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**Florida Department of Transportation  
Central Florida Commuter Rail Transit Project**

**Economic and Fiscal Impact  
Analysis of Future Station  
Transit Oriented Development**

**Lynx Station**  
Orange County, Florida

**Summary Report**  
Revised January 2009

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Florida Department of Transportation  
Central Florida Commuter Rail Transit (CFCRT)

**Economic and Fiscal Impact Analysis of Future Station  
Transit Oriented Development (TOD)**

**Lynx Station**

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# 1 Executive Summary - Lynx TOD Impact

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## Background

The 61.5 mile, 17 station Central Florida Commuter Rail Transit (CFCRT) project will provide the opportunity not only to move people more efficiently, but also to build new, walkable, transit oriented communities around selected stations, as well as strengthen existing communities around others.

In order to coordinate land use and transportation, FDOT reached out in November 2006, to agencies, major stakeholders and jurisdictions along the proposed project corridor. One part of the process involved holding a series of charrettes with local stakeholders. The sketch-level Transit Oriented Development (TOD) concepts developed for each of the 17 stations, and other charrette results were compiled in FDOT's Transit Oriented Development Workshop Sketchbook, (Summer 2007), and in the Supplemental Land Use Document (September 2007), submitted in support of the New Starts application for the Initial Operating Segment (IOS) of the Central Florida Commuter Rail Transit project.

## Overview: Fiscal and Economic Impacts of Potential Future TOD - Lynx Station

The purpose of this study is to provide a high-level analysis of economic impacts that could potentially accrue as a result of the construction of 17 Transit Oriented Development stations within the communities along the Central Florida Commuter Rail Transit alignment.

A four-part analysis was conducted to determine the fiscal and economic impacts of the potential future TOD around the proposed Lynx Station in Orange County. The analysis was conducted on the future development potential spread across 400 land parcels totaling 355 acres within ½ mile radius of the station and includes:

- Potential future property values within the study area.
- Potential number of permanent jobs within the proposed future development.
- Potential numbers of direct, indirect, and induced jobs and earnings created in the area during construction. (Direct spending represents the immediate project construction expenditures. Indirect impacts represent the economic impacts resulting when construction companies purchase materials, supplies and services from other firms. Induced impacts reflect the benefits to retailing and other businesses when construction workers spend their earnings in the study area.)
- Potential direct, indirect, and induced employment and earnings created in Seminole, Orange, Volusia, and Osceola counties from permanent jobs. These earnings and jobs reflect an increase in economic activity and overall wealth in the area from the new permanent jobs (retail and commercial).

In order to find approximate potential land and building values for the potential Lynx station area development, existing comparable TOD community was used as a proxy: The Plaza at 189 South Orange Avenue located in Orlando, Florida. The characteristics of this development are comparable with the future land uses for the Lynx station area community, and therefore serve as a good benchmark for this study. All dollar values in the report are presented in real \$2008 unless otherwise noted.

## Potential future property values

Using the comparable development in Orlando, Florida to serve as a “prototype” for this study, the potential value of the study area development at TOD build-out was estimated. With construction of the rail line, appropriate land use policies and resumed economic growth, total parcel value could reach \$3.2 billion<sup>1</sup> in 2028, with \$61 million in tax revenues in that year. This compares to a total parcel value forecast of \$2.2<sup>2</sup> billion in 2028 and tax revenues of \$41 million, under the no-TOD scenario.

## Potential direct, indirect and induced jobs and earnings from construction

The construction of future development, at the indicative scale and type for the study area, will inevitably have an impact on the local economy due to an increase in demand for labor, and an increase in spending on supplies and materials. The US BEA RIMS II multipliers were applied to predict direct, indirect, and induced jobs and earnings within Orange and three neighboring counties: Seminole, Volusia, and Osceola, during the construction lifetime. The analysis forecasts that future TOD could contribute up to \$260 million in household earnings and 6,375 person-year jobs to the study area over the construction period.

## Potential permanent jobs and economic impacts

Finally, considering increased commercial density within the study area, an estimate was made of potential permanent jobs within the future TOD. With the addition of new office and retail space to the existing parcels in study area, the TOD could attract up to 2,275 permanent jobs within ½ mile of the station. In addition, these new jobs and earnings will have impacts on the local economy, similar to those previously described for construction. Using US BEA RIMS II multipliers, an estimate was made of future direct, indirect, and induced permanent jobs and earnings from the new development. The future development’s permanent economic impacts could include up to \$144 million in annual earnings to the surrounding counties and up to 5,500 permanent jobs.

Exhibit 1 shows a summary of the study results. Methodology for each calculation, and a more detailed analysis of the results are included in the subsequent sections of this report.

**Exhibit 1: Summary Table of Lynx Station TOD Impact Study Results**

<b>Lynx Station <i>Orange County</i></b>	
Future Study Area Property Value Potential (M \$2008)	\$3,200
Added Property Tax Collections 2028 (M \$2008)	\$20
Direct, Indirect, Induced Employment (Construction Jobs)	6,375
Earnings in Construction Sector (M \$2008)	\$260
Potential Permanent Jobs Created	2,275
Direct, Indirect, Induced Employment (From Perm. Jobs)	5,500
Direct, Indirect, Induced Earnings (From Perm. Jobs in M \$2008)	\$144

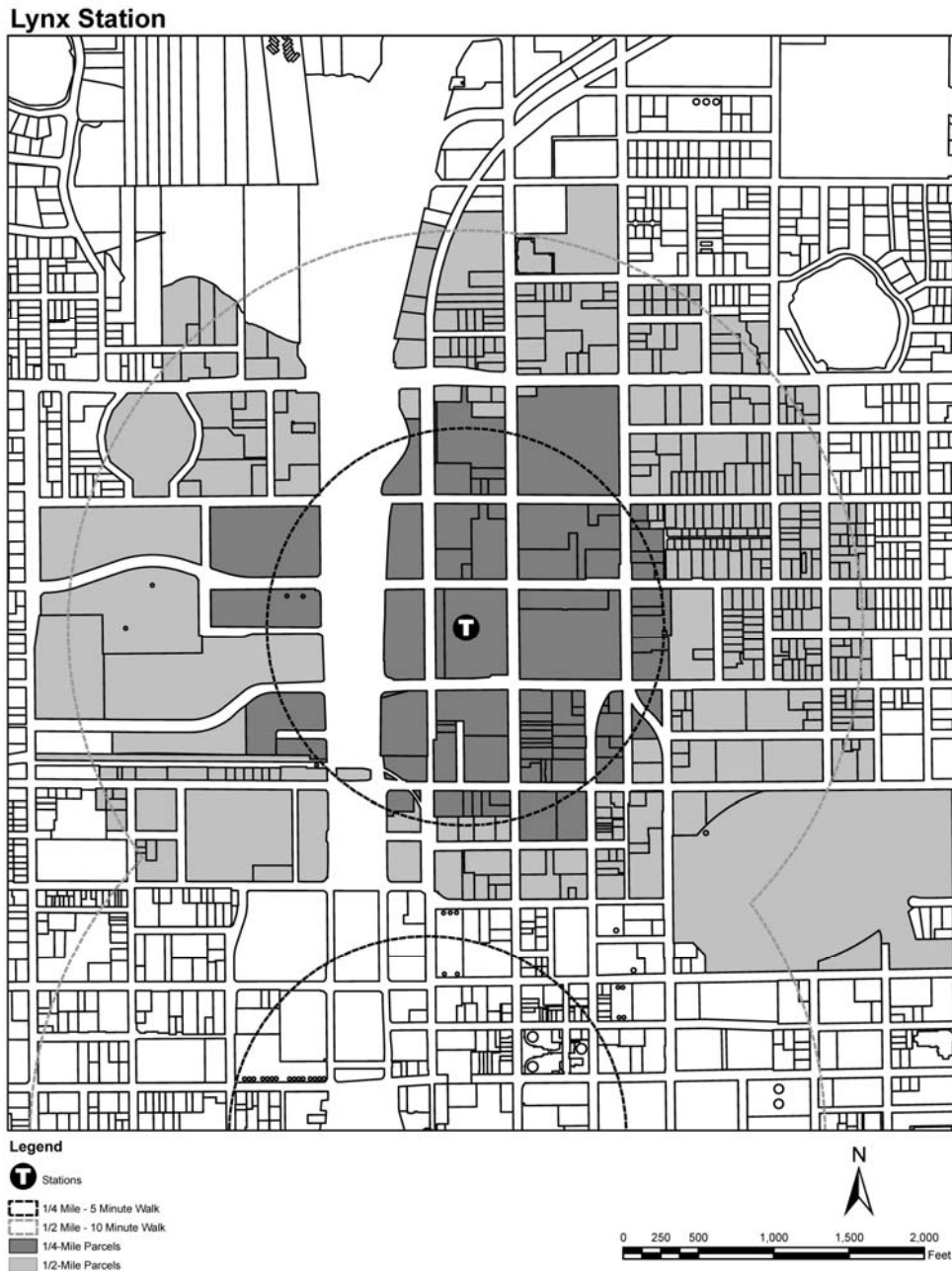
<sup>1</sup> 2008 dollars. Assumes a real annual growth in property value of 2%

<sup>2</sup> 2008 dollars. Assumes a real annual growth in property value of 2%

## 2 Study Overview

A four-part analysis was conducted to determine the fiscal and economic impacts of potential transit-oriented development in Orange County, Florida. Impacts include future tax revenues from property in the new development within ½ mile of the proposed station, employment and earnings, as well as induced and indirect employment and earnings and the economic impacts of this ½ mile area on Orange and its neighboring counties, including Seminole, Osceola, and Volusia. Exhibit 2 shows the general location of the proposed CFCRT station, and the study area parcels, with the ½ and ¼ mile radii from the station.

Exhibit 2: Map of Lynx Station TOD Study Area



The four-part analysis can be summarized as follows:

- Determination of potential property values under the TOD and no-TOD scenarios (and corresponding property taxes).
- RIMS II analysis of potential regional jobs and earnings created during the construction of the future TOD. This analysis estimates the total impact of additional construction spending on the Orange County study area, including direct construction. Induced and indirect employment and earnings result when businesses supply goods and services to support construction, and also when construction workers spend on retail goods, services, and other consumption items. (RIMS II analysis employs RIMS II multipliers, which are generated by the U.S. Bureau of Economic Analysis from an input output economic model created specifically for the study area.)
- Potential permanent jobs attracted to the study area by future commercial development.
- RIMS II analysis of additional regional jobs and earnings created as a result of the increase in permanent employment.

A summary of the study assumptions is included at the end of this report.

## 3 Fiscal Analysis of Property Tax Revenues

### 3.1 Methodology

The following steps were taken to evaluate future property values and taxes for the Lynx TOD study area in Orange County:

- 1) Determine current property taxes and tax rates for study area;
- 2) Find predicted real growth rate in property value for Orange County;
- 3) Determine potential future value of study area parcels (and corresponding taxes); and
- 4) Forecast baseline property value (no-TOD scenario) and compare to future property value (TOD scenario) over the next twenty years.

The four assessments and findings are summarized on the following page.

#### 3.1.1 Determination of Study Area Current Property Taxes and Tax Rates

With data available from the Orange Tax Roll Archive (from the County's Property Appraiser's website)<sup>3</sup>, a determination was made of the total taxes collected from current development on the study area's parcels in 2007. In order to perform this analysis, the database was queried for a number of the parcels in the study area and recorded the total assessed value in 2007, taxes paid, and the corresponding tax percentage paid on property value was recorded. The data was used to find an average percentage of assessed value paid in property tax. This data is presented in Exhibit 3 below.

**Exhibit 3: Property Tax Summary for Orange County, 2008**

Total Assessed Value	Taxes Paid	Average Percent of Assessed Value Paid in Taxes
\$1,470,000,000	\$27,900,000	1.90%

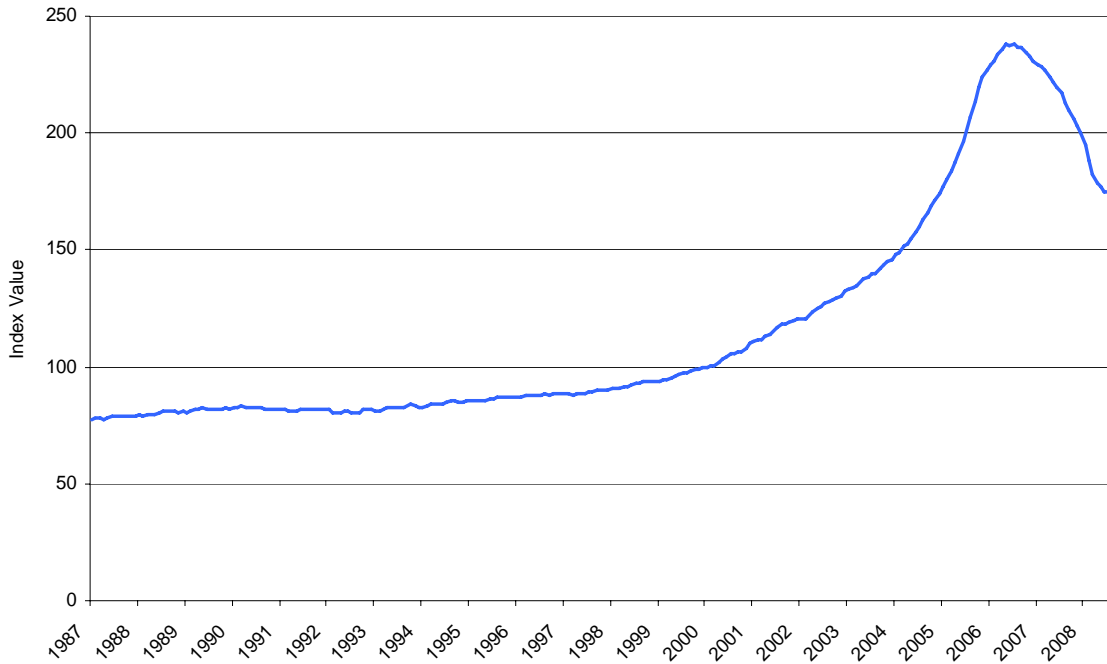
#### 3.1.2 Predicting the Real Growth Rate in Property Value for Orange County

Until recently, property values in Florida have grown at a relatively constant annual rate. As shown in Exhibit 4 on the following page, real property values in Tampa, Florida were increasing steadily until 2001, at which time growth in property value began to increase at an extremely high rate. Associating most of this growth with the recent real estate 'bubble', the Case-Shiller Home Price Index<sup>4</sup> change from 1987 to 2000 was chosen as a proxy for home value growth in Central Florida. The results of a compound annual growth calculation using the index data give a 1987 to 2000 CAGR of 2%, which was applied to baseline development as well as new construction in the analysis.

<sup>3</sup> [http://www.ocpaf.org/searches/parcel\\_form.html](http://www.ocpaf.org/searches/parcel_form.html)

<sup>4</sup> [http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices\\_csmahp/2,3,4,0,0,0,0,0,0,1,1,0,0,0,0,0.html](http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices_csmahp/2,3,4,0,0,0,0,0,0,1,1,0,0,0,0,0.html)

**Exhibit 4: Case-Shiller Home Price Index (Tampa, FL)<sup>5</sup>**



### 3.1.3 Determination of Future Parcel Value with TOD

The potential future TOD in the study area will be entirely different in character as well as density from the parcel area that currently exists. While most of the land is currently developed, it is under-utilized compared to its potential use.

To achieve transit supportive density, most of the future TOD parcels would allow for mixed-use and mixed development, as well as higher population density. A future TOD scenario within a ½ mile radius of the station could potentially include:

- 2,400 residential dwellings (Approximately 2.4 million square feet);
- 1.3 million square feet of commercial/office space;
- 137,000 square feet of retail space; and
- Plaza and open space.

Considering the consequential policy, regulatory, and other development issues, an 85% efficiency rate was assumed on the TOD build-out scenario. In other words, this analysis assumes that only 85% of the future TOD scenario described above would be implemented.

To predict future parcel value for improved property within the TOD study area, an existing similar development was utilized as a prototype to determine potential future parcel value (including the value of the underlying land as well as built improvements). The Plaza, located at 189 South Orange Avenue (at the southwest corner of Lake Eola) in Orlando, Florida, is a relatively new development with similar characteristics to the potential Lynx TOD. Property value data for The Plaza is used as a proxy for possible future property values in Volusia.

<sup>5</sup> Measures the nominal value of the residential real estate market in the United States

Averages were developed from the data per gross square foot (GSF) for commercial, retail, and residential development. These unit value estimates were then applied to the TOD development program to estimate future increases in assessed values within the study area. This approach overcomes the lack of representative financial data for the development study area. As the Lynx Station would be in a more urban environment, the assumed values per square foot are higher than the values for developments in a more rural area. An average of 1,000 square feet per dwelling unit for the new residential development was assumed.

The relevant characteristics of The Plaza are described below:

- Value of improved residential property: \$215 per GSF<sup>6</sup>;
- Value of improved Commercial/ Office property: \$245 per GSF<sup>7</sup>; and
- Value of improved Retail property: \$245 per GSF<sup>8</sup>.

As described above, these assumptions were applied to generate potential property value in the study area.

### **3.1.4 Forecast Baseline and Future Development Property Value (with and without TOD) Over the Analysis Period**

With or without future TOD development, the parcel value in the study area is expected to experience a real increase in value over time. Using a baseline growth in property value of 2% the "baseline" forecast property value is calculated per year over the next 20 years (Exhibit 5).

The potential property value was estimated for a TOD build-out scenario within the study area, using the land use and cost assumptions summarized in Section 3.1.3. As future development would occur in phases, the following was assumed:

- Phase 1: 30% of future development (on-line in 2013)
- Phase 2: 40% of future development (on-line in 2018)
- Phase 3: 30% of future development (on-line in 2023)

As property value in the area will experience a real increase over time (in addition to the value generated from future development), the same annual percentage increase in property value (2%) is applied to the TOD study area as is applied to the study area without TOD.

## **3.2 Results of Potential Future Property Value Analysis**

Using the methods and assumptions described above, the analysis suggests a future parcel value of \$3.2 billion in 2028 for the proposed development. Exhibit 5 on the following page shows the baseline property value forecast and the build scenario potential property value over time.

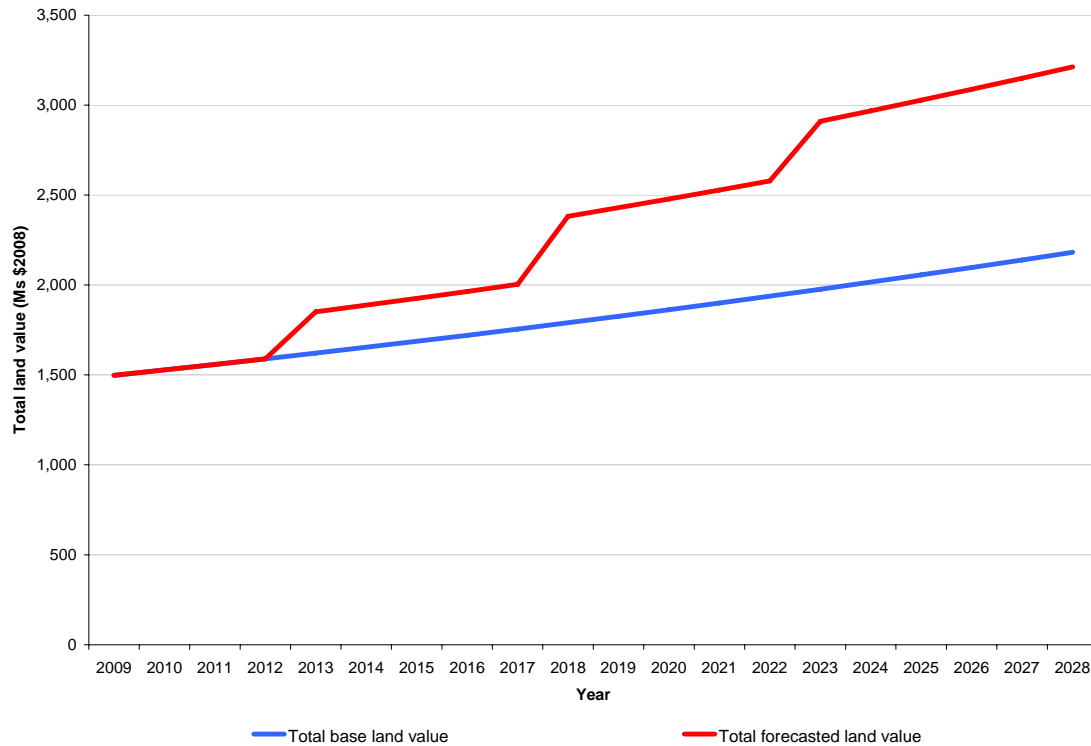
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<sup>6</sup> Orange County Property Appraiser's Website. <http://www.ocpaf1.org/>

<sup>7</sup> Bilbao, Richard. *South Florida Business Journal*. November 2008. "Distressed office properties result in auctions – and cheaper options." Assumes 2% escalation from 2007 value.

<sup>8</sup> Bilbao, Richard. *South Florida Business Journal*. November 2008. "Distressed office properties result in auctions – and cheaper options." Assumes 2% escalation from 2007 value.

**Exhibit 5: Total Parcel Value for Base Case and Development Scenarios (M \$2008)**



As shown in the preceding figure, the potential TOD would add significant value to property in the study area, with parcel value about 50% higher than the base-year value by year 2028.

Exhibit 6 shows the amount of property tax for both the baseline no-build scenario and for the proposed development at four different time periods in the analysis (assuming property tax rates remain constant over the forecast period at approximately 1.90% of assessed parcel value). As construction of the potential development is completed and the different phases come on-line, the difference between the baseline scenario and the build scenario becomes greater.

**Exhibit 6: Potential Property Taxes for Baseline and Future Development Scenarios for Select Years (M \$2008)**

Year	2013	2018	2023	2028
Baseline Property Taxes (M \$2008)	31	34	38	41
Potential Property Taxes (M \$2008)	35	45	55	61

## 4 Economic Impact Analysis

### 4.1 Construction Related Economic Impacts

#### 4.1.1 Methodology

To perform this analysis, the following steps were taken:

- Estimate total construction cost for the future TOD.
- Perform RIMS II analysis to determine regional impacts in earnings and employment for the study area over the period of TOD construction.

The assessments and results are summarized below.

#### 4.1.2 Estimated Total Construction Costs

To provide an estimate of construction costs for the entire future development, RSMeans 'CostWorks' Software was used. The software provided the following results for construction costs in the Orlando area:

- Cost per square foot of residential construction: \$124
- Cost per square foot of commercial construction: \$115

The above estimates are representative of the cost to construct the proposed buildings only, and would likely increase with the inclusion of land acquisition, public infrastructure, and other fringe development costs. Because the inclusion of any additional items would vary the per-square foot costs greatly, the basic costs were utilized for structures in order to provide a baseline estimate of total potential TOD construction costs.

Exhibit 7 summarizes future construction costs by study area development type.

**Exhibit 7: Summary of Construction Costs for Development Area**

Land Use	Cost per Sq. ft of Construction	Total Cost (M \$2008)
Residential	123	251
Commercial/Office	115	131
Retail	115	13
<b>Total Construction Cost</b>		<b>\$396</b>

This total construction cost estimate of \$396 million is used for the RIMS II Economic Analysis described in Section 4.1.3.

#### 4.1.3 RIMS II Economic Impact Analysis

The total future TOD construction cost estimated in Section 4.1.2 represents total spending on construction within the study area. The amount of \$396 million includes spending on materials and supplies (such as wood, concrete, and tools), labor (for construction workers, managers, and engineers), and the leasing of heavy equipment and machinery.

Direct spending on construction materials and supplies, as well as construction employment and associated wages paid to construction laborers, together generate multiple rounds of spending which ripple throughout the economy. For example, when contractors purchase cement from

local suppliers, those suppliers must in turn purchase raw materials, transportation services, accounting services, etc. The cement suppliers also pay their own workers, who (like the construction workers) purchase goods and services within the local economy. Such multiple rounds of “inter-industry” purchases (including household spending by wage earners) result in total economic activity which is a multiple of the direct, first round of spending. These multiplier effects, which are mathematically derived from an input-output (IO) model, are the basis for the regional economic multipliers used in this analysis.

In order to estimate the total direct, indirect, and induced earnings and employment, US Bureau of Economic Analysis (BEA) RIMS II input-output multipliers (final demand multipliers) have been applied to the direct construction cost, which represents the increase in final demand in the construction sector. The results of the analysis are summarized in Exhibit 8.

**Exhibit 8: RIMS II Results - Total Direct, Indirect, and Induced Earnings / Employment from Construction**

Project Cost (increase in final demand to the construction sector)	Total Regional Impacts	
396 (M \$2008)	Earnings (M \$2008) 260	Employment (jobs) 6,375

Direct employment refers to jobs created to construct the development, including construction workers and related support professions (e.g. engineers). Similarly, direct earnings include the earnings from jobs needed to construct the development. Indirect effects capture the “backward” linkages from the economic activity created by the project directly. For example, the construction of a large development creates employment in the residential construction, heavy construction equipment, manufacturing, and concrete industries. Induced effects include jobs and earnings derived from the “forward” spending of households, resulting from their increased earnings. For example, construction workers building the development will use their additional earnings to purchase food, clothing, insurance, and other items. This spending creates jobs and earnings in many sectors across the economy. The analysis of additional employment (which, for construction, would be measured in terms of person years of employment) assumes that there is sufficient capacity in the labor force to absorb additional employment (or additional hours of work).

It is important to note that the results of this phase of the analysis are not permanent jobs or earnings; they are temporary additions to the economy during the construction period.

## 4.2 Impact of Permanent Jobs Captured in the Area

### 4.2.1 Permanent Jobs Created

In addition to jobs created during construction, the development would attract a significant number of permanent jobs once completed. The addition of retail and office space will create many employment opportunities throughout the surrounding area. Using industry averages, the development could potentially employ 2,275 individuals within the study area (1/2 mile radius of the new station). Exhibit 9 on the following page shows the break-down of the expected employment per square foot of development space, and the corresponding number of permanent jobs created.

**Exhibit 9: Permanent Jobs in Study Area**

Land Use	Employees / Sq. ft	Total Jobs
Commercial/Office Space	525 <sup>9</sup>	2,175
Retail	1,250 <sup>10</sup>	90
<b>Total</b>		<b>2,275</b>

#### 4.2.2 Economic Impact of Permanent Jobs

The permanent jobs described in Section 4.2.1 will have an economic impact on the TOD and beyond, similar to that from construction jobs. Since these jobs are permanent, so will be the economic impacts that result from this increased employment. Using the average hourly wages across all industries for Florida in 2007, as given by the Bureau of Labor Statistics, the total direct, indirect, and induced earnings and employment from new permanent jobs were calculated. The US BEA RIMS II direct effect multipliers were used to complete the calculations. See Exhibit 10 for the results of the analysis.

**Exhibit 10: RIMS II Results - Total Direct, Indirect, and Induced Earnings / Employment from Permanent Jobs in Study Area**

Type of Space	Regional Impacts	
	Earnings (M \$2008)	Employment (jobs)
Commercial/Office Space	137	5,350
Retail	7	150
<b>Total</b>	<b>144</b>	<b>5,500</b>

An increase in permanent jobs within the study area would create an increase in employment in other sectors (and a corresponding increase in earnings) when the newly employed individuals spend their earnings in the area.

<sup>9</sup> Energy Information Administration. 2003. "Total and Means of Floorspace, Number of Workers, and Hours of Operation for Non-Mall Buildings, 2003".

[http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed\\_tables\\_2003/2003set1/2003html/b1.html](http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set1/2003html/b1.html)

<sup>10</sup> IBID

Florida Department of Transportation  
Central Florida Commuter Rail Transit (CFCRT)

**Economic and Fiscal Impact Analysis of Future Station  
Transit Oriented Development (TOD)**

**Study Assumptions**

1. The build-out values of future TOD developments were estimated using the following proxy developments or methods (methods/developments vary by TOD county location):
  - a. Winter Park Station – Recent average sales prices of commercial and residential property in Winter Park, Florida
  - b. Orange County Stations – The Plaza mixed use complex - South Orange Avenue, Orlando Florida
  - c. Osceola County, Volusia County, and Seminole County Stations – Colonial Town Park mixed use development - Lake Mary, Florida
2. The following phasing for development construction in all stations is assumed:
  - a. Phase 1: 30% of future development (on-line in 2013)
  - b. Phase 2: 40% of future development (on-line in 2018)
  - c. Phase 3: 30% of future development (on-line in 2023)
3. The construction cost per square foot of residential and commercial construction was obtained from the RS Means 'CostWorks' Software database. Costs include structure only and do not represent the full cost of construction including machinery rental, fit-out, etc. Values used were:
  - a. Cost per square foot of residential construction: \$124
  - b. Cost per square foot of commercial and retail construction: \$115
4. Senior cost estimators at PB reviewed these values and confirmed they are reasonable assumptions. Due to the downturn in the national and global economy, construction costs will likely increase very slowly, if at all, for the duration of the economic slowdown.
5. The size of an average residential dwelling unit was approximated at 1,000 GSF<sup>11</sup>. As building codes tend to impose upper limits on the size of a residential dwelling unit, a dwelling unit much less than 1,000 square feet as is viewed to be economically untenable. Larger units are possible, but on average, the 1,000 GSF is viewed as reasonable and reflective of local development and planning conditions. This is consistent with consumer preferences for smaller housing choices, including apartments, townhomes, lofts, and live-work units, for a third of the overall housing demand, reported by Reconnecting America's Center for Transit Oriented Development.
6. US Bureau of Economic Analysis (BEA) RIMS II Multipliers were used to forecast additional employment and wage earnings from indirect and induced economic impacts

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<sup>11</sup> An evaluation of Colonial Town Park residential units (used as a prototype development for this study) showed the size of a residential unit ranged from 500-1500 square feet. The average size for a residential unit (which ranged from a studio to a 2 bedroom/2 bathroom with a garage) was 1000 square feet as calculated by PB.

7. Nominal wage rates, property value growth rates, and ad valorem tax rates were assumed to remain constant over the study period.
8. Sufficient capacity is present in the labor force in order to absorb additional employment attracted by the development.
9. Property values for build and no-build scenario parcels grow at 2% (in real terms) per year independent of changes in value from development. This number is derived from an analysis of compound annual growth in real property value in Tampa from 1987 through 2001. Tampa data were used instead of County data, because the latter extended back only through 1995, a period reflecting excessive and unrepresentative property value appreciation, including the effects of the housing bubble. Given the downturn in the market, PB viewed the average County growth rates to be too high to forecast long-term growth in the future.
10. An 85% efficiency rate was applied to the TOD build-out scenario.
11. An analysis period of 20 years (2009-2028) was used for benefit calculations.
12. TOD properties are sold immediately as construction for each phase finishes.