

Economic Impact Analysis of the
John Wayne Airport
Capital Improvement Program

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Prepared For

John Wayne Airport

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Executive Summary

The purpose of this study by Orange County Business Council is to analyze the economic impact on Orange County resulting from the John Wayne Airport Capital Improvement Program. The analysis uses two different economic impact models which estimate both direct and indirect effects resulting from the \$543,192,032.00 in construction costs circulated into the economy.

First, Orange County Business Council implemented the Regional Input-Output Modeling System (RIMS II) which uses multipliers established by the Bureau of Economic Analysis and the total construction costs of the Capital Improvement Program to estimate the economic impacts. Using the RIMS II model, estimated:

- Final-demand output is \$1,093,662,838.02
- Final-demand earnings is \$281,156,195.76
- Final-demand employment is 6,670 (jobs created)

Also implemented was the IMPLAN Professional Model which has multipliers established by the Minnesota IMPLAN Group, Inc. Combined with the total construction costs, it yields the economic impacts associated with the Capital Improvement Program. The total effect which encompasses direct, indirect, and induced effects is estimated to be \$1,195,674,300.84.

The IMPLAN model also has Type 1 effect which estimates only direct and indirect effects at \$854,278,108.73 and Type SAM effect which estimates direct, indirect, and induced effects; whereas induced effects account for social security, income tax leakage, institution savings, and commuting; is at \$1,195,679,732.76.

Using two different models helps ensure that the estimated economic impacts are accurate. The results found by implementing these two models show the economic benefit to Orange County between \$1.1 billion and \$1.2 billion as a result of the Capital Improvement Program investments.

John Wayne Airport

Orange County is an attractive home for business and has grown dramatically over the past decades into the economically diverse and vibrant community it is today. JWA has played an important role in facilitating the growth of the nation’s fifth largest county. In 2005, JWA had a total output of \$5.61 billion; a payroll of \$1.28 billion; sustained 42,162 full-time equivalent employees; and had \$496.16 million in state and local government tax components of the airport’s total impacts. Currently, the airport serves nearly nine million commercial passengers a year.

John Wayne Airport Capital Improvement Program

JWA’s \$543 million Capital Improvement Program includes construction of a new 280,000+ square foot multi-level terminal with six new bridged gates (for a total of 20), a 2,200 space parking structure, a Central Utility Plant, a South Remain-Over-Night commercial aircraft parking area, two commuter terminals, and substantial improvements to the existing Terminals A and B. These improvements are designed to accommodate passenger levels identified in the “Settlement Agreement” document defining facility and operational parameters for John Wayne Airport.

John Wayne Airport’s CIP does not rely on the use of general fund tax dollars. Instead the CIP is being funded through a variety of sources including, but not limited to: (i) Internal Airport Revenues (\$201.9 million); (ii) General Airport Revenue Bonds funded by operations (\$78.5 million); (iii) General Airport Revenue Bonds funded by Passenger Facility Charges (\$132.2 million); and (iv) Passenger Facility Charge Revenue Reimbursement of Project Costs (\$48.7 million).

Starting with less than \$1 million in expenditures in 2005, the Capital Improvement Program will peak with almost \$200 million in spending in 2010.

John Wayne Airport Capital Improvement Program Yearly Construction Expenditures

The chart below indicates the yearly construction expenditures for the John Wayne Airport Capital Improvement Program.



Economic Impact Analysis

For the John Wayne Airport Improvement Program Economic Impact Analysis we used two economic impact analysis models to ensure accuracy of the estimates. The two models are: (1) the Regional Input-Output Modeling System (RIMS II) Economic Impact Analysis Model; and (2) the IMPLAN Professional Economic Impact Analysis Model (Version 2).

While both models measure the economic impact of construction expenditures from the John Wayne Airport Capital Improvement Program, they do so using slightly different methods. As a result, each individual impact estimate will differ slightly; the end total economic impact will be similar. Please refer to the glossary on page 13 of this report to gain a better understanding of terminology and aspects of these models.

For this study, Orange County Business Council used the RIMS II construction multipliers: (i) Final-Demand Output multiplier (which estimates total direct, indirect, and induced impacts), (ii) Final-Demand Earnings multiplier (which estimates the payroll from subsequent jobs created), (iii) Final-Demand Employment multiplier (which estimates the number of jobs created). These multipliers combined with the total construction costs help show the economic impact attributed to the Capital Improvement Program.

Using the IMPLAN Pro Model, construction multipliers used were: (i) Direct Effect multiplier, (ii) Indirect Effect multiplier, (iii) Induced Effect multiplier, (iv) Total Effect multiplier, (v) Type 1 multiplier, and (vi) Type SAM multiplier. Definitions for each of these multipliers can be found in the glossary.

The RIMS II Model and the IMPLAN Model have been used by both public and private sectors. For example, federal government agencies use them to study the local impact of government regulations on specific industries and to assess the local economic impacts of federal actions such as military base closings. State and local governments have used the multipliers to estimate the regional economic impacts of government policies and projects and events, such as firms locating within their state, or to assess the impacts of tourism. Businesses and private consultants have used multipliers to estimate the economic impacts of a wide range of projects (building a new sports facility), of natural disasters (Hurricane Katrina); or of special events (national political conventions). Having both models provides slightly different information and allows us to double-check the results since they should be similar in their estimates of total economic impact.

RIMS II Economic Impact Analysis Model

The Regional Input-Output Modeling System (RIMS II version 3.2) provided by the Bureau of Economic Analysis (BEA) is used in this analysis in order to understand the economic impact that the Airport Capital Improvement Program will have on the surrounding areas. This model creates multipliers using state and local personal income data and national input-output accounts data to study how one industry’s production affects the production of other industries in an economy and how many additional jobs are created by the industry.

The multipliers provided are the final-demand multipliers for output, earnings, and employment. These three sets of multipliers measure the economic impact of a change in final demand, earnings, or employment on the region’s economy. Choosing which multiplier to use depends on the accessibility of estimates of the initial changes in final demand, earnings, and employment. If all information needed is accessible, then different multipliers can be used and outcomes can be compared for accuracy; all impact estimates should be consistent.

The advantages of using RIMS II are: (i) the accessibility of the main data sources makes it possible to estimate regional multipliers without the use of expensive surveys; (ii) the level of industrial detail helps avoid aggregation errors; (iii) multipliers can be compared across areas based on a consistent set of estimating procedures throughout the nation; and (iv) multipliers are updated to reflect recent local-area wage-and-salary and personal income data.

Below are the RIMS II multipliers for the construction industry for Orange County. The Construction multipliers were selected since the Capital Improvement Program includes capital construction.

RIMS II Construction Multipliers:

Final-Demand Output Multiplier:	2.0134
Final-Demand Earnings Multiplier:	.5176
Final-Demand Employment Multiplier:	12.2798

*Determined by Bureau of Economic Analysis

IMPLAN Professional Economic Impact Analysis Model

The IMPLAN Professional (Version 2) is an economic model that allows the assessment of change in overall economic activity as a result of some corresponding change in one or more activities. IMPLAN was first developed by the Forest Service of the U.S. Department of Agriculture and has since been managed by the Minnesota IMPLAN Group, Inc (MIG).

Like the RIMS II model, the IMPLAN model is an input-output model which collects detailed information on transactions between each pair of sectors and arranges them in matrices describing the flow of economic activity between sectors. Because these two models are fairly similar, the end results they produce are fairly similar, thus ensuring accuracy.

IMPLAN uses direct, indirect, induced, and total effect multipliers as well as Type 1 and Type SAM multipliers with the construction expenditures to determine the economic effects. Direct impacts are equal to project expenditures. Indirect impacts are second round expenditures on goods and services made by the project’s support industries. Induced impacts are the changes that occur to household spending as incomes are affected by a project’s direct and indirect impacts. The total impact output comprises the direct, indirect, and induced impacts while the Type 1 multipliers are only the direct and indirect impacts and Type SAM multipliers are the direct, indirect, and induced effect, where induced effects are based on Social Security and income tax leakage, institution savings, and commuting; therefore the Type SAM and Total Effect impacts are very similar.

Below are the IMPLAN multipliers for the construction industry for Orange County. The Construction multipliers were selected since the Capital Improvement Program includes capital construction.

IMPLAN Construction Multipliers:

Direct Effect Multiplier:	1
Indirect Effect Multiplier:	.57275
Induced Effect Multiplier:	.628463
Total Effect Multiplier:	2.2012
Type 1 Multiplier:	1.5727
Type SAM Multiplier:	2.20121

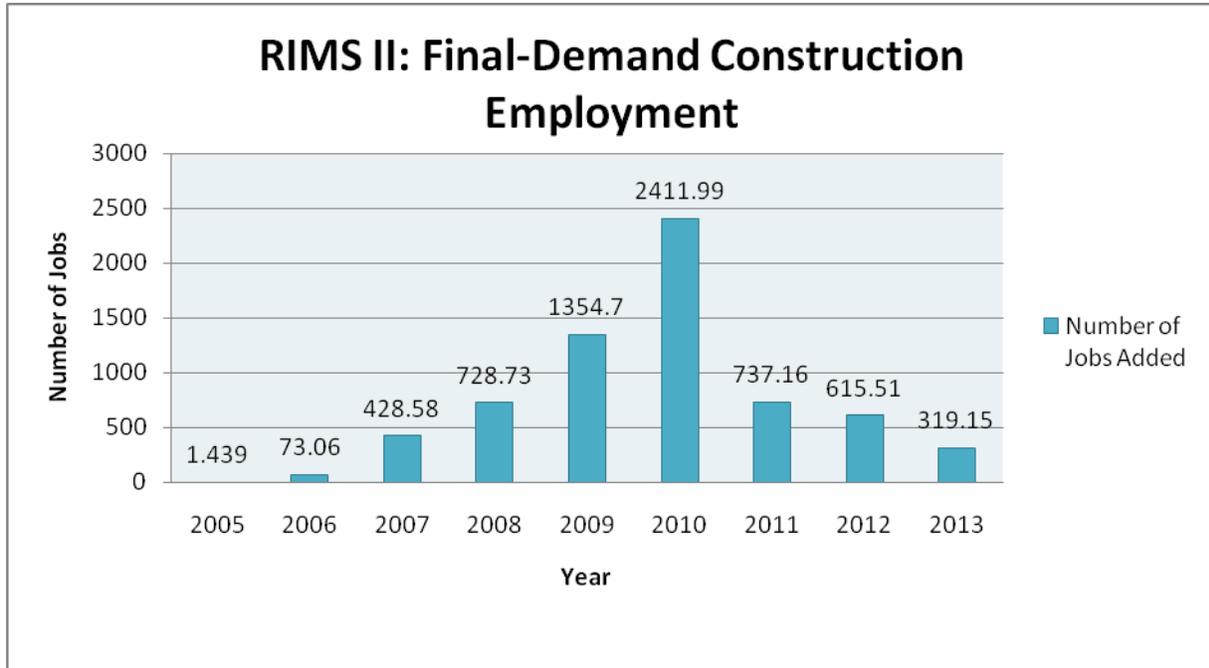
*Determined by MIG

Annual Construction Expenditure Outputs Using RIMS II



Assuming \$543,192,032 for construction costs, and taking into account the 2.0134 final-demand output multiplier, the total final-demand construction output for JWA’s Capital Improvement Program is \$1,093,662,838.02. The year with the highest cost of construction, and the highest amount of output with \$395,466,324.84, is 2010. In other words, for every dollar invested in the Airport’s Capital Improvement Program, \$2.0134 will be circulated back into the economy. This explains why each yearly output is more than double the annual expenditures from construction and why total output is more than double the total construction expenditure.

Annual Employment Added Using RIMS II



Using the RIMS II Final-Demand Construction Employment multiplier of 12.2798 with the total cost of JWA’s Capital Improvement Program we are able to see, on an annual basis, how many jobs will be created relative to the cost expenditures of construction. Approximately 36% of the total 6,670 jobs will be created in 2010. Analysis shows that for every \$1 million spent on construction, 12.2798 jobs will be created. With a total of \$543 million in expenditures, multiplied by the 12.2798 final-demand employment multiplier, the result is 6,670 jobs created.

Annual Earnings Using RIMS II



In order to calculate the total earnings that would result from the Capital Improvement Program, we took the final-demand construction earnings multiplier (.5176) and multiplied it with the total annual expenditures yielding \$281,156,195.76 in earnings. Our results show that, like the other tables, 2010 will be the year in which there is the largest cost expenditure and therefore the largest year for earnings. This means every dollar spent on construction will generate \$.5176 in average household earnings in the local area. Orange County will have the bulk of \$281,156,195.76 in total earnings due to the Capital Improvement Program's \$543,192,032 construction cost.

The final-demand earnings helps put into perspective the payroll associated with all different jobs affected by the Capital Improvement Program. This provides perspective on how the surrounding community will directly benefit from the construction.

Total Airport Improvement Program Effects Using IMPLAN



The IMPLAN model estimates the direct effect of JWA’s Capital Improvement Program to be \$543,192,032. The indirect effect is \$311,113,236.33. The induced effect is \$341,376,094.01. These totals are established by taking the corresponding construction multipliers (listed on page 6) and multiplying them by the total construction expenditures. This brings the total effect or output to \$1,195,674,300.84 based on defined construction expenditures for the Capital Improvement Program. This means that for every \$1 spent on construction expenditures there will be \$2.2012 circulated back into the economy. These outcomes are very similar to those found using the RIMS II software and therefore are considered to represent fairly accurate estimates.

The Type 1 and Type SAM multipliers simply provide different ways to look at economic impacts that would arise. The Type 1 multiplier (1.5727) results give an impact of \$854,278,108.73 and the Type SAM multiplier (2.20121) gives an impact of \$1,195,679,732.76. As previously discussed, these impacts are sums of the direct, indirect, and induced effects with some slight modifications (explained in the glossary on page 13). Therefore, the outcomes are very similar to the total estimated impacts.

John Wayne Airport Capital Improvement Program Economic Impact Analysis Numbers:

Total Construction Cost of Capital Improvement Program

Total Construction Cost:	\$543,192,032.00
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IMPLAN Multipliers:

Direct Effect Multiplier:	1
Indirect Effect Multiplier:	.57275
Induced Effect Multiplier:	.628463
Total Effect Multiplier:	2.2012
Type 1 Multiplier:	1.5727
Type SAM Multiplier:	2.20121

Estimated Economic Impact Using IMPLAN Model

	Direct Effect:	Indirect Effect:	Induced Effect:	Total Effect:	Type 1:	Type SAM:
Total Impact:	\$543,192,032.00	\$311,113,236.33	\$341,376,094.01	\$1,195,674,300.84	\$854,278,108.73	\$1,195,679,732.76

RIMS II Multipliers:

Final-Demand Output Multiplier:	2.0134
Final-Demand Earnings Multiplier:	.5176
Final-Demand Employment Multiplier:	12.2798

Estimated Economic Impact Using RIMS II Model

	Final-Demand Output	Final-Demand Earnings	Final-Demand Employment (Jobs)
Total Impacts:	\$1,093,662,838.02	\$281,156,195.76	6,670.319

*Total Impact Estimates found by multiplying corresponding multipliers with the total construction cost.

Impacting the Local Economy

(RIMS II Model vs. IMPLAN Model)

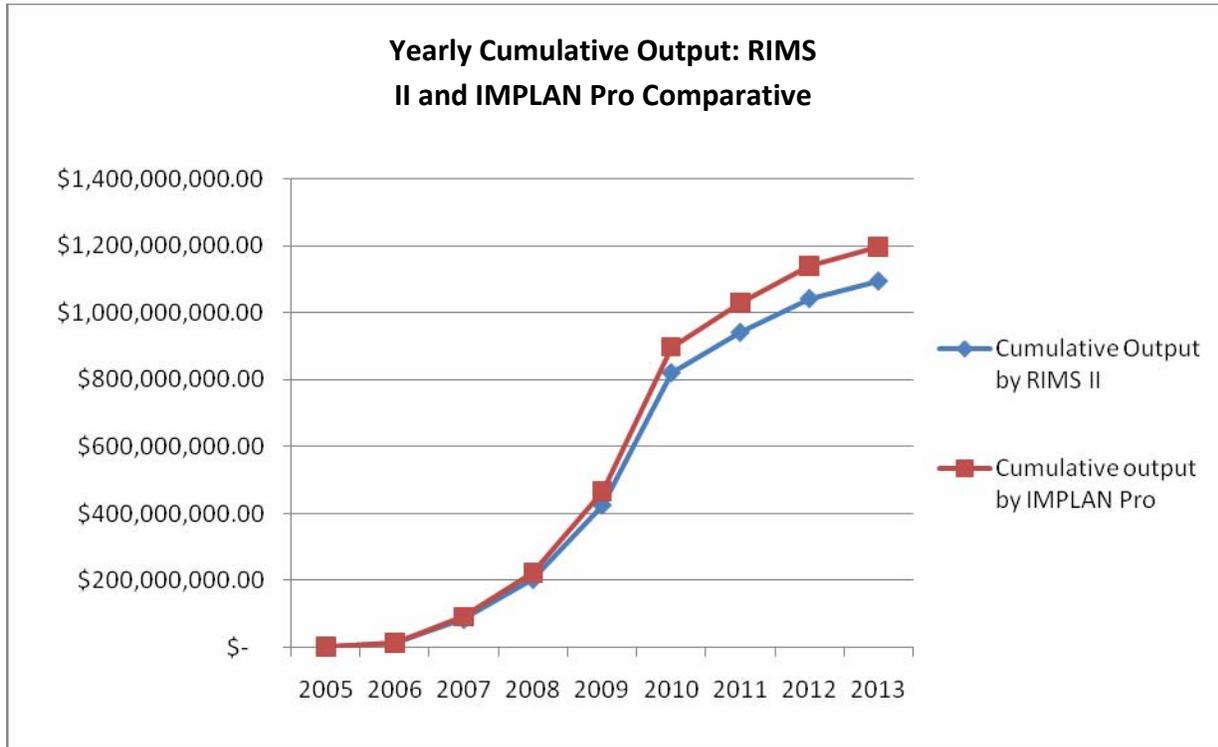
By using the RIMS II model provided by the BEA and the IMPLAN Model provided by MIG, we are able to see the specific economic impacts that would result from JWA's Capital Improvement Program. With the multipliers given, along with the JWA cash flow provided by JWA, we were able to find the total output, total employment creation, total earnings, and other impacts created by the improvement program.

With over one half-billion dollars being invested in the Capital Improvement Program, there are sure to be extensive economic impacts. The RIMS II expected total output will be over one billion dollars, with \$2.0134 in output for every \$1 spent on construction. The final-demand employment (total number of jobs per \$1 million change in the final-demand) shows that as a result of construction expenditures, a total of 6,670 jobs will be created. The final-demand earnings, which are the total household earnings per \$1 change in final-demand, will be \$281,156,195.76. This is a result of the .5176 final-demand earnings multiplier.

The IMPLAN model also puts the total impact over one billion dollars, but estimates approximately \$102,011,462.82 more in total output than the RIMS II model did. This means that for every \$1 spent on construction \$2.2012 will be circulated back into the economy. Indirect and induced impacts are each estimated to be well over \$300,000,000. This means that local businesses, as well as households, will be positively affected due to the economic transactions associated with the Capital Improvement Program.

Both models give fairly similar economic impacts, yet each was used to analyze different aspects of the Capital Improvement Program. While the RIMS II model gives more detailed information regarding employment and earnings, the IMPLAN model shows impacts in terms of economic activity between different sectors. Analyzing both models and identifying their specific outcomes enables the user to gain a more complete picture of the impacts associated with the Capital Improvement Program. The overall total impact is similar between both models and therefore demonstrates the accuracy of the projected impacts.

This graph represents each yearly cumulative output but both the RIMS II model and the IMPLAN Pro model.



Glossary:

Final-Demand Construction Output (RIMS II): the basic multiplier from which all the other RIMS II multipliers are derived. Multiplied by the construction expenditures this will give the economic output resulting from the Airport Improvement Program.

Final-Demand Construction Employment (RIMS II): indicates the change in employment in the construction industry resulting from a \$1 million expenditure in the construction industry.

Final-Demand Construction Earnings (RIMS II): indicates the change in earnings in the construction industry resulting from the estimated construction expenditures.

Direct Impact (IMPLAN): the output, earnings, and employment generated by businesses and government associated with the Capital Improvement Program.

Indirect Impact (IMPLAN): the output, earnings, and employment created by businesses which are not located within the airport but who rely on the airport for their enterprise.

Induced Impact (IMPLAN): the additional economic activity created by successive rounds of local spending; direct and indirect activity which creates more economic activity as employees spend their income on local goods and services and businesses purchasing goods or services from other businesses.

Type 1 Multiplier (IMPLAN): this gives the direct and indirect effects only; that is original expenditures resulting from the impacts plus indirect effects of industries buying from industries. This is calculated by dividing the direct plus indirect effects by the direct effect.

Type SAM (Social Accounting Matrix) Multiplier (IMPLAN): this is the direct, indirect, and induced effects where the induced effect is based on information in the social account matrix. It accounts for social security and income tax leakage, institution savings, and commuting.

Multipliers: attempt to estimate how much a one-time or sustained increase in economic activity in a particular region will be supplied by industries located in that region; they account for inter-industry relationships within regions.

Information Sources

- 1) John Wayne Airport Fiscal Year 2008-09 Business Plan-
<http://ocair.com/newsandfacts/reports/2008-09JWABusinessPlan.pdf>
- 2) John Wayne Airport 2008 Annual Report-
<http://ocair.com/newsandfacts/reports/AnnualReports/2008AnnualReport.pdf>
- 3) John Wayne Airport Improvement Program-
<http://ocair.com/Improvements/default.htm>
- 4) John Wayne Airport 2005 Economic Impact Report-
<http://ocair.com/newsandfacts/reports/economicimpactbrochure.pdf>
- 5) John Wayne Airport 2007 Passenger Survey-
<http://ocair.com/newsandfacts/reports/2007JWAPassengerSurvey.pdf>
- 6) U.S. Department of Commerce, Bureau of Economic Analysis-
<http://www.bea.gov/regional/rims/index.cfm>
- 7) Minnesota IMPLAN Group, Inc.-
<http://implan.com/v3/>