direct Visitor Spending Potential in the City of Miami  
and Other Areas of Miami-Dade County,  
New Miami Science Museum**

<b>Distribution of Miami Science Museum Operations Spending</b>				<b>Total</b>
City of Miami	75%			\$14,224,766
Miami-Dade County, Less City of Miami	15%			\$2,844,953
Outside of Miami-Dade County	10%			\$1,896,635
<b>Total Operations Spending</b>	<b>100%</b>			<b>\$18,966,355</b>
<b>Miami Science Museum Visitor Spending</b>		<b>Off-Site Spending</b>		
		<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>
				<b>Total</b>
Accommodations		\$0	\$8,201,325	\$0
Food & Beverage (In addition to Miami Science Museum)		\$3,126,970	\$3,827,285	\$795,410
Retail (In addition to Miami Science Museum)		\$6,253,940	\$4,374,040	\$1,363,560
Ground Transportation (Largely Gas)		\$3,908,713	\$1,093,510	\$454,520
Entertainment/Recreation (In addition to Miami Science Museum)		\$1,563,485	\$1,093,510	\$340,890
Other		\$3,126,970	\$2,187,020	\$681,780
<b>Total Off-Site Spending</b>		<b>\$17,980,078</b>	<b>\$20,776,690</b>	<b>\$3,636,160</b>
<b>Estimated Distribution of Off-Site Visitor Spending</b>				
		<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>
<b>Accommodations</b>				
City of Miami			40%	
Miami-Dade County, Less City of Miami			60%	
<b>Food &amp; Beverage</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Retail</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Ground Transportation</b>				
City of Miami	40%	50%	50%	
Miami-Dade County, Less City of Miami	60%	50%	50%	
<b>Entertainment/Recreation</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Other</b>				
City of Miami	60%	60%	60%	
Miami-Dade County, Less City of Miami	40%	40%	40%	
<b>Estimated Direct Spending</b>				
		<b>Day Trips</b>	<b>Hotel/Motel</b>	<b>Stay with Friends &amp; Relatives</b>
				<b>Total</b>
<b>Off-Site Spending in Miami-Dade County</b>				
Accommodations		\$0	\$8,201,325	\$0
Food & Beverage (In addition to Miami Science Museum)		3,126,970	3,827,285	795,410
Retail (In addition to Miami Science Museum)		6,253,940	4,374,040	1,363,560
Transportation Museum)		3,908,713	1,093,510	454,520
Other		1,563,485	1,093,510	340,890
		3,126,970	2,187,020	681,780
<b>Total Off-Site Spending in Miami-Dade County</b>		<b>\$17,980,078</b>	<b>\$20,776,690</b>	<b>\$3,636,160</b>
<b>Operations Spending Miami Science Museum in Miami-Dade County</b>				<b>\$17,069,719</b>
<b>Total Miami-Dade County Spending</b>				<b>\$59,462,647</b>

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc.

**Net New Direct Miami Science Museum Visitor Spending in Miami-Dade County Economy**

The analyses in **Table County 5** estimate the percentage of visitor spending that would be net new to the Miami-Dade County economy. The Miami Science Museum's annual operations spending is considered net new, as it is a unique entity in the county whose spending would not be readily replaced by that of any other entity in Miami-Dade County. For visitor spending, this analysis distinguishes net new spending that occurs in the area's economy due to the project, from spending that might otherwise occur. This distinction accounts for "substitution" of spending at the Miami Science Museum for other spending opportunities in Miami-Dade County. The Miami Science Museum will draw on existing tourism markets; but will help to grow these markets and expand spending by area visitors because of its unique offerings. As an expanded and new high-profile educational and cultural attraction, the Miami Science Museum will help to grow the area's economy and will attract net new spending and subsequent multiplier effects. Overall, of the visitor spending associated with a visit, a major portion is attributed to net new spending at both the local level. A reasonable estimate is 45 percent of such associated spending on the day of the museum visit is attributable to the major daily activity -- the Miami Science Museum visit.

Input-output modeling theory also indicates that only the retail margin component of a producer's price (the portion captured by the local retail or restaurant establishments) will have a significant impact to the local economy. The remaining components of the producer's price go to manufacturing (cost of goods sold), transportation, and warehousing costs outside of the economic unit being analyzed. Therefore, margins for selected spending categories were estimated based on the Bureau of Economic Analysis' input-output commodity composition tables of personal consumption expenditures in producers' and purchasers' prices, along with the consultant's judgment. The application of retail margins to consumer expenditures in certain expenditure categories has the effect of lowering the amount of new dollars that are recirculated in the economic unit under evaluation for a given consumer expenditure.

Data in Table 5 summarize the estimates of net new spending as corrected for retail margins for Miami-Dade County. Given these analyses and assumptions, the project is estimated to create approximately \$31.2 million in net new direct expenditures as corrected for retail margins in Miami-Dade County. These are the components of direct spending with multiplier effects. The resulting multiplier effects plus the overall direct net new spending constitutes the total economic impacts.

**Table County 5**  
**Estimated Economic Impacts of the New Miami Science Museum**  
**on Miami-Dade County**

	Estimated Total Spending	Total Spending Adjusted to Retail Margin	Estimated Percent Net New to Miami-Dade County	Estimated Net New Spending in Miami-Dade County	Spending in Miami-Dade County Adjusted to Retail Margin
<b>Estimated Miami Science Museum Operating Expenditures in Miami-Dade County</b>					
	\$17,069,719	\$17,069,719	100%	\$17,069,719	\$17,069,719
<b>Estimated Direct Off-Site Spending in Miami-Dade County</b>					
Accommodations	\$8,201,325	\$8,201,325	45%	\$3,690,596	\$3,690,596
Food & Beverage (Retail Margin 75%)	7,749,665	5,812,249	45%	3,487,349	2,615,512
Retail (Retail Margin 50%)	11,991,540	5,995,770	45%	5,396,193	2,698,097
Transportation (Retail Margin 25% on gasoline which is 75% of total)	5,456,743	2,387,325	45%	2,455,534	1,074,296
Entertainment/Recreation	2,997,885	2,997,885	45%	1,349,048	1,349,048
Other	5,995,770	5,995,770	45%	2,698,097	2,698,097
<b>Total Off-Site</b>	<b>\$42,392,928</b>	<b>\$31,390,324</b>		<b>\$19,076,817</b>	<b>\$14,125,646</b>
<b>Total Direct Operating Expenditures and Off-Site Spending</b>	<b>\$59,462,647</b>	<b>\$48,460,043</b>		<b>\$36,146,537</b>	<b>\$31,195,365</b>
<b>Economic Impacts - Miami-Dade County</b>					
	<i>Multipliers</i> <sup>1/</sup>				
<b>Total Indirect &amp; Induced</b>	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment</b> <sup>2/</sup>		
Accommodations	1.7759	0.6140	13.9557		
Food & Beverage	1.7760	0.6291	20.4922		
Retail	1.7862	0.7722	24.5884		
Transportation (Gasoline Stations)	1.6843	0.5276	15.4178		
Entertainment/Recreation	1.9207	0.5357	14.4767		
Other <sup>3/</sup>	1.9661	0.8795	17.6684		
Museums, Historical Sites, Zoos & Parks <sup>3/</sup>	1.9661	0.8795	17.6684		
	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment</b>		
Accommodations	\$6,554,046	\$2,266,064	51		
Food & Beverage	4,645,146	1,645,529	54		
Retail	4,819,287	2,083,491	66		
Transportation (Gasoline Stations)	1,809,488	566,813	17		
Entertainment/Recreation	2,591,184	722,629	20		
Other <sup>3/</sup>	5,304,728	2,372,874	48		
Miami Science Museum Operations	33,560,781	15,012,174	302		
<b>Total Indirect &amp; Induced</b>	<b>\$59,284,661</b>	<b>\$24,669,574</b>	<b>558</b>		
<b>Plus Net New Direct Effects</b>					
<b>Total In-County Spending Miami Science Museum Operating Spending</b>					
<b>Net new direct Miami-Dade County Spending</b>	<b>Expenditures</b>	<b>Earnings</b>	<b>Employment</b>		
Accommodations	\$3,690,596	\$1,276,025	29		
Food & Beverage	3,487,349	1,235,383	41		
Retail	5,396,193	2,332,901	74		
Transportation (Gasoline Stations)	2,455,534	769,184	23		
Entertainment/Recreation	1,349,048	376,222	10		
Other <sup>3/</sup>	2,698,097	1,206,894	24		
Miami Science Museum Operations <sup>4/</sup>	17,069,719	6,302,273	155		
<b>Total Direct</b>	<b>\$36,146,537</b>	<b>\$13,498,882</b>	<b>356</b>		
<b>Total Direct, Indirect &amp; Induced</b>	<b>\$95,431,198</b>	<b>\$38,168,455</b>	<b>914</b>		

1/ See text for discussion of multipliers. Multipliers from a custom run of the Minnesota IMPLAN® Group, Inc.

2/ In jobs per million dollars of expenditures, multipliers are based on the 2008 value of the dollar adjusted to February 2010 by inflation.

3/ For museum operations and for off-site visitor spending for other spending, the multiplier category: Museums, historical sites, zoos, and parks for Miami-Dade County is used as most representative of such activities.

4/ Employment at Museum preliminary personnel requirement estimate. Employment includes full-time and part-time positions.

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

### Total Economic Impacts of the New Miami Science Museum

The annual impacts to the Miami-Dade County economy, as noted above, are from direct (first round) net new spending to a given area, and subsequent rounds of spending within the economies. The total economic effect includes direct, indirect and induced expenditures; wages and income; and employment in the regional and local economies.

Data in Table 5 also present the estimates of total on-going annual economic impacts of the Miami Science Museum on Miami-Dade County. These are presented in current-dollar value. As the multiplier effect works its way through the local economy, the net direct economic activity due to the new Miami Science Museum will generate a total annual impact estimated at \$95.4 million in expenditures, of which \$38.2 million in wages will be generated. A total of 93 full-time and 62 part time employees for a total of 155 on-site jobs are planned for the new facility as Miami Science Museum employees or as outsourced activities employees when it is completed. The total annual direct, indirect and induced effects of visitor spending outside of the museum and the Museum's operations would result in a total of 914 jobs<sup>7</sup> supported in Miami-Dade County. These Miami Dade County economic impacts include the economic activity that would occur in the City of Miami. These County economic impacts are not additive with estimates of the economic impacts specific to the City of Miami.

The total economic impacts are summarized by data in **Table County 6**. Data in Table County 6 is derived and summarized from calculations in Tables County 3, County 4, and County 5.

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<sup>7</sup> Total jobs include full time and part time employment, assumed to be in ratio with the distribution of jobs between actual full time and part time for the area under consideration as a whole.

**Table County 6  
Summary of Estimated Economic Impacts of the New Miami Science Museum  
on the Miami-Dade County Economy**

<i>Estimated Stable Year Attendance Potential</i>	550,000
<b><i>Direct Spending by Miami Science Museum and Off-Site Visitor Spending</i></b>	
	<b><u>Total Spending In Miami-Dade County</u></b>
<b>Miami Science Museum Operating Expenditures</b>	<b><u>\$17,069,719</u></b>
<b><i>Estimated Direct New Off-Site Spending</i></b> <sup>1/</sup>	
Accommodations	\$8,201,325
Food & Beverage	7,749,665
Retail	11,991,540
Transportation	5,456,743
Entertainment/Recreation (In addition to Miami Science Museum)	2,997,885
Other	<u>5,995,770</u>
<b>Total Off-Site</b>	<b><u>\$42,392,928</u></b>
<b>Total Direct On-Site and Off-Site Expenditures</b> <sup>2/</sup>	<b>\$59,462,647</b>
<b><i>Total Direct, Indirect and Induced Effects of Visitor Spending on Expenditures, Earnings and Employment on the Geographic Area Evaluated</i></b>	
	<b><u>Miami-Dade County</u></b>
Expenditures	\$95,431,198
Earnings	\$38,168,455
Employment (permanent) <sup>2/</sup>	914

1/ Not all off-site spending is net new. Some spending would occur in other locations without the influence of the Miami Science Museum.

2/ Employment includes full-time and part-time jobs.

Note: Analysis for Miami-Dade County includes City of Miami for both direct spending and for multiplier effects. All estimates are in current dollars. The economic model includes rounding that is reflected in individual results, factors and totals.

Source: ConsultEcon, Inc. and as noted.

**COMMUNITY AND QUALITY OF LIFE BENEFITS**

**Expansion of the Regional Tourism Economy and Infrastructure**

Beyond its potential to create direct and multiplier effects on the local economy, the Miami Science Museum will contribute to the profile of Miami as a visitor destination, thus benefiting

the area overall. Not only will the new museum provide an additional destination for inducing travelers to visit Miami or extend their stay, but it will also help to transform Museum Park into a popular and well known south Florida destination. The Miami Science Museum has the potential to be a stimulus to tourism revenues, making a significant contribution in expanding Miami's overall tourism economy while educating, inspiring and entertaining both its residents and visitors.

The community development and educational benefits of the new Miami Science Museum may have the most profound and long-lasting impacts on the community. This project will enhance the knowledge of and interest in science and technology. The Miami Science Museum estimates that 82,500 students will attend in school groups annually- the vast majority will be from Miami-Dade County. In addition, many will attend while with their families. It will improve community self-esteem and citizenship. The new museum will expand the educational attractions base in Miami-Dade County and be a source of community pride and identity. The new Miami Science Museum will enhance Miami-Dade County as a place to live and work, thus improving all aspects of the local economy and community.

March 26, 2010

Mr. Frank Steslow, Chief Operating Officer  
Miami Science Museum  
3280 South Miami Avenue  
Miami, FL 33129  
*By Email:* fsteslow@miamisci.org

**Re: Economic Impacts of the New Miami Science Museum**

Dear Mr. Steslow:

ConsultEcon, Inc. has prepared an analysis of the economic and fiscal benefits to the City of Miami of the Miami Science Museum's new facility in Museum Park. This letter summarizes the findings of our analysis.

**FISCAL BENEFITS**

The term "fiscal benefits" refers to the positive impact of the new Miami Science Museum on the finances of the City of Miami. The benefits that it will provide to the City will include initial non-recurring benefits from project construction and once open, recurring benefits from ongoing operations.

**Non-Recurring Benefits**

The new Miami Science Museum will be developed by a not-for-profit organization. The project will be located on a site owned by the City of Miami. It has been defined by the City of Miami Commission as a "project of a government agency" and it is anticipated that it will receive a waiver from permit and impact fees. However, in the event the waiver is not granted, the following fees discussed below would be paid.

**Building Permit Fees**

The City of Miami typically charges \$0.25 building permit fees per square foot for non-residential projects with the fee applying to all space within the structure including its structured parking. The new Miami Science Museum facility will contain 175,000 square feet of enclosed space (not including structured parking and outdoor areas), that would result in a \$43,750 building permit fee if such fees are imposed. Additional fees would be paid by the project's roofing, electrical, plumbing, mechanical and elevator contractors; however, the plans for the project are not sufficiently formulated to estimate these fees at this time. Finally, the project will pay a solid waste surcharge of \$10,000.

**Impact Fees**

Typically, non-residential projects constructed within the City of Miami are required to pay impact fees for police, fire and general services. In addition, supplemental fees are applicable for those projects located within the portion of the City where development activity is governed by the

Downtown Miami Development of Regional Impact. The amounts of these and/or any other applicable impact fees have not established.

## **Recurring Benefits**

### **Ad Valorem Taxes**

As a not-for-profit entity, Miami Science Museum would not be required to pay ad valorem taxes on its new facility to the City of Miami, Miami-Dade County or the Miami-Dade County Public School District.

### **Non-Ad Valorem Revenues**

The City of Miami collects utility taxes and franchise fees from the providers of telephone, electric and other services based on their revenues. Upon application, non-profit organizations are exempt from utility service and franchise fees and utility excise taxes. To the extent that additional taxes imposed to cover the cost of operating the City of Miami Storm-Water Management System would apply, the amount collected would be dependent on the amount of these services used. The amount to be used cannot be quantified at this time. The City will also collect parking surcharges from museum visitors and museum staff while working that park a vehicle within a City facility or at a city parking meter.

Many of the visitors to the new Miami Science Museum will make expenditures for food, beverage retail goods and overnight accommodations in conjunction with their visit. These would be taxable purchases and the City of Miami will receive a portion of the total tax proceeds per established State and County revenue sharing formulas. These tax types include: Tourist Development Taxes, Sales and Use Tax, Motor Fuel Tax, Cigarette Tax. Where these purchases are made, and the type of establishment, will affect the amount of revenue that flows to the City of Miami. Data regarding point of purchase and type of establishment (per the tax laws) to support an analysis of this type is not available. Therefore, an estimate of the amount is not made for this report. These taxes in general would occur due to the increased economic activity generated due to the new Miami Science Museum.

## **ECONOMIC BENEFITS**

The term “economic benefits” relates to the positive impact that development of the new Miami Science Museum facility will have on the City’s economy as a whole and is not specific to its finances. The project will generate non-recurring economic benefits during construction and annual recurring economic benefits from operations.

### **Non-Recurring Benefits**

It is estimated that approximately 63 percent of the \$300 million development budget for the new Miami Science Museum will be spent in the City of Miami. This will produce an overall economic impact of \$489 million in expenditures (including direct, indirect and induced economic activity), including \$305 million due to hard cost expenditures and \$184 million due to soft cost expenditures. These estimates include multiplier effects.

Museum development expenditures estimated to occur in the City of Miami will include an estimated \$98 million for construction labor (including direct, indirect and induced earnings), representing 2,123 full-time and part-time jobs, with an average annual wage of approximately \$46,300. It is likely that a portion of the construction workers will be residents of the City of Miami.

## **Recurring Benefits**

### **Visitor Expenditures and Miami Science Museum Operations**

The Miami Science Museum estimates that 550,000 people will visit its new facility in a stabilized year of operation, which is the basis for this analysis. The direct off-site spending by visitors to the new Miami Science Museum as part of their visit to the Museum is estimated at \$42.4 million and the Museum's direct annual gross operating expenditures in the City of Miami is estimated at \$14.2 million, including costs of goods sold. Much of this direct spending will be net new spending in the City. When multiplier effects are factored, the total direct, indirect and induced net new annual economic impact would be \$60.5 million in expenditures.

### **Employment**

A total of 93 full-time and 67 part time employees for a total of 155 on-site jobs are planned for the new facility as Miami Science Museum employees or as outsourced activities employees when it is completed. The total annual direct, indirect and induced effects of visitor spending outside of the museum and the Museum's operations would result in a total of 635 full-time and part-time jobs and earnings of \$26.6 million in the City of Miami.

## **SUMMARY**

Beyond its potential to create direct and multiplier effects on the City of Miami, other local economies and the State, the new Miami Science Museum will contribute to the expanded profile of Miami as a visitor destination. The new Miami Science Museum has the potential to be a stimulus to tourism revenues, making a significant contribution in expanding the City of Miami's overall tourism economy while educating, inspiring and entertaining both its residents and visitors.

Respectfully submitted,

Robert E. Brais  
Vice President

Elena Kazlas  
Principal