



Interoffice Memorandum

AGENDA ITEM

August 24, 2018

TO: Mayor Teresa Jacobs
— AND —
Board of County Commissioners

FROM: Jon V. Weiss, P.E., Director
Community, Environmental and Development
Services Department

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SUBJECT: September 11, 2018 – Work Session
Transportation Impact Fee

Orange County collects impact fees to provide necessary infrastructure to support new growth for transportation, schools, law enforcement, fire, and parks. Pursuant to Orange County Code, Sec. 23-99, the County shall review the transportation impact fee technical study and code every five years to review construction costs, necessary transportation improvements, and to ensure the County does not charge more than the development's pro rata share for the reasonably anticipated costs of improvements necessitated by the new growth. The currently adopted study is dated September 5, 2012, as amended December 27, 2012, with the last amendment to the Code on September 23, 2014.

The County engaged its consultant in June 2017 to update the transportation impact fee technical study and ordinance. The consultants' draft technical report is attached. At the work session on September 11, 2018, staff will provide a background on the transportation impact fee, review the importance of impact fee collections in delivering the County's Capital Improvement Program, summarize the previous current technical studies, and provide the Board an overview of the next steps required for adoption.

The backup documentation for this item has been delivered under separate cover. It may also be assessed online as part of the eAgenda by clicking [here](#).

This item is for informational purposes, only; no action is required by the Board.

JVW/RN:am
Attachment

c: Ajit Lalchandani, County Administrator
Chris Testerman, Assistant County Administrator
Jim Harrison, Assistant County Administrator
Mark Massaro, Director, Public Works Department

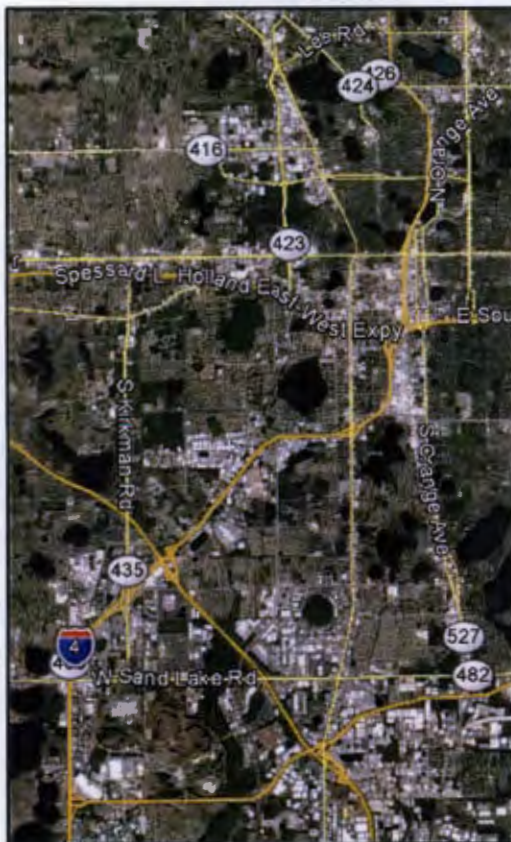
Orange County Transportation Impact Fee Update Study

DRAFT REPORT

April 30, 2018



planning | design | engineering



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**ORANGE COUNTY
TRANSPORTATION IMPACT FEE UPDATE STUDY**

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I. Introduction

Orange County's Transportation Impact Fee was originally adopted in 1985 and went into effect in 1986 to assist the County in providing adequate transportation facilities for expected growth. The technical study supporting the fee levels was last updated in 2012. As part of the 2012 update, in addition to updating roadway-based transportation impact fee, a separate multi-modal fee rate was calculated for the designated Alternative Mobility Area (AMA). The Board of County Commissioners adopted the 2012 study at a discounted rate.

This report updates both the roadway and multi-modal impact fee variables to reflect changes to the cost, credit, and demand components since 2012. In addition, this study addresses the following:

- Fee variation by geographic area;
- Fee levels under needs-based and asset-based approaches;
- Fee reductions for mixed-use developments based on internal capture; and
- A tool for potential fee reductions for certain types of land uses.

Consistent with the State of Florida Impact Fee Act requirements, the information used to develop the Orange County Roadway Impact Fee schedules is based on the most recent and localized data available.

Legal Overview

Since the early 1980's, in Florida, the legal basis and standards related to the assessment, collection and use of impact fees has primarily been established through case law. In 2006, the Florida Legislature approved the "Florida Impact Fee Act" incorporating into Statutes the authorization for local and county governments to assess, collect and use impact fees provided that a series of specific standards were met. Generally speaking, and down to the simplest of definitions, for impact fees to be assessed, collected or used, the impact fee must comply with the "dual rational nexus" test, which requires that the fee:

- Be supported by a study demonstrating that the fee levels are proportionate in amount to the need created by new development paying the fee; and
- Be spent in a manner that directs a proportionate benefit to new development, typically accomplished through a list of capacity-adding projects included in the County's Capital Improvement Plan, Capital Improvement Element, or another planning document/Master Plan.

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The “Florida Impact Fee Act,” which recognized impact fees as “an outgrowth of home rule power of a local government to provide certain services within its jurisdiction.” § 163.31801(2), Fla. Stat. The statute – concerned with mostly procedural and methodological limitations – did not expressly allow or disallow any particular public facility type from being funded with impact fees. The Act did specify procedural and methodological prerequisites, such as the requirement of the fee being based on most recent and localized data, a 90-day requirement for fee changes, and other similar requirements, most of which were common to the practice already.

More recent legislation further affected the statewide impact fee framework in Florida, including the following:

- **HB 227 in 2009:** The Florida legislation statutorily clarified that in any action challenging an impact fee, the government has the burden of proving by a preponderance of the evidence that the imposition or amount of the fee meets the requirements of state legal precedent or the Impact Fee Act and that the court may not use a deferential standard.
- **SB 360 in 2009:** Allowed fees to be decreased without the 90-day notice period required to increase the fees and purported to change the standard of legal review associated with impact fees. SB 360 also required the Florida Department of Community Affairs (now the Department of Economic Opportunity) and Florida Department of Transportation (FDOT) to conduct studies on “mobility fees,” which were completed in 2010.
- **HB 7207 in 2011:** Required a dollar-for-dollar credit, for purposes of concurrency compliance, for impact fees paid and other concurrency mitigation required. The payment must be reduced by the percentage share the project’s traffic represents of the added capacity of the selected improvement (up to a maximum of 20 percent or to an amount specified by ordinance, whichever results in a higher credit).
- **HB 319 in 2013:** Applied mostly to concurrency management authorities, but also encouraged local governments to adopt alternative mobility systems using a series of tools identified in section 3180(5)(f), Florida Statutes, including:
 1. Adoption of long-term strategies to facilitate development patterns that support multi-modal solutions, including urban design, and appropriate land use mixes, including intensity and density.
 2. Adoption of an area-wide level of service not dependent on any single road segment function.
 3. Exempting or discounting impacts of locally desired development, such as development in urban areas, redevelopment, job creation, and mixed use on the transportation system.
 4. Assigning secondary priority to vehicle mobility and primary priority to ensuring a

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safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit.

5. Establishing multi-modal level of service standards that rely primarily on non-vehicular modes of transportation where existing or planned community design will provide adequate level of mobility.
6. Reducing impact fees or local access fees to promote development within urban areas, multi-modal transportation districts, and a balance of mixed-use development in certain areas or districts, or for affordable or workforce housing.

Also, under HB 319, a mobility fee funding system expressly must comply with the dual rational nexus test applicable to traditional impact fees. Furthermore, any mobility fee revenues collected must be used to implement the local government's plan, which served as the basis for the fee. Finally, under HB 319, an alternative mobility system, that is not mobility fee-based, must not impose upon new development any responsibility for funding an existing transportation deficiency.

The following paragraphs provide further detail on the generally applicable legal standards applicable here.

Impact Fee Definition

- An impact fee is a one-time capital charge levied against new development.
- An impact fee is designed to cover the portion of the capital costs of infrastructure capacity consumed by new development.
- The principle purpose of an impact fee is to assist in funding the implementation of projects identified in the Capital Improvements Element (CIE) and other capital improvement programs for the respective facility/service categories.

Impact Fee vs. Tax

- An impact fee is generally regarded as a regulatory function established as a condition for improving property and is not established for the primary purpose of generating revenue, as are taxes.
- Impact fee expenditures must convey a proportional benefit to the fee payer. This is accomplished through the establishment of benefit districts, where fees collected in a benefit district are spent in the same benefit district.
- An impact fee must be tied to a proportional need for new infrastructure capacity created by new development.

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Methodology

The methodology used for the transportation impact fee study continues to follow a consumption-based impact fee approach in which new development is charged based upon the proportion of vehicle-miles of travel (VMT) or person-miles of travel (PMT) that each unit of new development is expected to consume of a lane-mile of roadway network. Unlike a “needs-based” approach, the consumption-based approach ensures that the impact fee is set at a rate that existing deficiencies cannot be corrected with impact fee revenues. As such, the County does not need to go through the process of estimating the portion of each capacity expansion project that may be related to existing deficiencies. The study incorporates the entire network of transportation within the county, including city, county and state roads, but excludes limited access facilities and rail facilities, which require large scale investments and are not typically funded with impact fees.

Included in this document is the necessary support material used in the calculation of the transportation impact fee. The general equation used to compute the impact fee for a given land use is:

$$[\text{Demand} \times \text{Cost}] - \text{Credit} = \text{Fee}$$

The “demand” for travel placed on a transportation system is expressed in units of Vehicle-Miles of Travel (VMT) (daily vehicle-trip generation rate x the trip length x the percent new trips [of total trips]) or PMT (VMT times the person-trip factor) for each land use contained in the impact fee schedule. Trip generation represents the average daily rates since new development consumes trips on a daily basis.

The “cost” of building new capacity typically is expressed in units of dollars per vehicle-mile or lane-mile of roadway capacity (or person-miles of capacity for the AMA). Consistent with the current adopted methodology, the cost is based on county roadway costs.

The “credit” is an estimate of future non-impact fee revenues generated by new development that are allocated to provide transportation capacity expansion. The impact fee is considered to be an “up front” payment for a portion of the cost of building a lane-mile of capacity that is directly related to the amount of capacity consumed by each unit of land use contained in the impact fee schedule, that is not paid for by future tax revenues generated by the new development activity. These credits are required under the supporting case law for the

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calculation of impact fees where a new development activity must be reasonably assured that they are not paying, or being charged, twice for the same level of service.

The input variables used in the fee equation are as follows:

Demand Variables:

- Trip generation rate
- Trip length
- Percent new trips

Cost Variables:

- Roadway cost per lane mile
- Roadway capacity per lane mile

Credit Variables:

- Equivalent gas tax credit (pennies)
- Present worth
- Fuel efficiency
- Effective days per year

II. Demand Component

Travel Demand

Travel demand is the amount of a transportation system consumed by a unit of new land development activity. Demand is calculated using the following variables and is measured in terms of the vehicle miles of new travel a unit of development consumes on the existing transportation system.

- Number of daily trips generated
- Average length of those trips
- Proportion of travel that is new travel, rather than travel that is already traveling on the road system and is captured by new development
- Interstate/Toll Facility discount factor
- Vehicle-trip to person-trip factor

As part of this update, the trip characteristics variables were obtained primarily from two sources: (1) trip characteristics studies previously conducted throughout Florida (Florida Studies Database), which includes studies conducted in Orange County as well as in other Florida jurisdictions, and (2) the Institute of Transportation Engineers' (ITE) *Trip Generation Handbook* (10th edition). The Florida Trip Characteristics Studies Database is included in Appendix A. This database was used to determine trip length, percent new trips, and the trip generation rate for several land uses.

Trip Length Adjustment Factor

Trip lengths for all land uses were adjusted to account for differences between the average trip lengths included in the Florida Studies Database, the Orlando Urban Area Transportation Study (OUATS 2040), and other Florida Standard Urban Transportation Model Structure (FSUTMS) model results. As it was the case in the 2012 update study, the OUATS 2040 model data suggested that trip lengths are typically longer in Orange County compared to other Florida counties. Therefore, residential, lodging, recreation, and office trip lengths were increased by 25 percent, while institutional, retail, and industrial trip lengths were increased by five percent.

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Interstate & Toll Facility Discount Factor

This variable was used to recognize that interstate highway and toll facility improvements are funded by the State (specifically, the Florida Department of Transportation) using earmarked State and Federal funds. Typically, transportation impact fees are not used to pay for these improvements and the portion of travel occurring on the interstate/toll facility system is usually eliminated from the total travel for each use.

To calculate the interstate and toll (I/T) facility discount factor, the loaded highway network file was generated for the OUATS 2040 model. A select link analysis was run for all traffic analysis zones located within Orange County in order to differentiate trips with an origin and/or destination within the county versus trips with no origin or destination within the county.

Currently, interstate and toll facilities in Orange County include I-4, the Florida Turnpike (SR 91), SR 408, SR 414, SR 417, SR 429, SR 451, SR 453, and SR 528. The limited access vehicle-miles of travel (Limited Access VMT) for trips with an origin and/or destination within County was calculated for the identified limited access facilities. The total Orange County VMT was calculated for all trips with an origin and/or destination within County for all roads, including limited access facilities, located within Orange County.

The I/T discount factor of 36.1 percent was determined by dividing the total limited access VMT by the total County VMT using the base year of the model. By applying this factor to the total County VMT, the reduced VMT is then representative of only the roadways which are funded by impact/multi-modal fees. Appendix A, Table A-1 provides further detail on this calculation.

Conversion of Vehicle-Trips to Person-Trips

For the multi-modal fee, it is necessary to estimate travel in units of person-miles. Vehicle-trips were converted to person-trips by applying a vehicle-trip to person-trip conversion factor 1.40. This factor was derived from a review of the OUATS 2040 model for Orange County.

Land Use Changes

Based on input from the County and a review of the Institute of Transportation Engineers' (ITE) *Trip Generation* reference report (10th edition, released September 2017), several new land uses were added to the transportation impact fee schedule.

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- Multi-Family Realignment: The current impact fee schedule includes multi-family apartment, condo/townhouse, and high-rise condo/townhouse as separate land uses. ITE 10th Edition has realigned these uses, creating a combined “multi-family housing” category, with differentiation in trip generation rate based on the number of stories. This update was incorporated into the impact fee schedule, shown by Land Use Code (LUC) used by ITE:
 - o LUC 220 (multi-family, low-rise, 1-2 floors) – includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two levels (floors).
 - o LUC 221 (multi-family, mid-rise, 3-10 floors) – includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors).
 - o LUC 222 (multi-family, high-rise, >10 floors) – includes apartments, townhouses, and condominiums that have more than 10 levels (floors). They are likely to have one or more elevators.
- Residential w/1st Floor Commercial: ITE 10th includes this new land use for consideration with two tiers:
 - o LUC 231 (mid-rise residential with 1st floor commercial): mixed-use multi-family housing buildings that have between three and 10 floors and include retail space on the first level. Typically found in dense multi-use urban and center city core settings.
 - o LUC 232 (high-rise residential with 1st floor commercial): mixed-use multi-family housing buildings that have more than 10 floors and include retail space that is open to the public on the first level. Typically found in dense multi-use urban and center city core settings.
- Dance Studio (Martial Arts/Music Lessons): Privately-owned recreation-based facility offering dance, gymnastics, ballet, or similar activity classes such as martial arts training and music lessons. Facilities typically range between 5,000 square feet and 25,000 square feet.
- LUC 720 (medical/dental office): a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility.
 - o Small Medical/Dental Office (<10,000 square feet): Similar to the Medical/Dental Office land use in the current schedule, but reflects a lower trip generation rate which is representative of smaller medical businesses that typically do not have extensive testing equipment or laboratories.
- LUC 911 (walk-in bank): This land use represents generally a free-standing building with its own parking lot. These banks do not have drive-in lanes but usually contain non-drive-thru teller machines (ATMs).

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- Tourist Hotel/Retail: The current schedule includes separate rates for hotel and retail development within the County's "tourist" district. However, updates to ITE since the last study and additional local studies resulted in trip generation rates for general retail and hotel land uses that are lower than those reflected for tourist hotel/retail categories. Given that generation rates for tourist hotel/retail categories are based on a smaller sample, hotel and retail development within the tourist district should be charged the same rate as development outside of the district to benefit from lower impact fee rates that are based on a larger set of data.

III. Cost Component

Cost information from Orange County and from other counties in Florida was reviewed to develop a unit cost for all phases involved in the construction of one lane-mile of roadway capacity. Additionally, cost information for bicycle/pedestrian and transit facilities was reviewed and included in the cost component calculations for the Alternative Mobility Area fee rate. Appendix B provides the data and other support information utilized in these analyses.

County Roadway Cost

This section examines the right-of-way (ROW), construction, and other cost components associated with county roads with respect to transportation capacity expansion improvements in Orange County. For this purpose, bid data for recently completed/ongoing local projects and recent construction bid data from roadway projects throughout Florida were used to identify and provide supporting cost data for County roadway improvements. The cost for each roadway capacity project was separated into three phases: design, ROW, and construction.

Design

Design costs for county roads were estimated at eight (8) percent of construction phase costs based on local improvements (8 percent) and a review of recent transportation impact fee studies throughout Florida (11 percent). Additional detail is provided in Appendix B, Tables B-1 and B-2.

Right-of-Way

The ROW cost reflects the total cost of the acquisitions along a corridor that were necessary to have sufficient cross-section width to widen an existing road or, in the case of new construction, to build a new road. ROW cost estimates were developed based on the ratio to construction phase costs from recent local improvements (43 percent) and from recent acquisition data observed in other Florida communities (42 percent). For impact fee purposes, a 40 percent factor was used to estimate ROW costs. Additional detail is provided in Appendix B, Tables B-1 and B-3.

Construction

Similar to the process for estimating ROW costs, the construction cost for county roads was based on recently bid/completed or ongoing local projects and cost for projects in other communities

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in Florida. A review of construction cost data for projects built in Orange County since 2012 identified approximately eight projects that include approximately 34 lane miles of improvements and average approximately \$3.3 million per lane mile. Projects reviewed included:

- Rouse Road from Lake Underhill Rd to Corporate Blvd
- Clarcona-Ocoee Road from Ocoee-Apopka Road to Hiawasse Road
- John Young Parkway from SR 528 to Florida Turnpike
- Econlockhatchee Trail from SR 408 to SR 50
- CR 535 Segment F from Overstreet Road to Fossick Road
- Reams Road from Delmar Avenue to Taborfield Avenue
- Lake Underhill Road from Goldenrod Road to Chickasaw Trail
- International Drive from Westwood Boulevard N to Westwood Boulevard S

It was noted that the construction costs for these improvements include construction engineering/inspection (CEI) costs.

In addition to local projects, recent improvements from other counties in Florida were reviewed to increase the sample size. This review included approximately 100 lane miles of lane addition and new road construction improvements with a weighted average cost per lane mile of approximately \$2.7 million, which does not include CEI costs. Based on a review of data from other jurisdictions, CEI is approximately nine percent of construction, and including this cost would increase the average cost to approximately \$2.9 million per lane mile.

Based on a review of these data sets, a construction cost of \$3.0 million per lane mile was used in the impact fee calculation for Orange County improvements. This figure reflects the local data and the statewide data. Additional detail is provided in Appendix B, Tables B-1 and B-4.

As shown in Table 1, the total county roadway cost was calculated at approximately \$4.40 million per lane mile.

Table 1
Estimated Total Cost per Lane Mile
for County Roads

Cost Type	Total Cost per Lane Mile
Design ⁽¹⁾	\$240,000
Right-of-Way ⁽²⁾	\$1,200,000
Construction ⁽³⁾	\$3,000,000
Total	\$4,440,000

1) Design is estimated at 8 percent of construction costs

2) ROW is estimated at 40 percent of construction costs

3) Source: Includes CEI cost. Appendix B, Tables B-1 and B-4

Note: All figures rounded to nearest \$000

Vehicle-Miles and Person-Miles of Capacity per Lane Mile

The transportation impact fee equation includes a vehicle-mile of capacity (VMC) component while the multi-modal fee calculation includes a person-mile of capacity (PMC) component. The VMC is an estimate of capacity added, per lane mile, for county roadway improvements in the 2040 Metroplan Cost Feasible and Needs Plan for Orange County. As shown in Table 2, each lane mile will add approximately 9,000 vehicles. The VMC figure was then multiplied by the person-trip factor (1.40) to estimate the PMC for use in the multi-modal fee calculation. Additional detail is provided in Appendix B, Table B-5.

Table 2
Weighted Average Capacity per Lane Mile

Source	Lane Mile Added ⁽¹⁾	Vehicle-Miles of Capacity Added ⁽¹⁾	VMC Added per Lane Mile ⁽²⁾
County Roads	270.44	2,437,462	9,013
Average VMC Added per Lane Mile⁽³⁾			9,000
County Roads	270.44	2,437,462	9,013
Vehicle-Trip to Person-Trip Factor ⁽⁴⁾			1.40
Average PMC Added per Lane Mile⁽⁵⁾			12,600

1) Source: Appendix B, Table B-5

2) Vehicle-miles of capacity added divided by lane miles added

3) VMC Added per lane mile (Item 2) rounded to nearest 100

4) Source: Based on a review of OUATS 2040 and peer jurisdictions

5) VMC added per lane mile multiplied by the person-trip factor rounded to the nearest 100

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Cost per Vehicle-Mile and Person-Mile of Capacity

The transportation cost per unit of development is assessed based on the cost per vehicle-mile of capacity and, in the case of the urban area, the cost per person-mile of capacity. As shown in Tables 1 and 2, the cost and capacity for transportation in Orange County have been calculated based on recent improvements. As shown in Table 3, the cost per VMC for travel within the County is \$493 and the cost per PMC is \$352.

The cost per VMC figure is used on the roadway-based transportation impact fee calculation to determine the total cost per unit of development based on vehicle-miles of travel consumed. For each vehicle-mile of travel that is added to the road system, approximately \$493 of capacity is consumed.

The cost per PMC figure is used on the multi-modal transportation impact fee calculation to determine the total cost per unit of development based on person-miles of travel consumed. For each person-mile of travel that is added to the transportation system, approximately \$352 of capacity is consumed.

Table 3
Weighted Average Cost per Capacity Added

Source	Cost per Lane Mile ⁽¹⁾	Average VMC/PMC Added per Lane Mile ⁽²⁾	Cost per VMC/PMC ⁽³⁾
County Roads (VMC)	\$4,440,000	9,000	\$493.33
County Roads (PMC)	\$4,440,000	12,600	\$352.38

1) Source: Table 1

2) Source: Table 2

3) Average VMC/PMC added per lane mile (Item 2) divided by cost per lane mile (Item 1)

Bicycle and Pedestrian Facility Costs

Bicycle and pedestrian facilities provide for relatively small quantities of the total vehicle-miles of travel due to the difference in the average distance traveled by a car trip versus pedestrian/bicycle trips. Because of their relatively small role in the urban travel scheme, they do not have a significant effect on evaluating the costs of providing for transportation. However, bike and pedestrian facilities are important and provide a source of travel for those who cannot drive, cannot afford to drive or choose not to drive, and they are a standard part of the urban street and sometimes included in rural roadways. Their costs are included in the standard

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roadway cross-sections for which costs are estimated for safety and mobility reasons. Thus, the costs of these facilities on major roads are included in the multi-modal fee. The multi-modal fee provides funding for only those bike and pedestrian facilities associated with roadways on the classified road system (excluding local/neighborhood roads), and allows for facilities to be added to existing classified roadways or included in the construction of a new classified roadway or lane addition improvement.

Transit Capital Cost per Person-Mile of Travel

A model for transit service and cost was developed to establish both the capital cost per person-mile of capacity and the system operating characteristics in terms of system coverage, hours of service, and headways. The model developed for Orange County was based on information from the LYNX Transit Development Plan. Components of the transit capital cost include:

- Vehicle acquisition tied to new routes
- Bus stops, shelters, and benches
- Cost of road network used by transit vehicles

Transit capital costs are computed as the cost of capital features needed to expand the transit system, as follows:

$$\text{Transit Capital Cost} = \text{Bus Infrastructure Cost} + \text{Road Capacity Cost}$$

Taking into account the infrastructure costs and the decline in potential vehicle-capacity that comes with adding transit, it was determined that the difference between constructing a lane mile of roadway (for cars only) versus constructing a roadway with transit is not significant.

The roadway with transit cost per PMC is approximately three (3) percent higher per lane mile than the cost to simply construct a road without transit amenities. Therefore, for the multi-modal fee calculation, the cost per PMC of approximately \$352 is representative of the cost to provide transportation capacity for all modes of travel. Additional information regarding the transit capital cost calculation is included in Appendix B, Tables B-6 and B-7.

IV. Credit Component

Capital Improvement Credit

The credit component of the impact fee accounts for the existing County funding sources that are being expended on transportation capacity expansion (excluding impact fee funds). This section summarizes the calculations utilized in the credit for non-impact/multi-modal fee contributions. Additional details are provided in Appendix C.

The present value of the portion of non-impact fee funding generated by new development over a 25-year period that is expected to be expended on capacity expansion projects was credited against the cost of the system consumed by travel associated with new development. In order to provide a connection to the demand component, which is measured in terms of travel, the non-impact/multi-modal fee dollars were converted to a fuel tax equivalency.

City

As shown in Table 4, the City of Orlando spends the equivalent of 0.1 pennies on roadway capacity-expansion projects funded with non-impact fee revenues. For the AMA fee, additional multi-modal capacity improvements were included in the credit, increasing the equivalent credit to 0.2 pennies.

County

As shown in Table 4, Orange County spends the equivalent of 4.8 pennies on roadway capacity-expansion projects funded with non-impact fee revenues. This amount includes the INVEST funds that the County received for transportation, which are unlikely to reoccur beyond the CIP period. Though they are not a recurring revenue source, like a fuel tax, the INVEST funds are being credited in a similar manner for impact fee purposes in order to provide a conservative credit for the fee rate calculation.

For the multi-modal fee, additional multi-modal capacity improvements were included in the credit calculations, increasing the equivalent credit to 5.7 pennies. This includes the portion of the County's annual LYNX contribution that is dedicated to capacity expansion.

State

As shown in Table 4, State expenditures on state roads were reviewed and a credit for the capacity-expansion portion attributable to state projects was estimated (excluding expenditures

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on limited access facilities). The review, which included 11 years of historical expenditures, as well as 5 years of planned expenditures, indicated that FDOT's roadway spending generates a credit of 9.3 pennies of equivalent gas tax revenue annually. For the multi-modal fee, a credit of 14.7 pennies was calculated to account for additional FDOT funds going towards multi-modal improvements (standalone sidewalk construction, transit, etc.), primarily for the estimated state transit funding for new capacity. The use of a 16-year period for developing a State credit results in a reasonably stable credit for Orange County, accounting for the volatility in FDOT spending in the county over short time periods.

In summary, for roadways, the City of Orlando contributes approximately 0.1 pennies and Orange County contributes 4.8 pennies, while the State spends an average of 9.3 pennies, annually, in the County. A total credit of 14.2 pennies was included in the roadway impact fee calculation to recognize the future capital revenues that are expected to be generated by new development from all non-impact fee funding sources.

For multi-modal improvements (including roadways), the City of Orlando contributes approximately 0.2 pennies and Orange County contributes 5.7 pennies, with the State spends an average of 14.7 pennies, annually, in the County. A total credit of 20.6 pennies was included in the multi-modal fee calculation to recognize the future capital revenues that are expected to be generated by new development from all non-impact fee revenues.

Table 4
Equivalent Pennies of Gas Tax Revenue

Credit	Equivalent Pennies per Gallon	
	Roadway	Multi-Modal
City Revenue ⁽¹⁾	\$0.001	\$0.002
County Revenue ⁽²⁾	\$0.048	\$0.057
State Revenue ⁽³⁾	\$0.093	\$0.147
Total	\$0.142	\$0.206

1) Source: Appendix C, Table C-2 (roadway) and C-5 (multi-modal)

2) Source: Appendix C, Table C-3 (roadway) and C-6 (multi-modal)

3) Source: Appendix C, Table C-4 (roadway) and C-7 (multi-modal)

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Present Worth Variables

Facility Life

The roadway facility life used in the impact fee analysis is 25 years, which represents the reasonable life of a roadway.

Interest Rate

This is the discount rate at which gasoline tax revenues might be bonded. It is used to compute the present value of the gasoline taxes generated by new development. The discount rate of 4.0 percent was used in the roadway impact fee calculation based on information provided by Orange County.

Fuel Efficiency

The fuel efficiency (i.e., the average miles traveled per gallon of fuel consumed) of the fleet of motor vehicles was estimated using the quantity of gasoline consumed by travel associated with a particular land use.

Appendix C, Table C-12 documents the calculation of fuel efficiency value based on the following equation, where "VMT" is vehicle miles of travel and "MPG" is fuel efficiency in terms of miles per gallon.

$$FuelEfficiency = \sum VMT_{RoadwayType} \div \sum \left(\frac{VMT_{VehicleType}}{MPG_{VehicleType}} \right)_{RoadwayType}$$

The methodology uses non-interstate VMT and average fuel efficiency data for passenger vehicles (i.e., passenger cars and other 2-axle, 4-tire vehicles, such as vans, pickups, and SUVs) and large trucks (i.e., single-unit, 2-axle, 6-tire or more trucks and combination trucks) to calculate the total gallons of fuel used by each of these vehicle types.

The combined total VMT for the vehicle types is then divided by the combined total gallons of fuel consumed to calculate, in effect, a "weighted" fuel efficiency value that reflects the existing fleet mix of traffic on non-interstate roadways. The VMT and average fuel efficiency data were obtained from the most recent Federal Highway Administration's *Highway Statistics 2015*. Based on the calculation completed in Appendix C, Table C-12, the fuel efficiency rate to be used in the updated impact fee equation is 18.73 miles per gallon.

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Effective Days per Year

An effective 365 days per year of operation was assumed for all land uses in the proposed fee. However, this will not be the case for all land uses since some uses operate only on weekdays (e.g., office buildings) and/or only seasonally (e.g., schools). The use of 365 days per year, therefore, provides a conservative estimate, ensuring that non-impact fee contributions are adequately credited against the fee.

V. Fee Variation by Geographic Area

Currently, Orange County has two impact fee areas: the Alternative Mobility Area with a multi-modal fee, and the remainder of the unincorporated County, with a roadway-based transportation impact fee. The Urban/AMA includes urbanized areas with higher densities and transit accessibility and surrounds the City of Orlando core.

This update study presents two fee variation options for consideration:

- Option 1: Continue with the current adopted assessment areas (Urban and Non-Urban); and
- Option 2: Expand the urban area and create suburban and rural assessment areas.

Option 1

Map 1 presents the current adopted transportation impact fee assessment areas.

Fee District Variation

A consumption-based impact fee rate is based on the adopted level of service (LOS) standards. When the current conditions are better than adopted standards, consumption-based impact fees do not generate sufficient revenues to maintain a transportation networks existing achieved LOS. The LOS for each roadway segment correlates to the vehicle-to-capacity (V/C) ratio. This ratio measures the number of vehicles on the road versus the number of vehicles that road can handle based on its functional classification (arterial, collector, freeway, etc) and design characteristics (number of lanes, signal spacing, etc). A low V/C ratio suggests less congestion and delay and better average speed/performance.

The current achieved V/C ratios are as follows:

- Countywide ≈ 0.59
- Urban area ≈ 0.65
- Non-urban area ≈ 0.58

The impact fee rate for the urban area is calculated based on the adopted LOS standards and allows degradation of the system to a V/C ratio of 1.00. However, as long as current achieved V/C supports it, the County may adopt a policy to base the fees on a better V/C ratio than the adopted standard to limit or slow the degradation for geographical subareas of the County,

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creating a fee differential. This approach is used in the case of fees calculated for the non-urban area of the county.

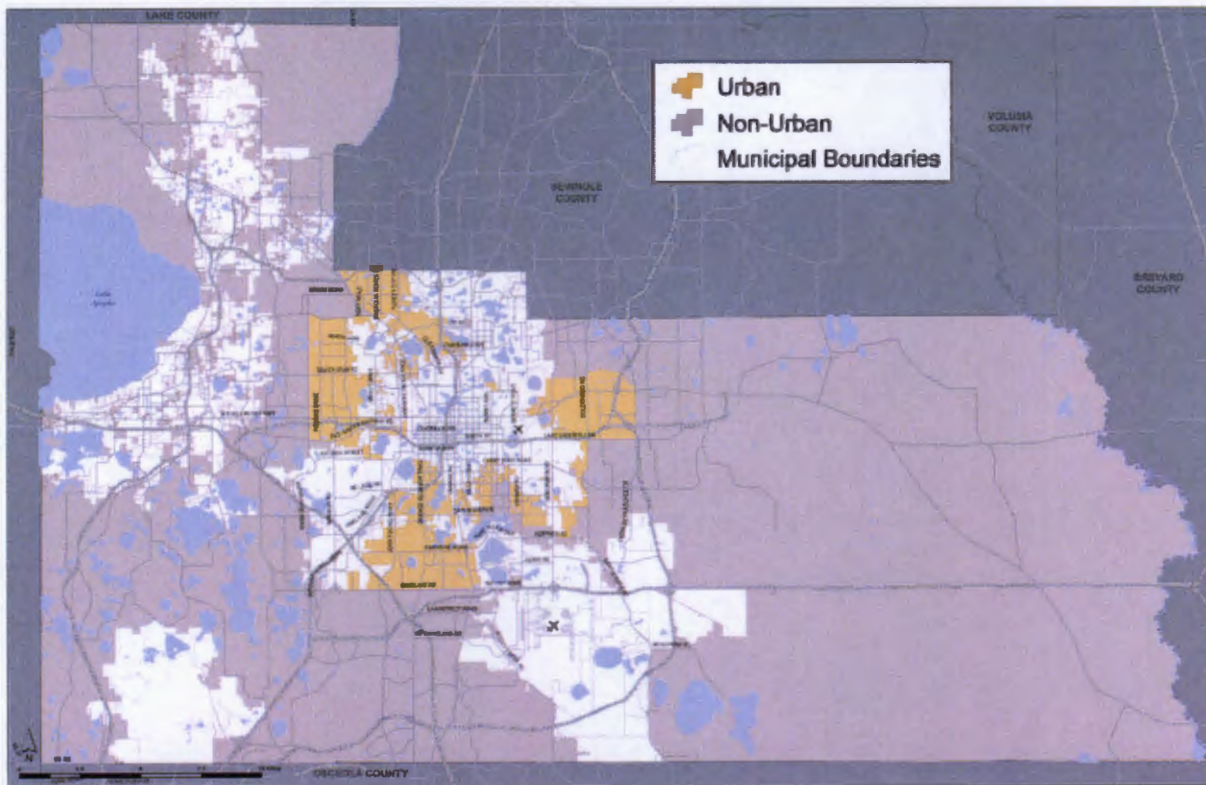
As illustrated on Map 1, Orange County currently has two separate fee assessment areas. As mentioned previously, the multi-modal fees in the urban area are based on the adopted level-of-service standard (**V/C of 1.00**), reflecting the higher level of congestion in this area.

The roadways in the non-urban area are performing better than the urban area, and in an effort to maintain the higher levels of performance, a differential capacity option was developed. This option uses a **V/C of 0.90** for non-urban area. Recognizing the higher quality of service currently provided in the non-urban area, the County can elect to charge a higher fee in this area (as compared to the urban area) in an effort to help preserve this higher achieved LOS. These adjustments are applied to the average VMC per lane mile for the non-urban area and to the average PMC per lane mile for the urban area:

- Urban = $(9,000 * 1.4) * 1.00 = \mathbf{12,600}$
- Non-Urban = $9,000 * 0.90 = \mathbf{8,100}$

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Map 1 – Current Transportation Impact Fee Assessment Areas



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Option 2

As part of this update, the existing AMA boundary was reviewed for a potential expansion. Additionally, the remaining unincorporated county was reviewed, recognizing that there are sub-urban/transitioning areas and rural areas with different demographic and travel characteristics. More specifically, as part of this analysis, Tindale Oliver reviewed the following:

- The County's Concurrency Alternatives Evaluation Report, Multi-Modal Corridor Plan, which addresses potential boundary changes for the AMA/urban area;
- Current and projected travel conditions, measured in terms of V/C ratios; and
- Type and level of development (single use/mixed use, already developed/vacant, etc.).

Based on this analysis, the following changes to the existing fee districts were considered.

Urban Fee Area

As mentioned previously, during the 2012 study, a multi-modal transportation impact fee was developed for the urban area to allow for more flexible spending of impact fee revenues in an area of the County where pedestrian/bicycle and transit improvements were needed to accommodate the dense development patterns around the City of Orlando. It is proposed that, consistent with the 2017 Concurrency Alternatives Evaluation Report¹, the urban area be extended to the northeast to capture the University of Central Florida, Full Sail University, and Valencia College communities (see Map 2). Though much of this area consists of single use residential land use classification, the area is mostly built-out, with only a limited number of the vacant residential parcels available for new development, as illustrated in Map 3. Therefore, this area is likely to be dominated by redevelopment projects, which will increase the densities and urban character of this area. The urban expansion should also extend to the southwest to include the International Drive corridor which houses many tourist accommodations and multi-modal amenities, as shown in Map 4.

Suburban/Transitioning Fee Area

The proposed transitioning area/suburban boundary is based on the existing Urban Service Area (USA) boundary and the western portion of the county. The Orange County USA includes the central part of the county surrounding the City of Orlando and extending to the county's northern and southern boundaries. The area to the west is primarily smaller cities and includes the future Horizon West development area, while the area to the east includes largely rural, preservation,

¹ Concurrency Alternatives Evaluation Report, Multi-Modal Corridor Plan – Phase III, VHB 2017

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and parks/recreation land. As shown on Map 5, this proposed transitioning area is much more congested than eastern rural area and exhibits different travel conditions.

Rural Fee Area

As previously mentioned, the area to the east of the Orange County USA is primarily rural farmland with pockets of preservation area and a large portion of park/recreation land that are not developable. The roadways in this area of the County experience a very favorable level-of-service with little to no congestion (Map 5).

Map 6 illustrates the proposed fee assessment area boundaries.

Fee District Variation

As previous discussed for Option 1, the proposed fee district rate variation is based on the LOS levels observed for each sub-area, which are measured in terms of V/C ratios.

The current achieved V/C ratios are as follows:

- Urban (expanded area) ≈ 0.63
- Suburban ≈ 0.59
- Rural ≈ 0.43

The multi-modal fees in the urban area are based on the adopted level-of-service standard (**V/C of 1.00**), reflecting the higher level of congestion in this area. The roadways in suburban/transitioning area are performing slightly better and roadways in the rural area are performing much better, and in an effort to maintain the higher levels of performance, a differential capacity option was developed. This option uses a **V/C of 0.90** for suburban/transitioning area and a **V/C of 0.80** for rural area impact fee calculations. Recognizing the higher quality of service currently provided in the transitioning and rural areas, the County can elect to charge a higher fee in these areas (as compared to the urban area) in an effort to help preserve this higher achieved LOS. These adjustments are applied to the average VMC per lane mile for the rural and suburban area and to the average PMC per lane mile for the urban area:

- Urban = $(9,000 * 1.4) * 1.00 = \mathbf{12,600}$
- Suburban = $9,000 * 0.90 = \mathbf{8,100}$
- Rural = $9,000 * 0.80 = \mathbf{7,200}$

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Map 2 – Proposed Northeast AMA Expansion - Orange County: Concurrency Alternatives Evaluation Report, Multi-Modal Corridor Plan Phase 3

Figure 1 - Alternative 2A: Map 1 (Northeast Map)



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Map 3 – Vacant Parcels in Northeast AMA Expansion Area

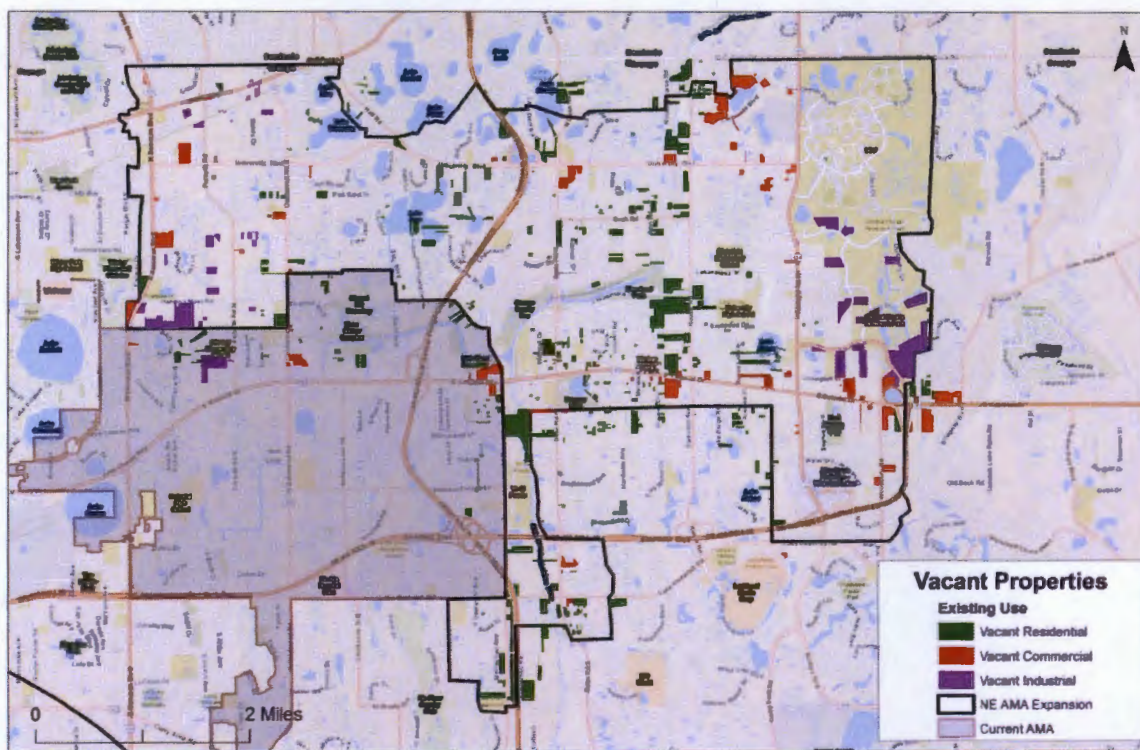
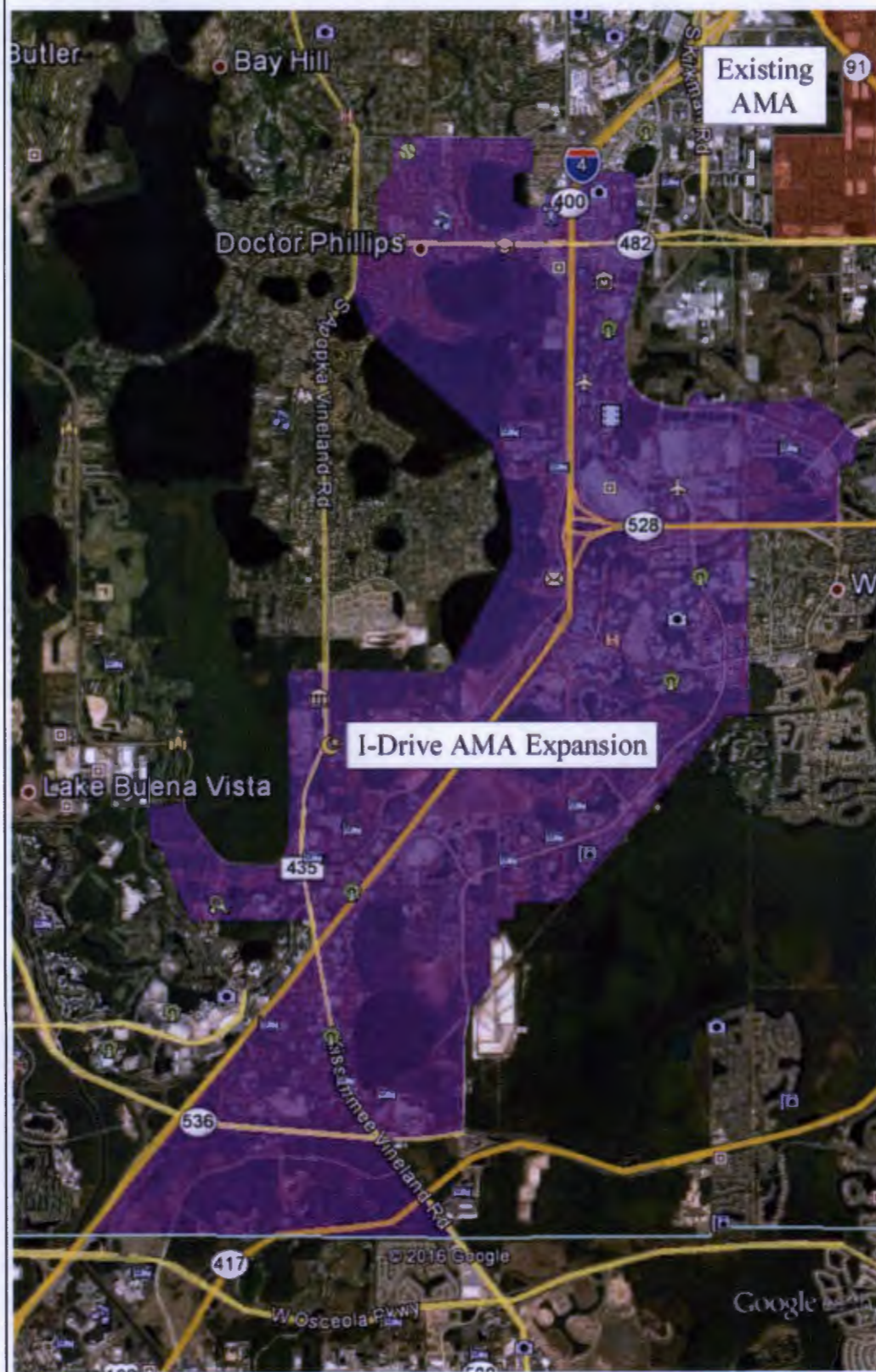
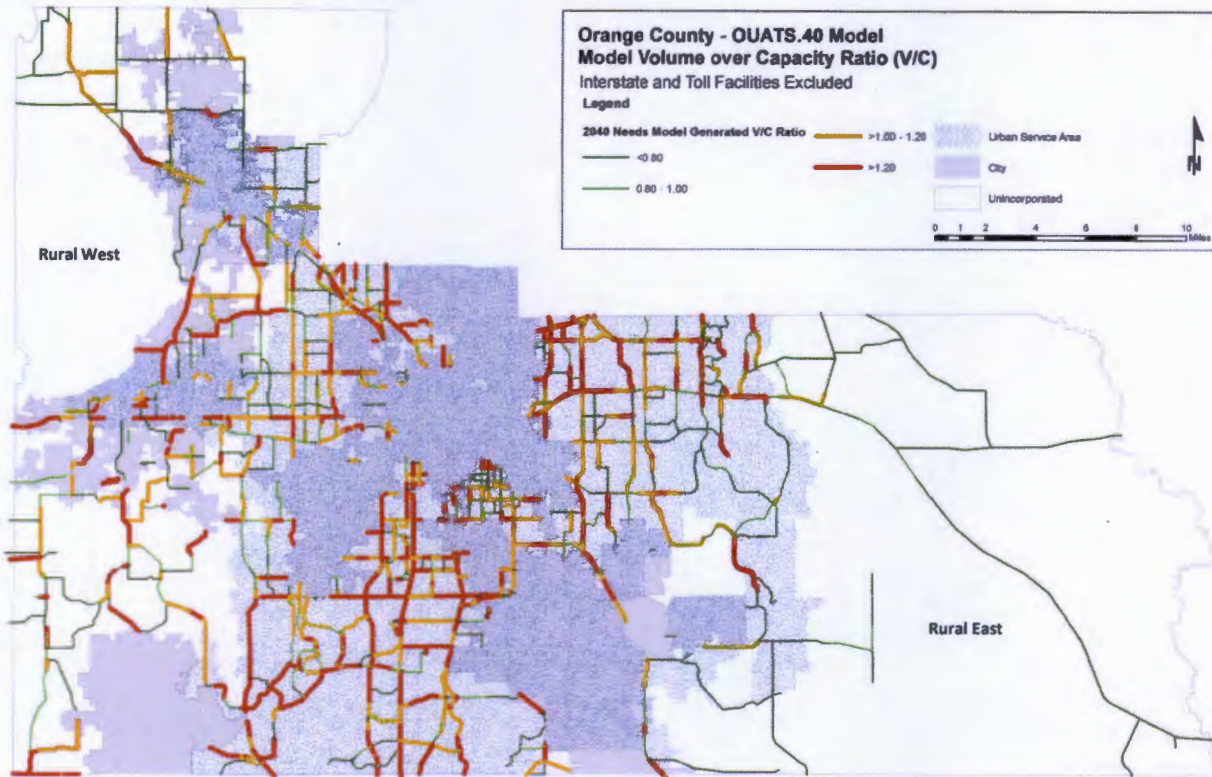


Figure 2 - Alternative 2A: Map 2 (Southeast Map)



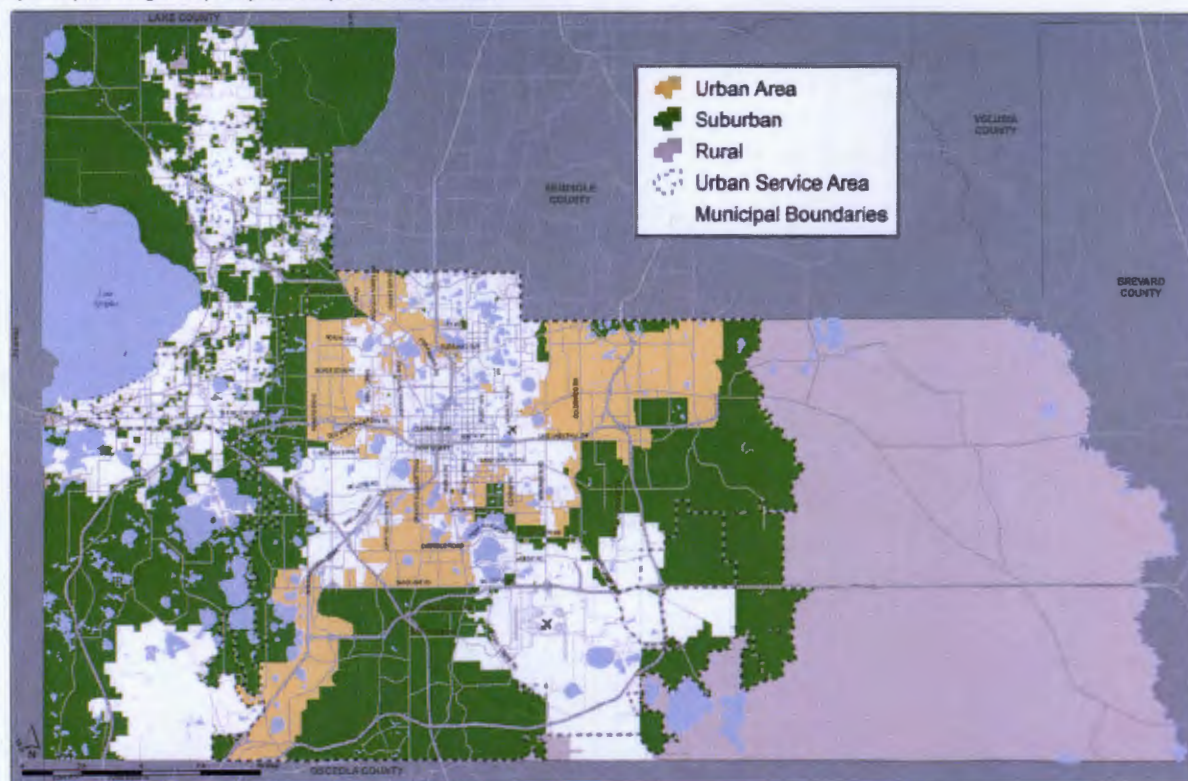
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Map 5 – Future Congestion by Segment – OUATS 2040 Needs Plan



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Map 6 – Proposed Orange County Transportation Impact Fee Assessment Areas



The alignment for the SW urban expansion includes adjustments not shown on Map 5 to include the entirety of the International Drive MSTU overlay

VI. Calculated Impact Fee Schedule

Detailed impact fee calculations for each land use are included in Appendix D, which includes the major land use categories and the impact fees for the individual land uses contained in each of the major categories. For each land use, Appendix D illustrates the following:

- Demand component variables (trip rate, trip length, and percent of new trips);
- Total impact fee cost;
- Annual capital improvement credit;
- Present value of the capital improvement credit;
- Net transportation/multi-modal impact fee;
- Current adopted Orange County impact fee; and
- Percent difference between the calculated impact fee and the current adopted impact fee.

It should be noted that the net impact fee illustrated in Appendix D is not necessarily a recommended fee, but instead represents the technically calculated impact fee per unit of land use that could be charged in Orange County.

For clarification purposes, it may be useful to walk through the calculation of an impact fee for one of the land use categories. In the following example, the net impact fee is calculated for the single-family residential detached land use category (ITE LUC 210) using information from the impact fee schedules included in Appendix D. For each land use category, the following equations are utilized to calculate the net impact fee:

$$\text{Net Impact Fee} = \text{Total Impact Cost} - \text{Capital Improvement Credit}$$

Where:

Roadway:

Total Impact Cost = $([\text{Trip Rate} \times \text{Assessable Trip Length} \times \% \text{ New Trips}] / 2) \times (1 - \text{Interstate/Toll Facility Discount Factor}) \times (\text{Cost per Vehicle-Mile of Capacity})$

Capital Improvement Credit = Present Value (Annual Capital Improvement Credit), given 4.0% interest rate & a 25-year facility life

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Annual Capital Improvement Credit = $\left(\frac{[\text{Trip Rate} \times \text{Total Trip Length} \times \% \text{ New Trips}]}{2} \right) \times (\text{Effective Days per Year} \times \$/\text{Gallon to Capital}) / \text{Fuel Efficiency}$

Multi-modal:

Total Multi-modal Transportation Cost = $\left(\frac{[\text{Trip Rate} \times \text{Assessable Trip Length} \times \% \text{ New Trips}]}{2} \right) \times (1 - \text{Interstate/Toll Facility Discount Factor}) \times (\text{Person-Trip Factor}) \times (\text{Cost per Person-Mile of Capacity})$

Capital Improvement Credit = Present Value (Annual Capital Improvement Credit), given 4.0% interest rate & a 25-year facility life

Annual Capital Improvement Credit = $\left(\frac{[\text{Trip Rate} \times \text{Total Trip Length} \times \% \text{ New Trips}]}{2} \right) \times (\text{Effective Days per Year} \times \$/\text{Gallon to Capital}) / \text{Fuel Efficiency}$

Each of the inputs has been discussed previously in this document; however, for purposes of this example, brief definitions for each input are provided in the following paragraphs, along with the actual inputs used in the calculation of the fee for the single-family detached residential land use category (2,000 sq ft):

- *Trip Rate* = the average daily trip generation rate, in vehicle-trips/day (7.81)
- *Assessable Trip Length* = the average trip length on collector roads or above, for the category, in vehicle-miles (8.28) (excluding local neighborhood roads).
- *Total Trip Length* = the assessable trip length plus an adjustment factor of half a mile, which is added to the trip length to account for the fact that gas taxes are collected for travel on all roads including local roads $(8.28 + 0.50 = 8.78)$
- *% New Trips* = adjustment factor to account for trips that are already on the roadway (100%)
- *Divide by 2* = the total daily miles of travel generated by a particular category (i.e., $\text{rate} \times \text{length} \times \% \text{ new trips}$) is divided by two to prevent the double-counting of travel generated between two land use codes since every trip has an origin and a destination
- *Interstate/Toll Facility Discount Factor* = discount factor to account for travel demand occurring on interstate highways and/or toll facilities (36.1%)
- *Person-Trip Factor* = converts vehicle-miles of travel to person-miles of travel (1.40)
- *Cost per Lane Mile* = unit cost to construct one lane mile of roadway, in \$/lane-mile (\$4,440,000)
- *Average Vehicle-Capacity Added per Lane Mile* = represents the average daily traffic on one travel lane at capacity for one lane mile of roadway, in vehicles/lane-mile/day (9,000)
 - Suburban Adjustment = $9,000 \times 0.90 \text{ V/C ratio} = 8,100$

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- Rural Adjustment = $9,000 \times 0.80 \text{ V/C ratio} = 7,200$
- *Average Person-Capacity Added per Lane Mile* = vehicle-capacity added per lane mile (9,000) multiplied by the person-trip factor (1.40) = 12,600 person-miles of capacity
- *Cost per Vehicle-Mile and Person-Mile of Capacity* = unit of vehicle-miles or person-miles of capacity consumed per unit of development. Cost per lane mile divided by average capacity added per lane mile
 - Urban = $\$4,440,000 / 12,600 = \352.38 per PMC
 - Suburban = $\$4,440,000 / 8,100 = \548.15 per VMC
 - Rural = $\$4,440,000 / 7,200 = \616.67 per VMC
- *Present Value* = calculation of the present value of a uniform series of cash flows, gas tax payments in this case, given an interest rate, "i," and a number of periods, "n;" for 4.00% interest and a 25-year facility life, the uniform series present worth factor is 15.6221
- *Effective Days per Year* = 365 days
- *\$/Gallon to Capital* = the amount of equivalent gas tax revenue per gallon of fuel that is used for capital improvements, in \$/gallon (\$0.142 for roadways, \$0.206 for multi-modal (including roadways))
- *Fuel Efficiency* = average fuel efficiency of vehicles, in vehicle-miles/gallon (18.73)

Consumption-Based Roadway Impact Fee Calculation

Using these inputs, a net impact fee can be calculated for the single-family residential detached (2,000 sf) land use category as follows:

Urban Fee Area (Multi-Modal Fee) (Table D-2):

$$\text{Total Impact Cost} = ([7.81 * 8.28 * 1.0] / 2) * (1 - 0.361) * 1.40 * (\$4,440,000 / 12,600) = \mathbf{\$10,193}$$

$$\text{Annual Cap. Improv. Credit} = ([7.81 * 8.78 * 1.0] / 2) * 365 * (\$0.206 / 18.73) = \$138$$

$$\text{Capital Improvement Credit} = \$138 * 15.6221 = \$2,156$$

$$\text{Net Multi-Modal Fee} = \$10,193 - \$2,156 = \mathbf{\$8,037}$$

Non-Urban/Suburban Fee Area (Roadway Fee) (Table D-3):

$$\text{Total Impact Cost} = ([7.81 * 8.28 * 1.0] / 2) * (1 - 0.361) * (\$4,440,000 / 8,100) = \mathbf{\$11,325}$$

$$\text{Annual Cap. Improv. Credit} = ([7.81 * 8.78 * 1.0] / 2) * 365 * (\$0.142 / 18.73) = \$95$$

$$\text{Capital Improvement Credit} = \$95 * 15.6221 = \$1,484$$

$$\text{Net Impact Fee} = \$11,325 - \$1,484 = \mathbf{\$9,841}$$

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Rural Fee Area (Roadway Fee) (Table D-4):

$$\text{Total Impact Cost} = ([7.81 * 8.28 * 1.0] / 2) * (1 - 0.361) * (\$4,440,000 / 7,200) = \mathbf{\$12,741}$$

$$\text{Annual Cap. Improv. Credit} = ([7.81 * 8.78 * 1.0] / 2) * 365 * (\$0.142 / 18.73) = \$95$$

$$\text{Capital Improvement Credit} = \$95 * 15.6221 = \$1,484$$

$$\text{Net Impact Fee} = \$12,741 - \$1,484 = \mathbf{\$11,257}$$

VII. Needs-Based Fee Analysis

As previously mentioned, the Orange County impact fee rates are calculated using a consumption-based methodology. For comparison purposes, this section presents an example of an impact fee calculation using a needs-based methodology.

A needs-based impact fee is calculated based on a list of improvements over a certain time period and associated growth over the same time period. As the list of improvements changes, the fee tends to vary. In the case of Orange County, the needs-based scenario is based on the Needs Plan improvements from the Metroplan 2040 LRTP.

Needs-Based Fee Calculation

Demand Component

Under the needs-based approach, the demand component for each land use is also measured in terms of VMT (the product of trip generation, trip length, and percent new trips, less the interstate/toll facility discount).

Cost of Needs

The cost component for the needs-based analysis is based on the cost of building a set of improvements. The set of projects and total cost were based on the list of County road improvements included in the Metroplan 2040 Long Range Transportation Plan. The cost estimates include adjustments for year-of-expenditure and use a 2040 cost equivalent for all unfunded needs plan improvements. The total estimated cost of improvements is approximately \$2.15 billion.

Non-Impact Fee Revenue

The needs-based impact fee is based on the total cost of improvements less the non-impact fee revenue contributions. Therefore, fuel tax contributions are removed from the calculation. As shown in the Metroplan 2040 LRTP, fuel tax revenues are estimated at approximately \$201.1 million. The remaining cost of improvements used in the impact fee equation is now approximately \$1.95 billion.

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VMT Added

The cost per VMT is calculated based on the 2040 volumes for county roads in Orange County. Using the OUATS 2040 Transportation Model, approximately 5.69 million VMT will be added between the model base year (2009) and 2040. The VMT added represents the volume added to all county roads, not just those that were improved and excludes interstate/toll facilities. For the impact fee calculation, the VMT was adjusted to 3.85 million VMT to account for the difference in timeframes between the model timeframe (2009-2040) and the needs plan (2020-2040). The total cost of improvements net of available funding was then divided by the total VMT added for all county roads to determine a cost per VMT of approximately \$506.

Needs-Based Roadway Impact Fee Calculation

Using these inputs, a net impact fee can be calculated for the single-family residential detached (2,000 sf) land use category as follows:

Needs Plan:

$$\text{Net Impact Fee} = ([\text{TGR} * \text{TL} * \text{PNT}] / 2) * (1 - \text{I/T Discount}) * \text{Cost per VMT}$$

$$\text{Net Impact Fee} = ([7.81 * 8.28 * 1.0] / 2) * (1 - 0.361) * \$506 = \mathbf{\$10,454}$$

The resulting needs-based fee is approximately 20 percent more than its consumption-based counterpart. For the single family land use, a consumption-based transportation impact fee rate would be approximately \$8,709 using a V/C of 1.00.

Asset-Based Fee Calculation

An additional analysis was completed to measure the level of investment made by the existing development in Orange County's transportation system. This exercise provides a general sense of a fee per dwelling unit that would have been required to construct the existing transportation network. The total asset value of the county road system was estimated using the total lane miles in the roadway inventory ($\approx 3,173$) and the cost per lane mile from Table 1 (\$4,440,000). This results in an estimated asset value of approximately \$14.1 billion in roadway infrastructure.

The asset value was divided by the current population (1,313,880) and then multiplied by the persons-per-household (2.39) to determine an asset per household of approximately \$26,000. However, this does not account for the portion of non-residential development that would pay impact fees. Based on historical impact fee collections, residential development has generated approximately 60 percent of the county revenues. Therefore, the asset per household was reduced to 60 percent resulting in an estimated fee of \$15,600 per household.

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As discussed previously, consumption-based transportation impact fees are calculated based on adopted LOS standards, and do not reflect historical investment levels in a community. Rather, they are conservative fees that slow down the degradation of the transportation system.

VIII. Transportation Impact Fee Rate Comparison

A comparison of calculated fee schedule to the current adopted fee by land use is presented in Table 5 for select land uses.

A summary of the calculated impact fee rates for all land uses is presented in Appendix D, Tables D-1 through D-3.

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Table 5
Transportation Impact/Multi-Modal Fee Comparison

Land Use	Unit ⁽²⁾	Orange County			Orange County ⁽⁶⁾		Orange County ⁽⁷⁾		Brevard County ⁽⁹⁾	Hillsborough County ⁽⁹⁾	Lake County ⁽¹⁰⁾	Osceola County ⁽¹¹⁾	Pasco County ⁽¹²⁾	Polk County ⁽¹³⁾
		Urban ⁽³⁾	Non-Urban/ Suburban ⁽⁴⁾	Rural ⁽⁵⁾	Non-AMA	AMA	Non-AMA	AMA						
Date of Last Update		2018	2018	2018	2012	2012	2012	2012	2000	2016	2013	2015	2014	2015
Adoption Percentage ⁽¹⁾		100%	100%	100%	56%	56%	100%	100%	100%	50%	70%	100%	N/A	100%
Residential:														
Single Family (2,000 sf)	du	\$8,037	\$9,841	\$11,257	\$3,898	\$3,761	\$6,961	\$6,716	\$4,353	\$3,184	\$2,706	\$4,585	\$5,835	\$2,155
Non-Residential:														
Light Industrial	1,000 sf	\$3,047	\$3,746	\$4,286	\$2,163	\$2,088	\$3,863	\$3,728	n/a	\$2,025	\$1,505	\$2,024	\$0	\$666
Office (50,000 sq ft)	1,000 sf	\$7,943	\$9,738	\$11,142	\$5,574	\$5,374	\$9,953	\$9,596	\$5,058	\$4,496	\$2,623	\$2,886	\$0	\$2,237
Retail (125,000 sq ft)	1,000 sf	\$9,755	\$12,132	\$13,912	\$5,477	\$5,246	\$9,780	\$9,368	\$5,270	\$5,057	\$3,080	\$11,795	\$5,641	\$3,808
Bank w/Drive-Thru	1,000 sf	\$14,642	\$18,198	\$20,865	\$11,525	\$11,050	\$20,581	\$19,733	\$23,331	\$10,653	\$3,080	\$5,461	\$12,730	\$3,808
Fast Food w/Drive-Thru	1,000 sf	\$71,581	\$89,353	\$102,526	\$38,463	\$36,809	\$68,684	\$65,731	\$35,791	\$35,413	\$3,080	\$7,091	\$40,950	\$3,808

- 1) Represents the portion of the maximum calculated fee for each respective county that is actually charged. Fees may have been lowered/increased through annual indexing or policy discounts. Does not account for moratoriums/suspensions
- 2) du = dwelling unit
- 3) Source: Appendix D, Table D-2
- 4) Source: Appendix D, Table D-3
- 5) Source: Appendix D, Table D-4
- 6) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and increased to 56 percent in 2014
- 7) Source: Orange County Planning and Development Department. Fees shown at the maximum calculated rates
- 8) Source: Brevard County Planning and Development Department
- 9) Source: Hillsborough County Public Works Department. Mobility fees shown are for the Urban Assessment District and are being phased in over a five-year period. The current fees shown are 50 percent (effective January 1, 2018) of the maximum rates calculated in the 2016 Mobility Fee Study
- 10) Source: Lake County Economic Growth Department. Fees shown are for the South Benefit District
- 11) Source: Osceola County Community Development Department. Non-mixed use fees are shown. Single family fee shown is the non-rural rate and the bank with drive-thru land use is measured per lane
- 12) Source: Pasco County Central Planning Department. Mobility fees shown reflect the subsidized rates that are charged in the Urban Service District.
- 13) Source: Polk County Building Department. The fees shown were adopted at 50 percent and increased to 100 percent in March 2017

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Table 5 (continued)
Transportation Impact/Multi-Modal Fee Comparison

Land Use	Unit ⁽²⁾	Orange County			Orange County ⁽⁶⁾		Orange County ⁽⁷⁾		Seminole County ⁽⁸⁾	Volusia County ⁽⁹⁾	City of Ocoee ⁽¹⁰⁾	City of Orlando ⁽¹¹⁾	City of Winter Garden ⁽¹²⁾
		Urban ⁽³⁾	Non-Urban/ Suburban ⁽⁴⁾	Rural ⁽⁵⁾	Non-AMA	AMA	Non-AMA	AMA					
Date of Last Update		2018	2018	2018	2012	2012	2012	2012	1992	2003	2015	2012	2004
Adoption Percentage ⁽¹⁾		100%	100%	100%	56%	56%	100%	100%	100%	68%	100%	50%	100%
Residential:													
Single Family (2,000 sf)	du	\$8,037	\$9,841	\$11,257	\$3,898	\$3,761	\$6,961	\$6,716	\$1,271	\$2,174	\$3,944	\$3,818	\$3,517
Non-Residential:													
Light Industrial	1,000 sf	\$3,047	\$3,746	\$4,286	\$2,163	\$2,088	\$3,863	\$3,728	\$944	\$1,220	\$2,497	\$2,214	\$1,404
Office (50,000 sq ft)	1,000 sf	\$7,943	\$9,738	\$11,142	\$5,574	\$5,374	\$9,953	\$9,596	\$2,785	\$2,310	\$4,753	\$4,237	\$5,748
Retail (125,000 sq ft)	1,000 sf	\$9,755	\$12,132	\$13,912	\$5,477	\$5,246	\$9,780	\$9,368	\$3,282	\$3,080	\$4,847	\$5,591	\$7,645
Bank w/Drive-Thru	1,000 sf	\$14,642	\$18,198	\$20,865	\$11,525	\$11,050	\$20,581	\$19,733	\$10,375	\$10,960	\$9,608	\$11,774	\$30,730
Fast Food w/Drive-Thru	1,000 sf	\$71,581	\$89,353	\$102,526	\$38,463	\$36,809	\$68,684	\$65,731	\$16,991	\$23,010	\$23,156	\$40,182	\$58,351

- 1) Represents the portion of the maximum calculated fee for each respective county that is actually charged. Fees may have been lowered/increased through annual indexing or policy discounts. Does not account for moratoriums/suspensions
- 2) du = dwelling unit
- 3) Source: Appendix D, Table D-2
- 4) Source: Appendix D, Table D-3
- 5) Source: Appendix D, Table D-4
- 6) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and increased to 56 percent in 2014
- 7) Source: Orange County Planning and Development Department. Fees shown at the maximum calculated rates
- 8) Source: Seminole County Development services Department. Fees shown are for the West District
- 9) Source: Volusia County Growth and Resource Management Department. Fees shown include 3.0% administrative fee. Fees were adopted at 68 percent and then indexed for three consecutive years to the rates shown
- 10) Source: City of Ocoee Planning and Zoning Division
- 11) Source: City of Orlando Transportation Planning Division. City Other Multi-Modal impact fees shown
- 12) Source: City of Winter Garden Community Development Department. Fees were adopted at 100 percent and are the average of the North and South of Tumpike study's proposed rates

IX. Economic Growth Model

In addition to calculating the roadway impact fee levels, this study also includes an economic growth approach to impact fee calculations, which takes into account the existing development's ability to absorb new growth and calculates the levels of possible policy discounts without reducing the level-of-service used in the full roadway/multi-modal impact fee calculations.

As presented in Appendix C, in addition to impact fees, other revenue sources such as fuel tax and INVEST funds are also being used to fund the countywide transportation system. In terms of the economic growth calculations, it is important to note the following:

- As discussed previously, consumption-based impact fees that are based on either the adopted LOS standard or a service level that is lower than achieved LOS do not generate sufficient revenues to maintain the existing conditions.
- The economic growth strategy calculations are based on the future estimated fuel tax and other funding toward countywide transportation capital capacity projects. The calculations exclude any funding dedicated toward paying the debt service since the dollar amount cannot be available for absorbing the growth. If other revenue sources become available, these calculations will need to be revised.
- Based on the socio-economic data and projections obtained from the OUATS 2040, an average annual growth rate of 1.2 percent was calculated for unincorporated Orange County between 2017 and 2040. This growth projection is used in the calculations associated with the economic growth strategy.
- As shown in Appendix C, the County allocated \$37 million of non-impact fee dollars per year toward capacity expansion of county roads. In addition, the State invests approximately \$64 million per year on transportation capacity in Orange County. Although impact fee calculations already account for the portion of this revenue that is generated by new development, a larger portion of the revenue is generated by existing population and can be treated as a "buy-down" fund. In other words, as long as the County limits the buy-down amount to the level of non-impact fee investment, the equity requirements of impact fee will be met.

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- Given that any impact fee discount results in revenue loss, it is recommended that the discounts are applied to select land uses consistent with the County's Comprehensive Plan and economic development goals and policies. Examples would be high wage creating jobs, industries/sectors important to well-being of the residents (such as housing, education, safety, etc.).
- Similarly, the County could reduce impact fee on residential land uses more than non-residential land uses.

It is important that the County track the impact fee discount amounts and compare them to the non-impact fee capacity funding programmed in the five-year Capital Improvement Plan to ensure that the discounted amounts do not exceed funding provided by other sources. This process should be documented in an annual report.

As mentioned previously, the level of discount is more of a policy decision and could be at any level between no discounts and the maximum level of non-impact fee investment per year (or any amount the County dedicates from non-impact fee revenue sources). Any additional discounts would either need to be applied to all land uses or to be bought down with the General Fund or another revenue source.

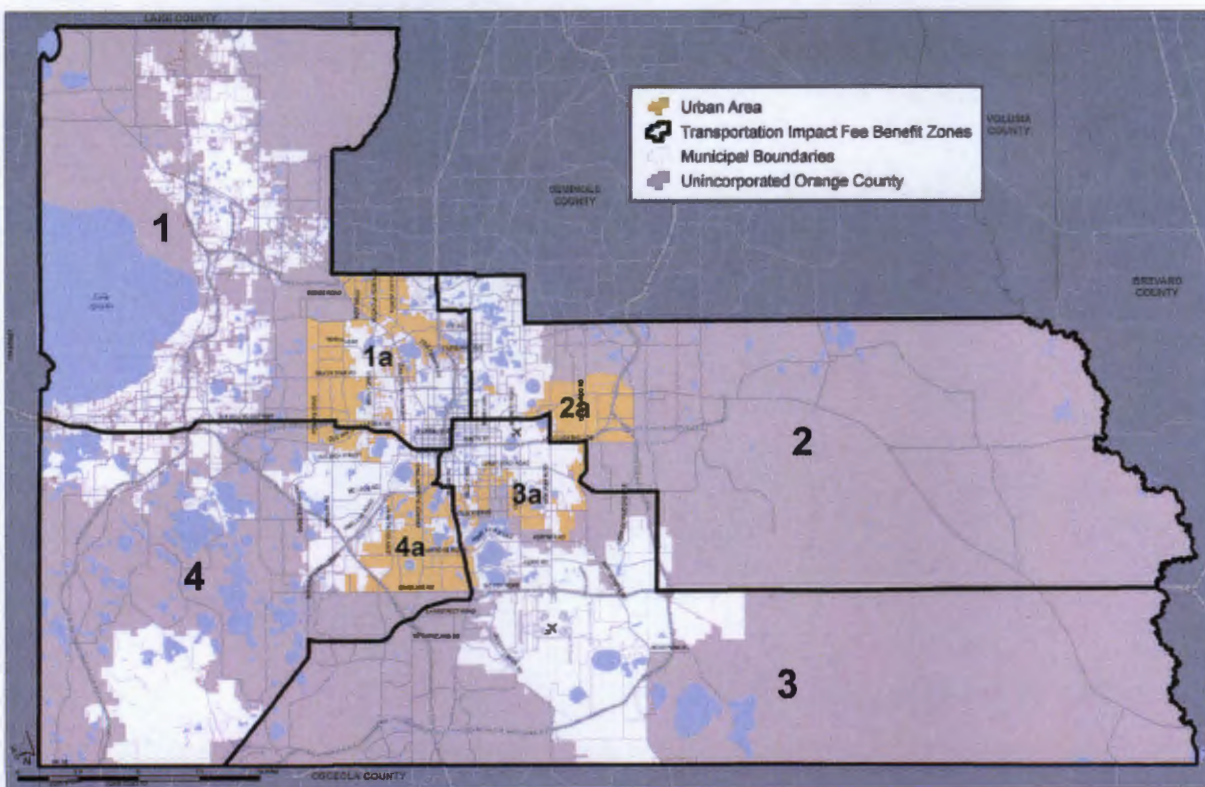
X. Impact Fee Benefit Zones

As part of the update to the impact fee program, the existing impact fee benefit zones illustrated in Map 7 were reviewed. Currently, Orange County has four road impact fee benefit zones, and 4 sub-zones for the alternative mobility area. Benefit districts dictate where impact fee revenues can be spent to ensure that fee payers receive the associated benefit. Typically, boundaries for benefit districts are based on land uses, growth rates, major roadway boundaries, and major geographical/environmental boundaries. Impact fee revenues collected within each district are deposited into separate trust accounts upon receipt. These revenues can only be used for capacity expansion improvements.

As previously discussed, the County may potentially expand the urban area to the southwest and the northeast. As shown in Map 8, these expansions will become part of the urban sub-areas within each larger transportation impact fee benefit district. The boundaries of the four main districts will not be altered.

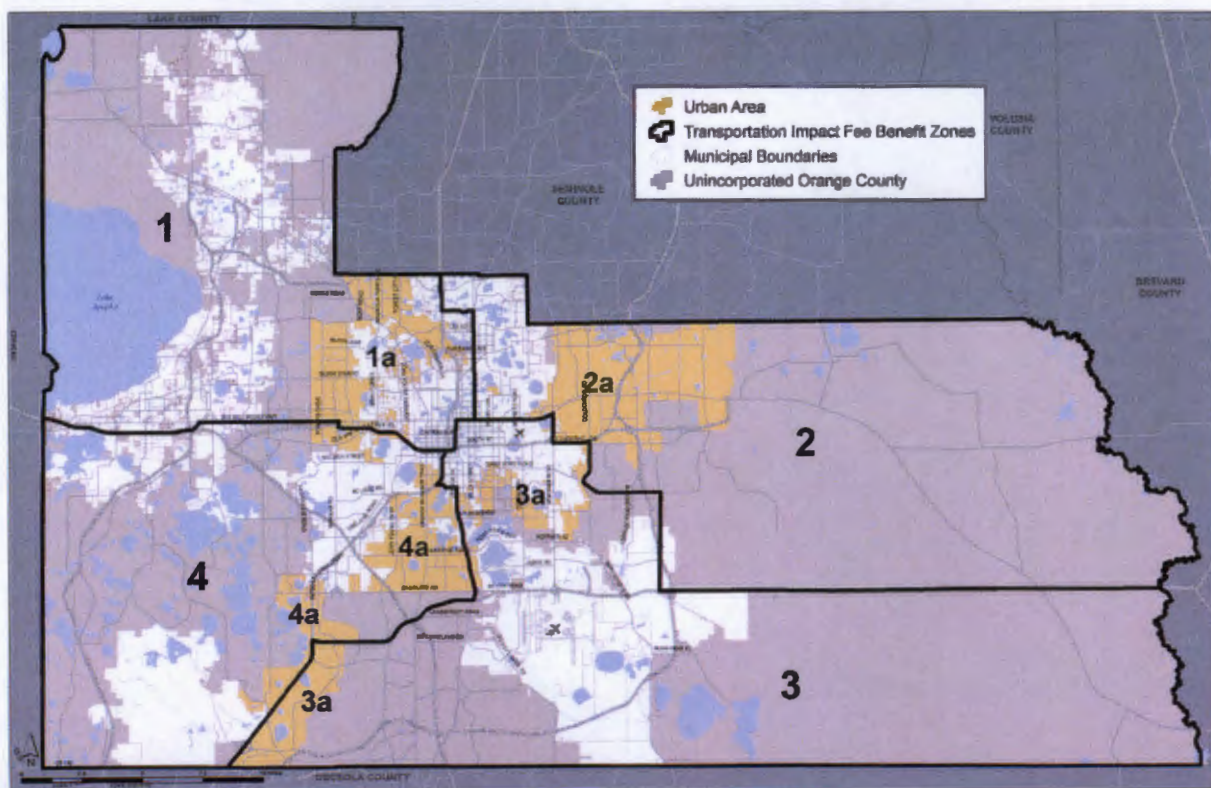
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Map 7 – Orange County Transportation Impact Fee Existing Benefit Zones



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Map 8 – Orange County Transportation Impact Fee Benefit Zones with Expanded Urban Area



XI. Indexing

In many cases, impact fees are reviewed periodically (every three to five years) as opposed to an annual review. If no annual adjustment is applied to the impact fee rates a situation can arise where major adjustments to the fee schedule become necessary due to the time interval between update studies. The need for significant adjustment also creates major concern in the development community. To address this issue, the calculated fees in Appendix D, Tables D-1 through D-3, could potentially be indexed annually for construction and land cost increases, as appropriate. The method for developing this index is detailed in this section.

Land Cost

As shown in Table 6, between 2012 and 2017 the total just property value for all vacant residential land in unincorporated Orange County increased by an annual average of 8.2 percent. This index was applied to the ROW component of the transportation impact fee.

Table 6
Just Value Trend – Unincorporated Orange County

Year	Just Value (Vacant Land ONLY)			
	Countywide	Unincorporated	% Change CW	% Change Uninc.
2012	\$2,524,918,735	\$1,462,392,892	-	-
2013	\$2,499,883,081	\$1,478,892,972	-1.0%	1.1%
2014	\$2,794,876,391	\$1,701,638,886	11.8%	15.1%
2015	\$2,999,055,112	\$1,835,656,636	7.3%	7.9%
2016	\$3,356,603,868	\$2,014,490,714	11.9%	9.7%
2017	\$3,624,185,916	\$2,156,930,154	8.0%	7.1%
Average			7.6%	8.2%

Source: Florida Department of Revenue

Roadway Construction Cost

The Florida Department of Transportation provides historical inflation factors for transportation project costs, which are presented in Table 7. It is recommended that these factors be used for the design and construction components of the transportation impact fee indexing. As shown in Table 7, the average index is approximately 1.8 percent based on the past 5 years.

Table 7
FDOT Project Cost Inflation Index

Fiscal Year	Inflation Rate
2012	3.9%
2013	1.9%
2014	3.0%
2015	0.0%
2016	0.0%
Annual Avg.	1.8%

Source: FDOT Office of Policy Planning

Transit Capital Cost

As previously noted, the transit capital cost for the multi-modal fee in the urban district is not included in the unit construction cost per person-mile used to calculate the impact fee due to the insignificant impact on the cost per person-mile. Therefore, there is no indexing adjustment for capital costs related to transit investment. However, an index should be applied to the transit capital cost once the investment reaches a significant level, as determined in a future update study. For this component, the Engineering News-Record (ENR) Building Cost Index is recommended.

Index Calculation

Table 8 presents the indexing application for the transportation impact fee rates.

Table 8
Transportation Indexing Application

Phase	Cost per Lane Mile ⁽¹⁾	Percent of Total Cost ⁽²⁾	Annual Increase ⁽³⁾	Index ⁽⁴⁾
Design	\$240,000	5.4%	1.8%	0.1%
Right-of-Way	\$1,200,000	27.0%	8.2%	2.2%
Construction	\$3,000,000	67.6%	1.8%	1.2%
Total Cost	\$4,440,000		-	-
Total Applicable Index⁽⁵⁾				3.5%

1) Source: Table 1

2) Cost phase (design, ROW, construction) divided by the total cost

3) Source: Table 6 for ROW; Table 7 for design and construction

4) Percent of total cost (Item 2) for each phase multiplied by the annual increase (Item 3)

5) Sum of the index components (Item 4) for all phases

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Index Application

This section provides an indexing application example using the total application index of 3.5 percent:

- Single Family (detached):
 - o Urban Area = $\$8,037 \times (1 + 3.5\%) = \mathbf{\$8,318}$
 - o Non-Urban/Suburban Area = $\$9,841 \times (1 + 3.5\%) = \mathbf{\$10,185}$
 - o Rural Area = $\$11,257 \times (1 + 3.5\%) = \mathbf{\$11,651}$

This index would be applied to the fees for each land use at the end of the first year after adoption and implementation of the updated impact fee schedule. Given the recent fluctuations in land and construction values, it is recommended that the indices be re-evaluated at the end of the first year of application. At the end of each subsequent year, the index would be re-calculated and applied to the current adopted fee schedule. This approach creates the opportunity to base the index on the most current data available.

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APPENDIX A
Demand Component Calculations

Appendix A: Demand Component

This appendix presents the detailed calculations for the demand component of the roadway/multi-modal impact fee update.

Interstate & Toll Facility Discount Factor

Table A-1 presents the interstate and toll facility discount factor used in the calculation of the roadway/multi-modal impact fee. This variable is based on data from the Orlando Urban Area Transportation System 2040 Model (OUATS), specifically the base year 2009 vehicle-miles of travel. It should be noted that discount factor excludes all external-to-external trips, which represent traffic that goes through Orange County, but does not necessarily stop in the county. This traffic is excluded from the analysis since it does not come from development within the county. The I/T discount factor is used to reduce the VMT/PMT that the roadway/multi-modal fee charges for each land use.

Table A-1
Interstate/Toll Facility Discount Factor

Facility Type	Total	
	VMT	%
Interstate/Toll	10,339,058	36.1%
Other Roads	18,331,972	63.9%
Total	28,671,030	100.0%
Interstate/Toll	10,339,058	36.1%

Source: OUATS 2040 (base year)

Demand Variable Changes

Since the last demand component update in 2012, the trip generation rate (TGR), trip length (TL), and percent new trips (PNT) has changed for several land uses. These variables were updated based on additional data included in the Florida Studies database (including local Orange County studies) and the use of the ITE 10th Edition Trip Generation Reference Report. Table A-2 presents the changes to the gross VMT while Tables A-3 through A-5 provide detail on each individual input variable. For the trip length comparison in Table A-4, it is important to note that these figures reflect the trip length figures used in the impact fee calculations prior to the application of local adjustment factor to reflect longer trip lengths in Orange County.

Table A-2
Percent Change in Gross VMT of Impact Fee Land Uses

ITE LUC	Land Use	Unit	GVTM 2012	GVTM 2018	GVTM %	Explanation
RESIDENTIAL:						
210	Single Family (Detached)	du	25.85	25.85	0%	No change
220	Multi-Family Housing (Low-Rise, 1-2 floors)	du	16.83	18.67	11%	Re-alignment of multi-family land uses in ITE 10th Edition
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	16.83	13.87	-18%	Re-alignment of multi-family land uses in ITE 10th Edition
222	Multi-Family Housing (High-Rise, >10 floors)	du	10.66	11.35	6%	Re-alignment of multi-family land uses in ITE 10th Edition
231	Mid-Rise Residential w/1st floor Commercial	du	-	8.77	-	New land use
232	High-Rise Residential w/1st floor Commercial	du	-	3.93	-	New land use
240	Mobile Home Park	du	9.59	9.59	0%	No change
251	Retirement Community/Age-Restricted Single-Family	du	8.48	9.49	12%	TGR update, see Table A-3
265	Time Share	du	13.91	17.13	23%	TGR update, see Table A-3
n/a	Student Housing	du	7.19	7.19	0%	No change
LODGING:						
310	Hotel	room	13.14	11.47	-13%	TGR update, see Table A-3
320	Motel	room	9.41	5.60	-40%	TGR update, see Table A-3
RECREATION:						
430	Golf Course	acre	15.01	11.14	-26%	TGR update, see Table A-3
437	Bowling Alley	1,000 sf	77.24	30.13	-61%	TGR update, see Table A-3
443	Movie Theater	1,000 sf	76.25	80.19	5%	TGR update, see Table A-3
491	Racquet Club	1,000 sf	33.96	47.68	40%	TGR update, see Table A-3
492	Health/Fitness Club	1,000 sf	79.71	83.51	5%	TGR update, see Table A-3
n/a	Dance Studio (Martial Arts/Music Lessons)	1,000 sf	-	30.55	-	New land use
INSTITUTIONAL:						
522	School	1,000 sf	52.85	26.71	-49%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
560	Public Assembly	1,000 sf	34.94	12.23	-65%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
565	Day Care	1,000 sf	55.62	36.77	-34%	TGR update, see Table A-3
590	Library	1,000 sf	91.22	116.86	28%	TGR update, see Table A-3
MEDICAL:						
610	Hospital	bed	30.10	57.63	91%	TGR & PNT update, see Tables A-3 and A-5
620	Nursing Home	1,000 sf	2.86	3.48	22%	TGR update, see Table A-3
640	Animal Hospital/Veterinary Clinic	1,000 sf	67.97	16.09	-76%	TGR & TL update, see Tables A-3 and A-4
OFFICE:						
710	General Office 50,000 sf or less	1,000 sf	37.07	25.66	-31%	TGR update, see Table A-3
710	General Office 50,001-100,000 sf	1,000 sf	31.60	25.14	-20%	TGR update, see Table A-3
710	General Office 100,001-200,000 sf	1,000 sf	26.94	24.61	-9%	TGR update, see Table A-3
710	General Office greater than 200,000 sf	1,000 sf	22.98	24.12	5%	TGR update, see Table A-3
720	Small Medical/Dental Office (10,000 sq ft or less)	1,000 sf	85.75	58.85	-31%	TGR update, see Table A-3
720	Medical/Dental Office	1,000 sf	85.75	84.27	-2%	TGR update, see Table A-3
732	Post Office	1,000 sf	136.51	131.15	-4%	TGR update, see Table A-3
RETAIL:						
815	Free-Standing Discount Store	1,000 sf	46.02	42.71	-7%	TGR update, see Table A-3
816	Hardware/Paint Store	1,000 sf	26.86	4.79	-82%	TGR update, see Table A-3
820	Retail 50,000 sf or less	1,000 sf	45.32	39.30	-13%	TGR update, see Table A-3
820	Retail 100,001-200,000 sf	1,000 sf	48.21	42.68	-11%	TGR update, see Table A-3
820	Retail 200,001-300,000 sf	1,000 sf	42.84	38.72	-10%	TGR update, see Table A-3
820	Retail 300,001-400,000 sf	1,000 sf	41.36	37.84	-9%	TGR update, see Table A-3
820	Retail 400,001-500,000 sf	1,000 sf	40.28	37.18	-8%	TGR update, see Table A-3
820	Retail 500,001-1,000,000 sf	1,000 sf	39.87	37.04	-7%	TGR update, see Table A-3
820	Retail 1,000,001-1,200,000 sf	1,000 sf	41.03	38.93	-5%	TGR update, see Table A-3
820	Retail greater than 1,200,000 sf	1,000 sf	41.66	39.72	-5%	TGR update, see Table A-3
820	Retail greater than 1,200,000 sf	1,000 sf	42.52	40.75	-4%	TGR update, see Table A-3
840/841	New/Used Auto Sales	1,000 sf	47.97	44.66	-7%	TGR update, see Table A-3
850	Supermarket	1,000 sf	60.21	62.11	3%	TGR update, see Table A-3
853	Convenience Market w/Gas Pumps	1,000 sf	163.86	132.39	-19%	TGR update, see Table A-3
862	Home Improvement Superstore	1,000 sf	23.96	24.71	3%	TGR update, see Table A-3
863	Electronics Superstore	1,000 sf	12.30	21.49	75%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
880/881	Drug Store	1,000 sf	85.81	34.73	-60%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
SERVICES:						
911	Bank/Savings Walk-In	1,000 sf	-	33.60	-	New land use
912	Bank/Savings Drive-In	1,000 sf	90.15	58.09	-36%	TGR update, see Table A-3
925	Drinking Place	1,000 sf	30.96	59.48	92%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
931	Quality Restaurant	1,000 sf	110.13	104.00	-6%	TGR update, see Table A-3
932	High-Turnover Restaurant	1,000 sf	131.22	119.58	-9%	TGR update, see Table A-3
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	303.79	286.86	-6%	TGR update, see Table A-3
942	Auto Service	1,000 sf	52.17	36.74	-30%	TGR, TL & PNT update, see Tables A-3, A-4, and A-5
944/945	Gasoline/Service Station w/ or w/o Conv/Car Wash	fuel pos.	36.83	40.39	10%	TGR update, see Table A-3
947	Self-Service Car Wash	wash station	80.05	32.57	-59%	TGR update, see Table A-3
INDUSTRIAL:						
110	General Light Industrial	1,000 sf	16.51	11.75	-29%	TGR update, see Table A-3
140	Manufacturing	1,000 sf	9.05	9.31	3%	TGR update, see Table A-3
150	Warehouse	1,000 sf	8.43	4.12	-51%	TGR update, see Table A-3
151	Mini-Warehouse	1,000 sf	3.07	2.41	-21%	TGR & TL update, see Tables A-3 and A-4

- Gross VMT = TGR * TL * PNT / 2
- Individual input variables are shown in Tables A-3 through A-5
- The trip length values used to calculate the GVTM do NOT include the TL adjustment factors that are applied in the impact fee rate calculations. The TL shown in Table A-4 provide a comparison to the 2012 report of the unadjusted TL values
- See Appendix D for additional information

Table A-3
Percent Change in Trip Generation Rate of Impact Fee Land Uses

ITE LUC	Land Use	Unit	TGR 2012	TGR 2018	TGR %	Explanation
RESIDENTIAL:						
210	Single Family (Detached)	du	7.81	7.81	0%	No change
220	Multi-Family Housing (Low-Rise, 1-2 floors)	du	6.60	7.32	11%	Re-alignment of multi-family land uses in ITE 10th Edition
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	6.60	5.44	-18%	Re-alignment of multi-family land uses in ITE 10th Edition
222	Multi-Family Housing (High-Rise, >10 floors)	du	4.18	4.45	6%	Re-alignment of multi-family land uses in ITE 10th Edition
231	Mid-Rise Residential w/1st floor Commercial	du	-	3.44	-	New land use
232	High-Rise Residential w/1st floor Commercial	du	-	1.54	-	New land use
240	Mobile Home Park	du	4.17	4.17	0%	No change
251	Retirement Community/Age-Restricted Single-Family	du	3.13	3.50	12%	Updated TGR in ITE 10th Edition
265	Time Share	du	7.01	8.63	23%	Updated TGR in ITE 10th Edition
n/a	Student Housing	du	2.82	2.82	0%	No change
EDUCATION:						
310	Hotel	room	6.36	5.55	-13%	Additional FL Studies added and updated TGR in ITE 10th Edition
320	Motel	room	5.63	3.35	-40%	Updated TGR in ITE 10th Edition
RECREATION:						
430	Golf Course	acre	5.04	3.74	-26%	Updated TGR in ITE 10th Edition
437	Bowling Alley	1,000 sf	33.33	13.00	-61%	Updated TGR in ITE 10th Edition (peak hour adjusted for daily)
443	Movie Theater	1,000 sf	78.06	82.30	5%	Updated TGR in ITE 10th Edition
491	Racquet Club	1,000 sf	14.03	19.70	40%	Updated TGR in ITE 10th Edition (peak hour adjusted for daily)
492	Health/Fitness Club	1,000 sf	32.93	34.50	5%	Updated TGR in ITE 10th Edition (peak hour adjusted for daily)
n/a	Dance Studio (Marital Arts/Music Lessons)	1,000 sf	-	21.33	-	New land use
INSTITUTIONAL:						
522	School	1,000 sf	13.78	20.17	46%	Updated TGR in ITE 10th Edition
560	Public Assembly	1,000 sf	9.11	6.95	-24%	Updated TGR in ITE 10th Edition
565	Day Care	1,000 sf	75.07	49.63	-34%	Updated TGR in ITE 10th Edition
590	Library	1,000 sf	56.24	72.05	28%	Updated TGR in ITE 10th Edition
HEALTHCARE:						
610	Hospital	bed	11.81	22.32	89%	Updated TGR in ITE 10th Edition
620	Nursing Home	1,000 sf	2.48	3.02	22%	Updated TGR in ITE 10th Edition
640	Animal Hospital/Veterinary Clinic	1,000 sf	28.66	24.20	-16%	Updated TGR in ITE 10th Edition
OFFICE:						
710	General Office 50,000 sf or less	1,000 sf	15.65	10.83	-31%	Updated TGR equation in ITE 10th Edition
710	General Office 50,001-100,000 sf	1,000 sf	13.34	10.61	-20%	Updated TGR equation in ITE 10th Edition
710	General Office 100,001-200,000 sf	1,000 sf	11.37	10.39	-9%	Updated TGR equation in ITE 10th Edition
710	General Office greater than 200,000 sf	1,000 sf	9.70	10.18	5%	Updated TGR equation in ITE 10th Edition
720	Small Medical/Dental Office (10,000 sq ft or less)	1,000 sf	34.72	23.83	-31%	New land use (change shown from the medical/dental office)
720	Medical/Dental Office	1,000 sf	34.72	34.12	-2%	Updated TGR in ITE 10th Edition
732	Post Office	1,000 sf	108.19	103.94	-4%	Updated TGR in ITE 10th Edition
RETAIL:						
815	Free-Standing Discount Store	1,000 sf	57.24	53.12	-7%	Updated TGR in ITE 10th Edition
816	Hardware/Paint Store	1,000 sf	51.29	9.14	-82%	Updated TGR in ITE 10th Edition
820	Retail 50,000 sf or less	1,000 sf	86.56	75.05	-13%	Updated TGR equation in ITE 10th Edition
820	Retail 50,001-100,000 sf	1,000 sf	67.91	60.12	-11%	Updated TGR equation in ITE 10th Edition
820	Retail 100,001-200,000 sf	1,000 sf	53.28	48.16	-10%	Updated TGR equation in ITE 10th Edition
820	Retail 200,001-300,000 sf	1,000 sf	46.23	42.30	-9%	Updated TGR equation in ITE 10th Edition
820	Retail 300,001-400,000 sf	1,000 sf	41.80	38.58	-8%	Updated TGR equation in ITE 10th Edition
820	Retail 400,001-500,000 sf	1,000 sf	38.66	35.92	-7%	Updated TGR equation in ITE 10th Edition
820	Retail 500,001-1,000,000 sf	1,000 sf	30.33	28.78	-5%	Updated TGR equation in ITE 10th Edition
820	Retail 1,000,001-1,200,000 sf	1,000 sf	28.46	27.14	-5%	Updated TGR equation in ITE 10th Edition
820	Retail greater than 1,200,000 sf	1,000 sf	26.96	25.84	-4%	Updated TGR equation in ITE 10th Edition
840/841	New/Used Auto Sales	1,000 sf	26.40	24.58	-7%	Updated TGR in ITE 10th Edition
850	Supermarket	1,000 sf	103.38	106.64	3%	Updated TGR in ITE 10th Edition
853	Convenience Market w/Gas Pumps	1,000 sf	775.14	626.25	-19%	Updated TGR in ITE 10th Edition
862	Home Improvement Superstore	1,000 sf	29.80	30.74	3%	Updated TGR in ITE 10th Edition
863	Electronics Superstore	1,000 sf	45.04	41.05	-9%	Updated TGR in ITE 10th Edition
880/881	Drug Store	1,000 sf	88.46	104.37	18%	Updated TGR in ITE 10th Edition
SERVICES:						
911	Bank/Savings Walk-In	1,000 sf	-	59.39	-	New land use. TGR from ITE 10th (PM 4-6pm adjusted for daily)
912	Bank/Savings Drive-In	1,000 sf	159.34	102.66	-36%	Updated TGR in ITE 10th Edition
925	Drinking Place	1,000 sf	113.40	113.60	0%	Updated TGR in ITE 10th Edition
931	Quality Restaurant	1,000 sf	91.10	86.03	-6%	Updated TGR in ITE 10th Edition
932	High-Turnover Restaurant	1,000 sf	116.60	106.26	-9%	Additional FL Studies added and updated TGR in ITE 10th Edition
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	511.00	482.53	-6%	Updated TGR in ITE 10th Edition
942	Auto Service	1,000 sf	25.67	28.19	10%	Updated TGR in ITE 10th Edition
944/945	Gasoline/Service Station w/ or w/o Conv./Car Wash	fuel pos.	168.56	184.84	10%	Blend of 944 & 945; updated TGR in ITE 10th Edition
947	Self-Service Car Wash	wash station	108.00	43.94	-59%	Additional FL Studies added
INDUSTRIAL:						
110	General Light Industrial	1,000 sf	6.97	4.96	-29%	Updated TGR in ITE 10th Edition
140	Manufacturing	1,000 sf	3.82	3.93	3%	Updated TGR in ITE 10th Edition
150	Warehouse	1,000 sf	3.56	1.74	-51%	Updated TGR in ITE 10th Edition
151	Mini-Warehouse	1,000 sf	2.15	1.49	-31%	Additional FL Studies added

See Appendix D for additional information

Table A-4
Percent Change in Trip Length (Unadjusted) of Impact Fee Land Uses

ITE LUC	Land Use	Unit	TL 2012	TL 2018	TL %	Explanation
RESIDENTIAL:						
210	Single Family (Detached)	du	6.62	6.62	0%	No change
220	Multi-Family Housing (Low-Rise, 1-2 floors)	du	5.10	5.10	0%	No change
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	5.10	5.10	0%	No change
222	Multi-Family Housing (High-Rise, >10 floors)	du	5.10	5.10	0%	No change
231	Mid-Rise Residential w/1st floor Commercial	du	-	5.10	-	New land use
232	High-Rise Residential w/1st floor Commercial	du	-	5.10	-	New land use
240	Mobile Home Park	du	4.60	4.60	0%	No change
251	Retirement Community/Age-Restricted Single-Family	du	5.42	5.42	0%	No change
265	Time Share	du	3.97	3.97	0%	No change
n/a	Student Housing	du	5.10	5.10	0%	No change
LODGING:						
310	Hotel	room	6.26	6.26	0%	No change
320	Motel	room	4.34	4.34	0%	No change
RECREATIONAL:						
430	Golf Course	acre	6.62	6.62	0%	No change
437	Bowling Alley	1,000 sf	5.15	5.15	0%	No change
443	Movie Theater	1,000 sf	2.22	2.24	1%	Updated weighted average calculation
491	Racquet Club	1,000 sf	5.15	5.15	0%	No change
492	Health/Fitness Club	1,000 sf	5.15	5.15	0%	No change
n/a	Dance Studio (Marital Arts/Music Lessons)	1,000 sf	-	3.37	-	New land use
INSTITUTIONAL:						
522	School	1,000 sf	7.67	3.31	-57%	Updated to use 50% of single family per review of travel demand models
560	Public Assembly	1,000 sf	7.67	3.91	-49%	Updated to use the midpoint of office and retail (App. A)
565	Day Care	1,000 sf	2.03	2.03	0%	No change
590	Library	1,000 sf	6.62	6.62	0%	No change
MEDICAL:						
610	Hospital	bed	6.62	6.62	0%	No change
620	Nursing Home	1,000 sf	2.59	2.59	0%	No change
640	Animal Hospital/Veterinary Clinic	1,000 sf	5.10	1.90	-63%	Updated to use FL Studies; previously used 2004 study
OFFICE:						
710	General Office 50,000 sf or less	1,000 sf	5.15	5.15	0%	No change
710	General Office 50,001-100,000 sf	1,000 sf	5.15	5.15	0%	No change
710	General Office 100,001-200,000 sf	1,000 sf	5.15	5.15	0%	No change
710	General Office greater than 200,000 sf	1,000 sf	5.15	5.15	0%	No change
720	Small Medical/Dental Office	1,000 sf	5.55	5.55	0%	No change
720	Medical/Dental Office	1,000 sf	5.55	5.55	0%	No change
732	Post Office	1,000 sf	5.15	5.15	0%	No change
RETAIL:						
815	Free-Standing Discount Store	1,000 sf	2.40	2.40	0%	No change
816	Hardware/Paint Store	1,000 sf	1.87	1.87	0%	No change
820	Retail 50,000 sf/gla or less	1,000 sf/gla	1.87	1.87	0%	No change
820	Retail 50,001-100,000 sf/gla	1,000 sf/gla	2.29	2.29	0%	No change
820	Retail 100,001-200,000 sf/gla	1,000 sf/gla	2.40	2.40	0%	No change
820	Retail 200,001-300,000 sf/gla	1,000 sf/gla	2.52	2.52	0%	No change
820	Retail 300,001-400,000 sf/gla	1,000 sf/gla	2.64	2.64	0%	No change
820	Retail 400,001-500,000 sf/gla	1,000 sf/gla	2.75	2.75	0%	No change
820	Retail 500,001-1,000,000 sf/gla	1,000 sf/gla	3.34	3.34	0%	No change
820	Retail 1,000,001-1,200,000 sf/gla	1,000 sf/gla	3.57	3.57	0%	No change
820	Retail greater than 1,200,000 sf/gla	1,000 sf/gla	3.80	3.80	0%	No change
840/841	New/Used Auto Sales	1,000 sf	4.60	4.60	0%	No change
850	Supermarket	1,000 sf	2.08	2.08	0%	No change
853	Convenience Market w/Gas Pumps	1,000 sf	1.51	1.51	0%	No change
862	Home Improvement Superstore	1,000 sf	2.40	2.40	0%	No change
863	Electronics Superstore	1,000 sf	1.27	1.87	47%	Updated to <50,000 sq ft retail tier; previously used <10,000 sq ft
880/881	Drug Store	1,000 sf	3.88	2.08	-46%	Updated to use FL Studies; previously used 2004 study
SERVICES:						
911	Bank/Savings Walk-In	1,000 sf	-	2.46	-	New land use
912	Bank/Savings Drive-In	1,000 sf	2.46	2.46	0%	No change
925	Drinking Place	1,000 sf	1.27	1.87	47%	Updated to <50,000 sq ft retail tier; previously used <10,000 sq ft
931	Quality Restaurant	1,000 sf	3.14	3.14	0%	No change
932	High-Turnover Restaurant	1,000 sf	3.17	3.17	0%	No change
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	2.05	2.05	0%	No change
942	Auto Service	1,000 sf	7.97	3.62	-55%	Updated to use FL Studies; previously used 2004 study
944/945	Gasoline/Service Station	fuel pos.	1.90	1.90	0%	No change
947	Self-Service Car Wash	wash station	2.18	2.18	0%	No change
INDUSTRIAL:						
110	General Light Industrial	1,000 sf	5.15	5.15	0%	No change
140	Manufacturing	1,000 sf	5.15	5.15	0%	No change
150	Warehouse	1,000 sf	5.15	5.15	0%	No change
151	Mini-Warehouse	1,000 sf	3.10	3.51	13%	Updated to use the midpoint of office and retail (<50k sq ft)

- The trip length values shown do NOT include the TL adjustment factors that are applied in the impact fee rate calculations. The TL shown in Table A-4 provide a comparison to the 2012 report of the raw, unadjusted TL values
- See Appendix D for additional information

Table A-5
Percent Change in Percent New Trips of Impact Fee Land Uses

ITE LUC	Land Use	Unit	PNT 2012	PNT 2018	PNT %	Explanation
RESIDENTIAL:						
210	Single Family (Detached)	du	100%	100%	0%	No change
220	Multi-Family Housing (Low-Rise, 1-2 floors)	du	100%	100%	0%	No change
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	100%	100%	0%	No change
222	Multi-Family Housing (High-Rise, >10 floors)	du	100%	100%	0%	No change
231	Mid-Rise Residential w/1st floor Commercial	du	-	100%	-	New land use
232	High-Rise Residential w/1st floor Commercial	du	-	100%	-	New land use
240	Mobile Home Park	du	100%	100%	0%	No change
251	Retirement Community/Age-Restricted Single-Family	du	100%	100%	0%	No change
265	Time Share	du	100%	100%	0%	No change
n/a	Student Housing	du	100%	100%	0%	No change
EDUCATION:						
310	Hotel	room	66%	66%	0%	No change
320	Motel	room	77%	77%	0%	No change
RECREATIONAL:						
430	Golf Course	acre	90%	90%	0%	No change
437	Bowling Alley	1,000 sf	90%	90%	0%	No change
443	Movie Theater	1,000 sf	88%	87%	-1%	Updated weighted average calculation
491	Racquet Club	1,000 sf	94%	94%	0%	No change
492	Health/Fitness Club	1,000 sf	94%	94%	0%	No change
n/a	Dance Studio (Martial Arts/Music Lessons)	1,000 sf	-	85%	-	New land use
INSTITUTIONAL:						
522	School	1,000 sf	100%	80%	-20%	Updated; based on office land use w/adjustment
560	Public Assembly	1,000 sf	100%	90%	-10%	Updated; based on office land use
565	Day Care	1,000 sf	73%	73%	0%	No change
590	Library	1,000 sf	49%	49%	0%	No change
MEDICAL:						
610	Hospital	bed	77%	78%	1%	Updated; based on midpoint of office and hotel
620	Nursing Home	1,000 sf	89%	89%	0%	No change
640	Animal Hospital/Veterinary Clinic	1,000 sf	93%	70%	-25%	Updated to use FL Studies; previously used 2004 study
OFFICE:						
710	General Office 50,000 sf or less	1,000 sf	92%	92%	0%	No change
710	General Office 50,001-100,000 sf	1,000 sf	92%	92%	0%	No change
710	General Office 100,001-200,000 sf	1,000 sf	92%	92%	0%	No change
710	General Office greater than 200,000 sf	1,000 sf	92%	92%	0%	No change
720	Small Medical/Dental Office	1,000 sf	89%	89%	0%	No change
720	Medical/Dental Office	1,000 sf	89%	89%	0%	No change
732	Post Office	1,000 sf	49%	49%	0%	No change
RETAIL:						
815	Free-Standing Discount Store	1,000 sf	67%	67%	0%	No change
816	Hardware/Paint Store	1,000 sf	56%	56%	0%	No change
820	Retail 50,000 sf/gla or less	1,000 sf/gla	56%	56%	0%	No change
820	Retail 50,001-100,000 sf/gla	1,000 sf/gla	62%	62%	0%	No change
820	Retail 100,001-200,000 sf/gla	1,000 sf/gla	67%	67%	0%	No change
820	Retail 200,001-300,000 sf/gla	1,000 sf/gla	71%	71%	0%	No change
820	Retail 300,001-400,000 sf/gla	1,000 sf/gla	73%	73%	0%	No change
820	Retail 400,001-500,000 sf/gla	1,000 sf/gla	75%	75%	0%	No change
820	Retail 500,001-1,000,000 sf/gla	1,000 sf/gla	81%	81%	0%	No change
820	Retail 1,000,001-1,200,000 sf/gla	1,000 sf/gla	82%	82%	0%	No change
820	Retail greater than 1,200,000 sf/gla	1,000 sf/gla	83%	83%	0%	No change
840/841	New/Used Auto Sales	1,000 sf	79%	79%	0%	No change
850	Supermarket	1,000 sf	56%	56%	0%	No change
853	Convenience Market w/Gas Pumps	1,000 sf	28%	28%	0%	No change
862	Home Improvement Superstore	1,000 sf	67%	67%	0%	No change
863	Electronics Superstore	1,000 sf	43%	56%	30%	Updated to <50,000 sq ft retail tier; previously used <10,000 sq ft
880/881	Drug Store	1,000 sf	50%	32%	-36%	Updated to use FL Studies; previously used 2004 study
SERVICES:						
911	Bank/Savings Walk-In	1,000 sf	-	46%	-	New land use
912	Bank/Savings Drive-In	1,000 sf	46%	46%	0%	No change
925	Drinking Place	1,000 sf	43%	56%	30%	Updated to <50,000 sq ft retail tier; previously used <10,000 sq ft
931	Quality Restaurant	1,000 sf	77%	77%	0%	No change
932	High-Turnover Restaurant	1,000 sf	71%	71%	0%	No change
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	58%	58%	0%	No change
942	Auto Service	1,000 sf	51%	72%	41%	Updated to use FL Studies; previously used 2004 study
944/945	Gasoline/Service Station	fuel pos.	23%	23%	0%	No change
947	Self-Service Car Wash	wash station	68%	68%	0%	No change
INDUSTRIAL:						
110	General Light Industrial	1,000 sf	92%	92%	0%	No change
140	Manufacturing	1,000 sf	92%	92%	0%	No change
150	Warehouse	1,000 sf	92%	92%	0%	No change
151	Mini-Warehouse	1,000 sf	92%	92%	0%	No change

See Appendix D for additional information

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Florida Studies Trip Characteristics Database

The Florida Studies Trip Characteristics Database includes over 200 studies on 40 different residential and non-residential land uses collected over the last 25 years. Data from these studies include trip generation, trip length, and percent new trips for each land use. This information has been used in the development of impact fees and the creation of land use plan category trip characteristics for communities throughout Florida and the U.S.

Tindale Oliver estimates trip generation rates for all land uses in a roadway impact fee schedule using data from studies in the Florida Studies Database and the Institute of Transportation Engineers' (ITE) *Trip Generation* reference report (10th edition). In instances, when both ITE *Trip Generation* reference report (10th edition) and Florida Studies trip generation rate (TGR) data are available for a particular land use, the data is typically blended to increase the sample size and provide a more valid estimate of the average number of trips generated per unit of development. If no Florida Studies data is available, only TGR data from the ITE reference report is used in the fee calculation.

The trip generation rate for each respective land use is calculated using machine counts that record daily traffic into and out of the site studied. The traffic count hoses are set at entrances to residential subdivisions for the residential land uses and at all access points for non-residential land uses.

The trip length information is obtained through origin-destination surveys that ask respondents where they came from prior to arriving at the site and where they intended to go after leaving the site. The results of these surveys were used to estimate average trip length by land use.

The percent new trip variable is based on assigning each trip collected through the origin-destination survey process a trip type (primary, secondary, diverted, and captured). The percent new trip variable is then calculated as 1 minus the percentage of trips that are captured.

Land Use 151: Mini-Warehouse												
Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source		
Orange Co, FL	89.6	2006	-	-	1.23	-	-	-	-	Orange County		
Orange Co, FL	84.7	2006	-	-	1.39	-	-	-	-	Orange County		
Orange Co, FL	93.0	2006	-	-	1.51	-	-	-	-	Orange County		
Orange Co, FL	107.0	2007	-	-	1.45	-	-	-	-	Orange County		
Orange Co, FL	77.0	2009	-	-	2.18	-	-	-	-	Tindale Oliver		
Orange Co, FL	93.7	2012	-	-	1.15	-	-	-	-	Tindale Oliver		
Total Size	545.0	5			Average Trip Length:		n/a					
ITE	780.0	15			Weighted Average Trip Length:		n/a					
Blended total	1,325.0				Weighted Percent New Trip Average:		-					
								Weighted Average Trip Generation Rate:		1.47		
								ITE Average Trip Generation Rate:		1.51		
								Blend of FL Studies and ITE Average Trip Generation Rate:		1.49		

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Land Use 210: Single Family - Detached

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Gwinnett Co, GA	-	12/13-18/92	-	-	5.80	-	5.40	-	31.32	Street Smarts
Gwinnett Co, GA	-	12/13-18/92	-	-	5.40	-	6.10	-	32.94	Street Smarts
Sarasota Co, FL	76	Jun-93	70	70	10.03	-	6.00	-	60.18	Sarasota County
Sarasota Co, FL	79	Jun-93	86	86	9.77	-	4.40	-	42.99	Sarasota County
Sarasota Co, FL	135	Jun-93	75	75	8.05	-	5.90	-	47.50	Sarasota County
Sarasota Co, FL	152	Jun-93	63	63	8.55	-	7.30	-	62.42	Sarasota County
Sarasota Co, FL	193	Jun-93	123	123	6.85	-	4.60	-	31.51	Sarasota County
Sarasota Co, FL	97	Jun-93	33	33	13.20	-	3.00	-	39.60	Sarasota County
Sarasota Co, FL	282	Jun-93	146	146	6.61	-	8.40	-	55.52	Sarasota County
Sarasota Co, FL	393	Jun-93	207	207	7.76	-	5.40	-	41.90	Sarasota County
Hernando Co, FL	76	May-96	148	148	10.01	9a-6p	4.85	-	48.55	Tindale Oliver
Hernando Co, FL	128	May-96	205	205	8.17	9a-6p	6.03	-	49.27	Tindale Oliver
Hernando Co, FL	232	May-96	182	182	7.24	9a-6p	5.04	-	36.49	Tindale Oliver
Hernando Co, FL	301	May-96	264	264	8.93	9a-6p	3.28	-	29.29	Tindale Oliver
Charlotte Co, FL	135	Oct-97	230	-	5.30	9a-5p	7.90	-	41.87	Tindale Oliver
Charlotte Co, FL	142	Oct-97	245	-	5.20	9a-5p	4.10	-	21.32	Tindale Oliver
Charlotte Co, FL	150	Oct-97	160	-	5.00	9a-5p	10.80	-	54.00	Tindale Oliver
Charlotte Co, FL	215	Oct-97	158	-	7.60	9a-5p	4.60	-	34.96	Tindale Oliver
Charlotte Co, FL	257	Oct-97	225	-	7.60	9a-5p	7.40	-	56.24	Tindale Oliver
Charlotte Co, FL	345	Oct-97	161	-	7.00	9a-5p	6.60	-	46.20	Tindale Oliver
Charlotte Co, FL	368	Oct-97	152	-	6.60	9a-5p	5.70	-	37.62	Tindale Oliver
Charlotte Co, FL	383	Oct-97	516	-	8.40	9a-5p	5.00	-	42.00	Tindale Oliver
Charlotte Co, FL	441	Oct-97	195	-	8.20	9a-5p	4.70	-	38.54	Tindale Oliver
Charlotte Co, FL	1,169	Oct-97	348	-	6.10	9a-5p	8.00	-	48.80	Tindale Oliver
Collier Co, FL	90	Dec-99	91	-	12.80	8a-6p	11.40	-	145.92	Tindale Oliver
Collier Co, FL	400	Dec-99	389	-	7.80	8a-6p	6.40	-	49.92	Tindale Oliver
Lake Co, FL	49	Apr-02	170	-	6.70	7a-6p	10.20	-	68.34	Tindale Oliver
Lake Co, FL	52	Apr-02	212	-	10.00	7a-6p	7.60	-	76.00	Tindale Oliver
Lake Co, FL	126	Apr-02	217	-	8.50	7a-6p	8.30	-	70.55	Tindale Oliver
Pasco Co, FL	55	Apr-02	133	-	6.80	8a-6p	8.12	-	55.22	Tindale Oliver
Pasco Co, FL	60	Apr-02	106	-	7.73	8a-6p	8.75	-	67.64	Tindale Oliver
Pasco Co, FL	70	Apr-02	188	-	7.80	8a-6p	6.03	-	47.03	Tindale Oliver
Pasco Co, FL	74	Apr-02	188	-	8.18	8a-6p	5.95	-	48.67	Tindale Oliver
Pasco Co, FL	189	Apr-02	261	-	7.46	8a-6p	8.99	-	67.07	Tindale Oliver
Marion Co, FL	102	Apr-02	167	-	8.02	7a-6p	5.10	-	40.90	Kimley-Horn & Associates
Marion Co, FL	105	Apr-02	169	-	7.23	7a-6p	7.22	-	52.20	Kimley-Horn & Associates
Marion Co, FL	124	Apr-02	170	-	6.04	7a-6p	7.29	-	44.03	Kimley-Horn & Associates
Marion Co, FL	132	Apr-02	171	-	7.87	7a-6p	7.00	-	55.09	Kimley-Horn & Associates
Marion Co, FL	133	Apr-02	209	-	8.04	7a-6p	4.92	-	39.56	Kimley-Horn & Associates
Citrus Co, FL	111	Oct-03	273	-	8.66	7a-6p	7.70	-	66.68	Tindale Oliver
Citrus Co, FL	231	Oct-03	155	-	5.71	7a-6p	4.82	-	27.52	Tindale Oliver
Citrus Co, FL	306	Oct-03	146	-	8.40	7a-6p	3.94	-	33.10	Tindale Oliver
Citrus Co, FL	364	Oct-03	345	-	7.20	7a-6p	9.14	-	65.81	Tindale Oliver
Citrus Co, FL	374	Oct-03	248	-	12.30	7a-6p	6.88	-	84.62	Tindale Oliver
Lake Co, FL	42	Dec-06	122	-	11.26	-	5.56	-	62.61	Tindale Oliver
Lake Co, FL	51	Dec-06	346	-	18.22	-	9.46	-	172.36	Tindale Oliver
Lake Co, FL	59	Dec-06	144	-	12.07	-	10.79	-	130.24	Tindale Oliver
Lake Co, FL	90	Dec-06	194	-	9.12	-	5.78	-	52.71	Tindale Oliver
Lake Co, FL	239	Dec-06	385	-	7.58	-	8.93	-	67.89	Tindale Oliver
Hernando Co, FL	232	Apr-07	516	-	8.02	7a-6p	8.16	-	65.44	Tindale Oliver
Hernando Co, FL	95	Apr-07	256	-	8.08	7a-6p	5.88	-	47.51	Tindale Oliver
Hernando Co, FL	90	Apr-07	338	-	7.13	7a-6p	5.86	-	41.78	Tindale Oliver
Hernando Co, FL	58	Apr-07	153	-	6.16	7a-6p	8.39	-	51.68	Tindale Oliver
Collier Co, FL	74	Mar-08	503	-	12.81	7a-6p	3.05	-	39.07	Tindale Oliver
Collier Co, FL	97	Mar-08	512	-	8.78	7a-6p	11.29	-	99.13	Tindale Oliver
Collier Co, FL	315	Mar-08	1,347	-	6.97	7a-6p	6.55	-	45.65	Tindale Oliver
Collier Co, FL	42	Mar-08	314	-	9.55	7a-6p	10.98	-	104.86	Tindale Oliver
Total Size		10,380	55	13,130	Average Trip Length:		6.79			
					Weighted Average Trip Length:		6.68			

Note: Georgia studies are not included in summary statistics

Weighted Average Trip Generation Rate:

7.81

Land Use: 220/221/222: Multi-Family Low/Mid/High-Rise

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sarasota Co, FL	212	Jun-93	42	42	5.78	-	5.20	-	30.06	Sarasota County
Sarasota Co, FL	243	Jun-93	36	36	5.84	-	-	-	-	Sarasota County
Marion Co, FL	214	Apr-02	175	175	6.84	-	4.61	-	31.53	Kimley-Horn & Associates
Marion Co, FL	240	Apr-02	174	174	6.96	-	3.43	-	23.87	Kimley-Horn & Associates
Marion Co, FL	288	Apr-02	175	175	5.66	-	5.55	-	31.41	Kimley-Horn & Associates
Marion Co, FL	480	Apr-02	175	175	5.73	-	6.88	-	39.42	Kimley-Horn & Associates
Marion Co, FL	500	Apr-02	170	170	5.46	-	5.94	-	32.43	Kimley-Horn & Associates
Lake Co, FL	250	Dec-06	135	135	6.71	-	5.33	-	35.76	Tindale Oliver
Lake Co, FL	157	Dec-06	265	265	13.97	-	2.62	-	36.60	Tindale Oliver
Lake Co, FL	169	Dec-06	212	-	8.09	-	6.00	-	48.54	Tindale Oliver
Lake Co, FL	226	Dec-06	301	-	6.74	-	2.17	-	14.63	Tindale Oliver
Hernando Co, FL	312	Apr-07	456	-	4.09	-	5.95	-	24.34	Tindale Oliver
Hernando Co, FL	176	Apr-07	332	-	5.38	-	5.24	-	28.19	Tindale Oliver
Orange Co, FL	364	Nov-13	-	-	9.08	-	-	-	-	Orange County
Orange Co, FL	108	Aug-14	-	-	5.51	-	-	-	-	Orange County
Hernando Co, FL	31	May-96	31	31	6.12	9a-5p	4.98	-	30.48	Tindale Oliver
Hernando Co, FL	128	May-96	128	128	6.47	9a-5p	5.18	-	33.51	Tindale Oliver
Pasco Co, FL	229	Apr-02	198	198	4.77	9a-5p	-	-	-	Tindale Oliver
Pasco Co, FL	248	Apr-02	353	353	4.24	9a-5p	3.53	-	14.97	Tindale Oliver
Total Size	4,575				Average Trip Length:		4.29			
Total Size (TL)	3,631				Weighted Average Trip Length:		5.28			
ITE Average Trip Generation Rate (LUC 220: Low-Rise):										7.32
ITE Average Trip Generation Rate (LUC 221: Mid-Rise):										5.44
ITE Average Trip Generation Rate (LUC 222: High-Rise):										4.45

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Land Use 240: Mobile Home Park

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VTM	Source
Marion Co, FL	67	Jul-91	22	22	5.40	48hrs.	2.29	-	12.37	Tindale Oliver
Marion Co, FL	82	Jul-91	58	58	10.80	24hr.	3.72	-	40.18	Tindale Oliver
Marion Co, FL	137	Jul-91	22	22	3.10	24hr.	4.88	-	15.13	Tindale Oliver
Sarasota Co, FL	996	Jun-93	181	181	4.19	-	4.40	-	18.44	Sarasota County
Sarasota Co, FL	235	Jun-93	100	100	3.51	-	5.10	-	17.90	Sarasota County
Marion Co, FL	188	Apr-02	147	-	3.51	24hr.	5.48	-	19.23	Kimley-Horn & Associates
Marion Co, FL	227	Apr-02	173	-	2.76	24hr.	8.80	-	24.29	Kimley-Horn & Associates
Marion Co, FL	297	Apr-02	175	-	4.78	24hr.	4.76	-	22.75	Kimley-Horn & Associates
Hernando Co, FL	1,892	May-96	425	425	4.13	9a-6p	4.13	-	17.06	Tindale Oliver
Total Size	4,121		9	1,303						
					Average Trip Length:		4.94			
					Weighted Average Trip Length:		4.93			

Weighted Average Trip Generation Rate: 4.17

Land Use 251: Senior Adult Housing - Detached

Location	Size / Units	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VTM	Source
Lakeland, FL	67	3/28-4/2/90	26	24	3.50	9am-4pm	2.44	-	8.54	Tindale Oliver
Marion Co, FL	778	Apr-02	175	-	2.96	24hr.	3.49	-	10.33	Kimley-Horn & Associates
Marion Co, FL	877	Apr-02	209	-	2.91	24hr.	5.90	-	17.17	Kimley-Horn & Associates
Marion Co, FL	1,054	Apr-02	173	-	3.65	24hr.	6.00	-	21.90	Kimley-Horn & Associates
Marion Co, FL	3,076	Apr-02	198	-	2.63	24hr.	5.16	-	13.57	Kimley-Horn & Associates
Marion Co, FL	3,525	Apr-02	164	-	2.50	24hr.	5.83	-	14.58	Kimley-Horn & Associates
Total Size	9,477		5	945						
ITE	9,170		14							
Blended total	18,647									
					Average Trip Length:		4.89			
					Weighted Average Trip Length:		5.42			

Weighted Average Trip Generation Rate: 2.75
ITE Average Trip Generation Rate: 4.27
Blend of FL Studies and ITE Average Trip Generation Rate: 3.50

Land Use 310: Hotel

Location	Size (Rooms)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VTM	Source
Pinellas Co, FL	174	Aug-89	134	106	12.50	7-11a/3-7p	6.30	79.0	62.21	Tindale Oliver
Pinellas Co, FL	114	Oct-89	30	14	7.30	12-7p	6.20	47.0	21.27	Tindale Oliver
Orange Co, FL	123	1997	-	-	6.32					Orange County
Orange Co, FL	120	1997	-	-	5.27					Orange County
Orange Co, FL	146	1997	-	-	7.61					Orange County
Orange Co, FL	252	1997	-	-	5.63					Orange County
Orange Co, FL	172	1997	-	-	6.36					Orange County
Orange Co, FL	170	1997	-	-	6.06					Orange County
Orange Co, FL	128	1997	-	-	6.10					Orange County
Orange Co, FL	200	1997	-	-	4.56					Orange County
Orange Co, FL	112	1998	-	-	2.78					Orange County
Orange Co, FL	130	1998	-	-	9.12					Orange County
Orange Co, FL	106	1998	-	-	7.34					Orange County
Orange Co, FL	98	1998	-	-	7.32					Orange County
Orange Co, FL	120	1998	-	-	5.57					Orange County
Orange Co, FL	70	1999	-	-	1.85					Orange County
Orange Co, FL	123	1999	-	-	4.81					Orange County
Orange Co, FL	123	1999	-	-	3.70					Orange County
Orange Co, FL	211	2000	-	-	2.23					Orange County
Orange Co, FL	144	2000	-	-	7.32					Orange County
Orange Co, FL	105	2001	-	-	5.25					Orange County
Orange Co, FL	891	2005	-	-	5.69					Orange County
Orange Co, FL	1,584	2005	-	-	5.88					Orange County
Orange Co, FL	210	2006	-	-	4.88					Orange County
Orange Co, FL	1,499	2006	-	-	4.69					Orange County
Orange Co, FL	144	-	-	-	4.74					Orange County
Orange Co, FL	148	-	-	-	7.61					Orange County
Orange Co, FL	160	-	-	-	6.19					Orange County
Orange Co, FL	130	-	-	-	4.29					Orange County
Orange Co, FL	130	-	-	-	3.40					Orange County
Orange Co, FL	144	-	-	-	7.66					Orange County
Orange Co, FL	100	-	-	-	7.37					Orange County
Orange Co, FL	190	-	-	-	4.71					Orange County
Orange Co, FL	1,501	2011	-	-	3.50					Tindale Oliver
Orange Co, FL	174	2011	-	-	7.03					Tindale Oliver
Orange Co, FL	238	2014	-	-	4.05					Tindale Oliver
Total Size	10,184		21	164						
ITE	826		6							
Blended total	11,060									
					Average Trip Length:		6.29			
					Weighted Average Trip Length:		6.29			

Weighted Percent New Trip Average: 66.3
Weighted Average Trip Generation Rate: 5.31
ITE Average Trip Generation Rate: 8.36
Blend of FL Studies and ITE Average Trip Generation Rate: 5.55

Land Use 320: Motel

Location	Size (Rooms)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VTM	Source
Pinellas Co, FL	48	Oct-89	46	24	-	10a-2p	3.80	65.0	-	Tindale Oliver
Pinellas Co, FL	54	Oct-89	32	22	-	12p-7p	3.80	69.0	-	Tindale Oliver
Pinellas Co, FL	120	Oct-89	26	22	-	2p-7p	5.20	84.6	-	Tindale Oliver
Total Size	222		3	104						
ITE	654		6							
					Average Trip Length:		3.93			
					Weighted Average Trip Length:		4.94			

Weighted Percent New Trip Average: 76.6
ITE Average Trip Generation Rate: 3.35

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Land Use 444: Movie Theater

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pinellas Co, FL	24.7	Oct-89	151	116	113.10	2p-8p	2.70	77.0	235.13	Tindale Oliver
Pinellas Co, FL	34.0	Sep-89	122	116	63.40	2p-8p	1.90	95.0	114.44	Tindale Oliver
Total Size	58.7		273							
ITE	28.0		1							
Blended total	86.7									
				Average Trip Length:	2.80					
				Weighted Average Trip Length:	2.24					
				Weighted Percent New Trip Average:	87.4					
				Weighted Average Trip Generation Rate:	84.31					
				ITE Average Trip Generation Rate:	78.09					
				Blend of FL Studies and ITE Average Trip Generation Rate:	82.30					

Land Use 492: Health/Fitness Club

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	33	31	-	-	7.90	94.0	-	Kimley-Horn & Associates
Total Size	-		33							
ITE	37		8							
				Average Trip Length:	n/a					
				Percent New Trip Average:	94.0					
				ITE Average Trip Generation Rate (adjusted):	34.50					

Land Use 565: Day Care Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pinellas Co, FL	5.6	Aug-89	94	66	66.99	7a-5p	1.90	70.0	89.10	Tindale Oliver
Pinellas Co, FL	10.0	Sep-89	179	134	66.99	7a-5p	2.10	75.0	105.51	Tindale Oliver
Tampa, FL	-	Mar-86	28	25	-	-	2.60	89.0	-	Kimley-Horn & Associates
Total Size	15.6		301							
ITE	135.0		27							
Blended total	150.6									
				Average Trip Length:	2.20					
				Weighted Average Trip Length:	2.09					
				Weighted Percent New Trip Average:	75.2					
				Weighted Average Trip Generation Rate:	66.99					
				ITE Average Trip Generation Rate:	47.62					
				Blend of FL Studies and ITE Average Trip Generation Rate:	49.63					

Land Use 620: Nursing Home

Location	Size (Beds)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Lakeland, FL	120	Mar-90	74	66	2.86	11a-4p	2.50	89.0	6.59	Tindale Oliver
Total Size	120		74							
ITE	480		3							
Blended total	600									
				Average Trip Length:	2.59					
				Weighted Average Trip Length:	2.59					
				Weighted Percent New Trip Average:	89.0					
				Weighted Average Trip Generation Rate:	2.86					
				ITE Average Trip Generation Rate:	3.06					
				Blend of FL Studies and ITE Average Trip Generation Rate:	3.02					

Land Use 640: Animal Hospital/Veterinary Clinic

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
St. Petersburg, FL	4.0	-	-	-	21.50	-	-	-	-	Tindale Oliver
Clearwater, FL	3.0	Sep-89	-	-	44.00	-	1.90	70.0	-	Tindale Oliver
Clearwater, FL	2.0	Aug-89	-	-	-	-	1.90	70.0	-	Tindale Oliver
Total Size	7.0		3	0						
ITE	18.0		6							
Blended total	25.0									
				Average Trip Length:	1.80					
				Weighted Average Trip Length:	1.90					
				Weighted Percent New Trip Average:	70.0					
				Weighted Average Trip Generation Rate:	31.14					
				ITE Average Trip Generation Rate:	21.50					
				Blend of FL Studies and ITE Average Trip Generation Rate:	24.20					

Land Use 710: General Office Building

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Sarasota Co, FL	14.3	Jun-93	14	14	46.85	-	11.30	-	529.41	Sarasota County
Gwinnett Co, GA	98.0	Dec-92	-	-	4.30	-	5.40	-	-	Street Smarts
Gwinnett Co, GA	180.0	Dec-92	-	-	3.60	-	5.90	-	-	Street Smarts
Pinellas Co, FL	187.0	Oct-89	431	388	18.49	7a-5p	6.30	90.0	104.84	Tindale Oliver
St. Petersburg, FL	262.8	Sep-89	291	274	-	7a-5p	3.40	94.0	-	Tindale Oliver
Total Size	742.1		736							
ITE	11,286.0		66							
				Average Trip Length:	6.46					
				Weighted Average Trip Length:	3.15					
				Weighted Percent New Trip Average:	92.3					

Land Use 720: Small Medical/Dental Office Building

Site	Size (1,000 sf)	Tues., Jan 11		Wedn., Jan 12		Thur., Jan 13		TOTAL		AVERAGE		AVERAGE (per 1,000 sf)		
		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	TOTAL
Site 1	2.100	35	35	22	22	13	13	70	70	23.33	23.33	11.11	11.11	22.22
Site 2	3.000	40	40	52	52	53	53	145	145	48.33	48.33	16.11	16.11	32.22
Site 3	2.000	28	28	19	21	24	26	71	75	23.67	25.00	11.84	12.50	24.34
Site 4	1.000	30	30	52	52	57	57	139	139	46.33	46.33	46.33	46.33	92.66
Site 5	3.024	31	32	43	43	24	24	98	99	32.67	33.00	10.80	10.91	21.71
Site 6	1.860	22	24	19	17	11	11	52	52	17.33	17.33	9.32	9.32	18.64
Average												17.59	17.71	35.30
Average (excluding Site 4)												11.84	11.99	23.83

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Land Use 720: Medical/Dental Office Building

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	33	26	-	-	6.00	79.0	-	Kimley-Horn & Associates
Palm Harbor, FL	14.6	Oct-89	104	76	33.98	9a-5p	6.30	73.0	156.27	Tindale Oliver
St. Petersburg, FL	-	Nov-89	34	30	57.20	9a-4p	1.20	88.0	-	Tindale Oliver
Hernando Co, FL	58.4	May-96	390	349	28.52	9a-6p	6.47	89.5	165.09	Tindale Oliver
Hernando Co, FL	28.0	May-96	202	189	49.75	9a-6p	6.06	93.8	282.64	Tindale Oliver
Charlotte Co, FL	11.0	Oct-97	-	186	49.50	9a-5p	4.60	92.1	209.67	Tindale Oliver
Charlotte Co, FL	28.0	Oct-97	-	186	31.00	9a-5p	3.60	81.6	91.04	Tindale Oliver
Charlotte Co, FL	30.4	Oct-97	-	324	39.80	9a-5p	3.30	83.5	109.68	Tindale Oliver
Citrus Co, FL	38.9	Oct-03	-	168	32.26	8-6p	6.80	97.1	213.03	Tindale Oliver
Citrus Co, FL	10.0	Nov-03	-	340	40.56	8-630p	6.20	92.4	232.33	Tindale Oliver
Citrus Co, FL	5.3	Dec-03	-	20	29.36	8-5p	5.25	95.2	146.78	Tindale Oliver
Orange Co, FL	50.6	2009	-	-	26.72	-	-	-	-	Orange County
Orange Co, FL	23.5	2010	-	-	16.58	-	-	-	-	Tindale Oliver

Total Size 298.6
ITE 672.0
Blended total 970.6

Average Trip Length: 5.67
Weighted Average Trip Length: 5.55

Weighted Percent New Trip Average: 88.9

Average Trip Generation Rate: 32.59
ITE Average Trip Generation Rate: 34.80
Blend of FL Studies and ITE Average Trip Generation Rate: 34.12

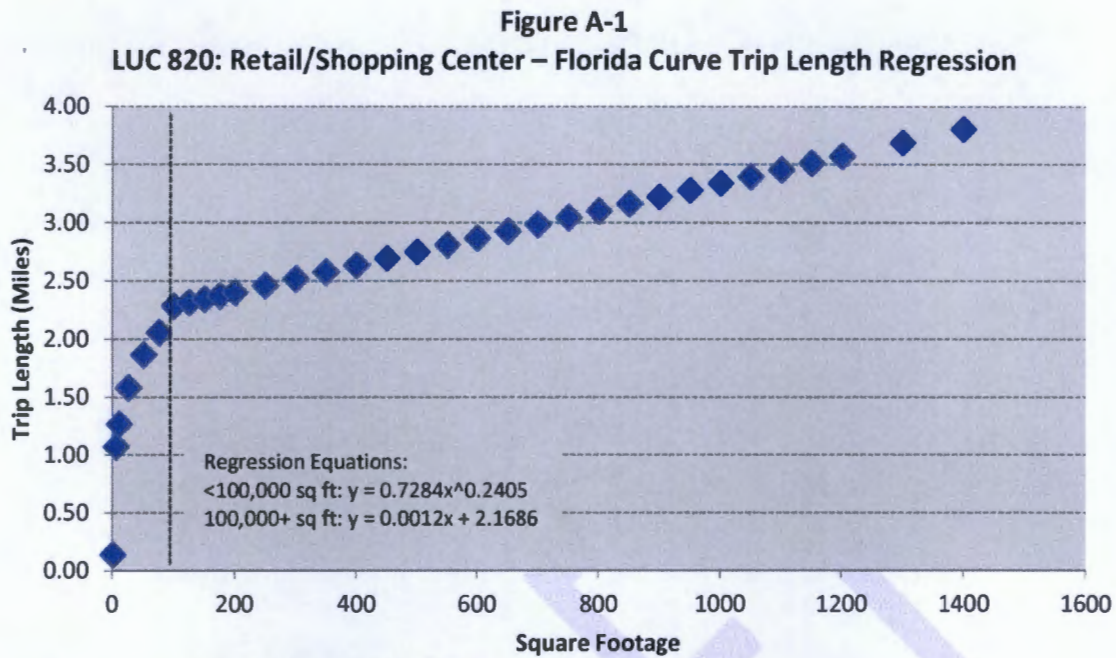
Land Use 820: Shopping Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	527	348	-	-	-	66.0	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	170	-	-	-	1.70	-	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	354	269	-	-	-	76.0	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	144	-	-	-	2.50	-	-	Kimley-Horn & Associates
St. Petersburg, FL	1,192.0	Aug-89	384	298	-	11a-7p	3.60	78.0	-	Tindale Oliver
St. Petersburg, FL	132.3	Sep-89	400	368	77.00	10a-7p	1.80	92.0	127.51	Tindale Oliver
Largo, FL	425.0	Aug-89	160	120	26.73	10a-6p	2.30	75.0	46.11	Tindale Oliver
Dunedin, FL	80.5	Sep-89	276	210	81.48	9a-5p	1.40	76.0	85.69	Tindale Oliver
Pinellas Park, FL	696.0	Sep-89	485	388	-	9a-6p	3.20	80.0	-	Tindale Oliver
Seminole, FL	425.0	Oct-89	674	586	-	-	-	87.0	-	Tindale Oliver
Hillsborough Co, FL	134.0	Jul-91	-	-	-	-	1.30	74.0	-	Tindale Oliver
Hillsborough Co, FL	151.0	Jul-91	-	-	-	-	1.30	73.0	-	Tindale Oliver
Collier Co, FL	-	Aug-91	68	64	-	-	3.33	94.1	-	Tindale Oliver
Collier Co, FL	-	Aug-91	208	154	-	-	2.64	74.0	-	Tindale Oliver
Sarasota/Bradenton, FL	109.0	Sep-92	300	185	-	12a-6p	-	61.6	-	King Engineering Associates, Inc.
Ocala, FL	133.4	Sep-92	300	192	-	12a-6p	-	64.0	-	King Engineering Associates, Inc.
Gwinnett Co, GA	99.1	Dec-92	-	-	46.00	-	3.20	70.0	103.04	Street Smarts
Gwinnett Co, GA	314.7	Dec-92	-	-	27.00	-	-	84.0	-	Street Smarts
Sarasota Co, FL	110.0	Jun-93	58	58	122.14	-	3.20	-	-	Sarasota County
Sarasota Co, FL	146.1	Jun-93	65	65	51.53	-	2.80	-	-	Sarasota County
Sarasota Co, FL	157.5	Jun-93	57	57	79.79	-	3.40	-	-	Sarasota County
Sarasota Co, FL	151.0	Jun-93	62	62	66.79	-	5.90	-	-	Sarasota County
Hernando Co, FL	107.8	May-96	608	331	77.60	9a-6p	4.68	54.5	197.85	Tindale Oliver
Charlotte Co, FL	88.0	Oct-97	-	-	73.50	9a-5p	1.80	57.1	75.56	Tindale Oliver
Charlotte Co, FL	191.9	Oct-97	-	-	72.00	9a-5p	2.40	50.9	87.97	Tindale Oliver
Charlotte Co, FL	51.3	Oct-97	-	-	43.00	9a-5p	2.70	51.8	60.08	Tindale Oliver
Lake Co, FL	67.8	Apr-01	246	177	102.60	-	3.40	71.2	248.37	Tindale Oliver
Lake Co, FL	72.3	Apr-01	444	376	65.30	-	4.50	59.0	173.37	Tindale Oliver
Pasco Co, FL	65.6	Apr-02	222	-	145.84	9a-5p	1.46	46.9	99.62	Tindale Oliver
Pasco Co, FL	75.8	Apr-02	134	-	38.23	9a-5p	2.36	58.2	52.52	Tindale Oliver
Citrus Co, FL	185.0	Oct-03	-	784	55.84	8a-6p	2.40	88.1	118.05	Tindale Oliver
Citrus Co, FL	91.3	Nov-03	-	390	54.50	8a-6p	1.60	88.0	76.77	Tindale Oliver
Bozeman, MT	104.3	Dec-06	359	359	46.96	-	3.35	49.0	77.08	Tindale Oliver
Bozeman, MT	159.9	Dec-06	502	502	56.49	-	1.56	54.0	47.59	Tindale Oliver
Bozeman, MT	35.9	Dec-06	329	329	69.30	-	1.39	74.0	71.28	Tindale Oliver

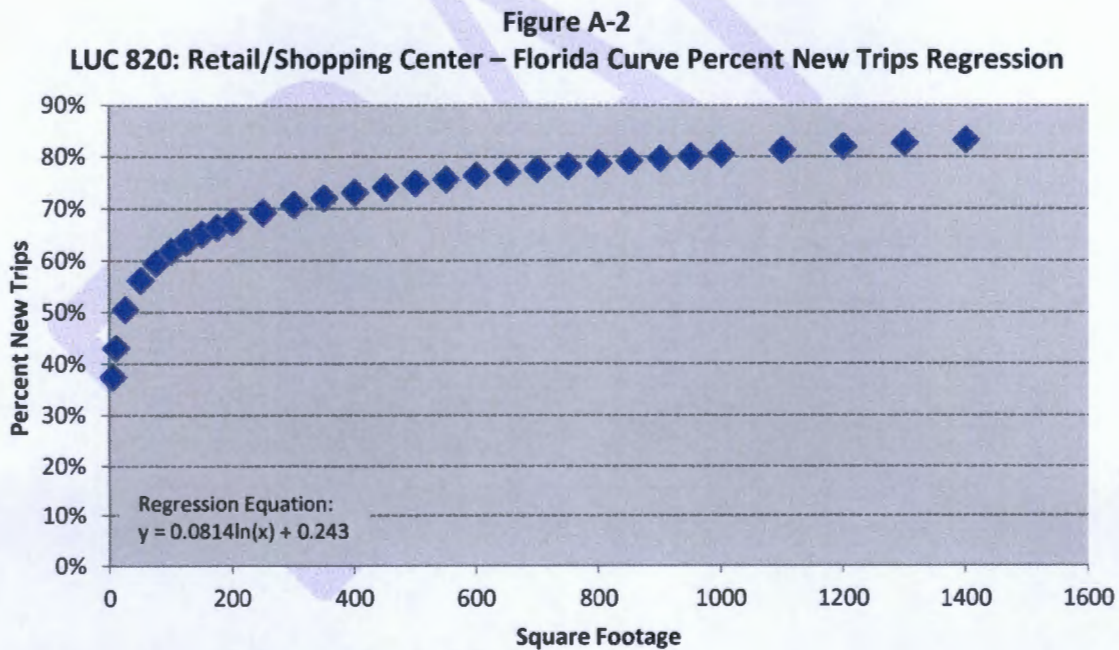
Total Size 5,757.5

7,536

Average Trip Length: 2.84



Source: Regression analysis based on FL Studies data for LUC 820



Source: Regression analysis based on FL Studies data for LUC 820

Land Use 840/841: New/Used Automobile Sales

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
St. Petersburg, FL	43.0	Oct-89	152	120	-	9a-5p	4.70	79.0	-	Tindale Oliver
Clearwater, FL	43.0	Oct-89	136	106	29.40	9a-5p	4.50	78.0	103.19	Tindale Oliver
Orange Co, FL	13.8	1997	-	-	35.75	-	-	-	-	Orange County
Orange Co, FL	34.4	1998	-	-	23.45	-	-	-	-	Orange County
Orange Co, FL	65.3	2001	-	-	28.50	-	-	-	-	Orange County
Orange Co, FL	39.1	2002	-	-	10.48	-	-	-	-	Orange County
Orange Co, FL	116.7	2003	-	-	22.18	-	-	-	-	Orange County
Orange Co, FL	51.7	2007	-	-	40.34	-	-	-	-	Orange County
Orange Co, FL	35.6	-	-	-	15.17	-	-	-	-	Orange County
Orange Co, FL	216.4	2008	-	-	13.45	-	-	-	-	Orange County
Total Size	618.0		8	288	Average Trip Length: 4.69					
ITE (840)	648.0		18		Weighted Average Trip Length: 4.69					
ITE (841)	28.0		14		Weighted Percent New Trip Average: 78.5					
Blended total	1,294.0				Weighted Average Trip Generation Rate: 21.04					
						ITE Average Trip Generation Rate (LUC 840): 27.84				
						ITE Average Trip Generation Rate (LUC 841): 27.06				
						Blend of FL Studies and ITE Average Trip Generation Rate: 24.58				

Land Use 850: Supermarket

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Palm Harbor, FL	62.0	Aug-89	163	52	106.26	9a-4p	2.08	56.0	123.77	Tindale Oliver
Total Size	62.0		1	163	Average Trip Length: 2.08					
ITE	170.0		5		Weighted Average Trip Length: 2.08					
Blended total	232.0				Weighted Percent New Trip Average: 56.0					
						Weighted Average Trip Generation Rate: 106.26				
						ITE Average Trip Generation Rate: 106.78				
						Blend of FL Studies and ITE Average Trip Generation Rate: 106.64				

Land Use 853: Convenience Market with Gasoline Pumps

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	72	-	-	-	2.00	-	-	Kimley-Horn & Associates
Marion Co, FL	1.1	Jun-91	77	20	544.80	24hr.	0.89	26.0	126.07	Tindale Oliver
Marion Co, FL	2.1	Jun-91	66	24	997.60	24hr.	1.67	36.4	606.42	Tindale Oliver
Marion Co, FL	4.4	Jun-91	85	25	486.70	48hrs.	1.06	29.4	151.68	Tindale Oliver
Collier Co, FL	-	Aug-91	96	38	-	-	1.19	39.6	-	Tindale Oliver
Collier Co, FL	-	Aug-91	78	16	-	-	1.06	20.5	-	Tindale Oliver
Tampa, FL	2.3	10/13-15/92	239	74	-	24hr.	1.06	31.1	-	Tindale Oliver
Ellenton, FL	3.3	10/20-22/92	124	44	-	24hr.	0.96	35.3	-	Tindale Oliver
Tampa, FL	3.8	11/10-12/92	142	23	-	24hr.	3.13	16.4	-	Tindale Oliver
Marion Co, FL	2.5	Apr-02	87	-	719.79	24hr.	1.62	32.8	322.19	Kimley-Horn & Associates
Marion Co, FL	2.5	Apr-02	23	-	610.46	24hr.	1.77	11.7	126.61	Kimley-Horn & Associates
Marion Co, FL	3.0	Apr-02	59	-	606.02	24hr.	0.83	32.6	195.00	Kimley-Horn & Associates
Total Size	25.1		9	1,148	Average Trip Length: 1.48					
ITE	102.0		34		Weighted Average Trip Length: 1.47					
Blended Total	127.1				Weighted Percent New Trip Average: 27.7					
						Average Trip Generation Rate: 639.68				
						ITE Average Trip Generation Rate: 624.20				
						Blend of FL Studies and ITE Average Trip Generation Rate: 626.25				

Land Use 880/881: Pharmacy with and without Drive-Through Window

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Pasco Co, FL	11.1	Apr-02	138	38	88.97	-	2.05	27.5	50.23	Tindale Oliver
Pasco Co, FL	12.0	Apr-02	212	90	122.16	-	2.04	42.5	105.79	Tindale Oliver
Pasco Co, FL	15.1	Apr-02	1192	54	97.96	-	2.13	28.1	58.69	Tindale Oliver
Total Size	38.2		3	1,542	Average Trip Length: 2.07					
ITE (LUC 880)	66.0		6		Weighted Average Trip Length: 2.06					
ITE (LUC 881)	208.0		16		Weighted Percent New Trip Average: 32.0					
Blended total	312.2				Average Trip Generation Rate: 103.03					
						ITE Average Trip Generation Rate (LUC 880): 90.08				
						ITE Average Trip Generation Rate (LUC 881): 109.16				
						Blend of FL Studies and ITE Average Trip Generation Rate: 104.37				

Land Use 912: Drive-In Bank

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	77	-	-	-	2.40	-	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	211	-	-	-	-	54.0	-	Kimley-Horn & Associates
Clearwater, FL	0.4	Aug-89	113	52	-	9a-6p	5.20	46.0	-	Tindale Oliver
Largo, FL	2.0	Sep-89	129	94	-	-	1.60	73.0	-	Tindale Oliver
Seminole, FL	4.5	Oct-89	-	-	-	-	-	-	-	Tindale Oliver
Marion Co, FL	2.3	Jun-91	69	29	-	24hr.	1.33	42.0	-	Tindale Oliver
Marion Co, FL	3.1	Jun-91	47	32	-	24hr.	1.75	68.1	-	Tindale Oliver
Marion Co, FL	2.5	Jul-91	57	26	-	48hrs.	2.70	45.6	-	Tindale Oliver
Collier Co, FL	-	Aug-91	162	96	-	24hr.	0.88	59.3	-	Tindale Oliver
Collier Co, FL	-	Aug-91	116	54	-	-	1.58	46.6	-	Tindale Oliver
Collier Co, FL	-	Aug-91	142	68	-	-	2.08	47.9	-	Tindale Oliver
Hernando Co, FL	5.4	May-96	164	41	-	9a-6p	2.77	24.7	-	Tindale Oliver
Marion Co, FL	2.4	Apr-02	70	-	-	24hr.	3.55	54.6	-	Kimley-Horn & Associates
Marion Co, FL	2.7	May-02	50	-	246.66	24hr.	2.66	40.5	265.44	Kimley-Horn & Associates
Total Size	25.2		9	1,407	Average Trip Length: 2.38					
ITE	147.0		21		Weighted Average Trip Length: 2.38					
Blended total	172.2				Weighted Percent New Trip Average: 46.2					
						Weighted Average Trip Generation Rate: 246.66				
						ITE Average Trip Generation Rate: 100.03				
						Blend of FL Studies and ITE Average Trip Generation Rate: 102.66				

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Land Use 931: Quality Restaurant

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	76	62	-	-	2.10	82.0	-	Kimley-Horn & Associates
St. Petersburg, FL	7.5	Oct-89	177	154	-	11a-2p/4-8p	3.50	87.0	-	Tindale Oliver
Clearwater, FL	8.0	Oct-89	60	40	110.63	10a-2p/5-9p	2.80	67.0	207.54	Tindale Oliver
Total Size	15.5	2	313							
ITE	90.0	10								
Blended total	105.5									
	98.0									
							Average Trip Length:	2.40		
							Weighted Average Trip Length:	3.14		
							Weighted Percent New Trip Average:			76.7
							Weighted Average Trip Generation Rate:			110.63
							ITE Average Trip Generation Rate:			83.84
							Blend of FL Studies and ITE Average Trip Generation Rate:			86.03

Land Use 932: High-Turnover (Sit-Down) Restaurant

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Hernando Co, FL	6.2	1996	242	175	187.51	9a-6p	2.76	72.5	375.00	Tindale Oliver
Hernando Co, FL	8.2	1996	154	93	102.71	9a-6p	4.15	60.2	256.43	Tindale Oliver
St. Petersburg, FL	5.0	1989	74	68	132.80	1130-7p	2.00	92.0	243.98	Tindale Oliver
Kenneth City, FL	5.2	1989	236	176	127.88	4p-730p	2.30	75.0	220.59	Tindale Oliver
Pasco Co, FL	5.2	2002	114	88	82.47	9a-6p	3.72	77.2	236.81	Tindale Oliver
Pasco Co, FL	5.8	2002	182	102	116.97	9a-6p	3.49	56.0	228.77	Tindale Oliver
Orange Co, FL	5.0	1996	-	-	135.68	-	-	-	-	Orange County
Orange Co, FL	9.7	1996	-	-	132.32	-	-	-	-	Orange County
Orange Co, FL	11.2	1998	-	-	18.76	-	-	-	-	Orange County
Orange Co, FL	7.0	1998	-	-	126.40	-	-	-	-	Orange County
Orange Co, FL	4.6	1998	-	-	129.23	-	-	-	-	Orange County
Orange Co, FL	7.4	1998	-	-	147.44	-	-	-	-	Orange County
Orange Co, FL	6.7	1998	-	-	82.58	-	-	-	-	Orange County
Orange Co, FL	11.3	2000	-	-	95.33	-	-	-	-	Orange County
Orange Co, FL	7.2	2000	-	-	98.06	-	-	-	-	Orange County
Orange Co, FL	11.4	2001	-	-	91.67	-	-	-	-	Orange County
Orange Co, FL	5.6	2001	-	-	145.59	-	-	-	-	Orange County
Orange Co, FL	5.5	-	-	-	100.18	-	-	-	-	Orange County
Orange Co, FL	11.3	-	-	-	62.12	-	-	-	-	Orange County
Orange Co, FL	10.4	-	-	-	31.77	-	-	-	-	Orange County
Orange Co, FL	5.9	-	-	-	147.74	-	-	-	-	Orange County
Orange Co, FL	8.9	2008	-	-	52.69	-	-	-	-	Orange County
Orange Co, FL	9.7	2010	-	-	105.84	-	-	-	-	Orange County
Orange Co, FL	9.5	2013	-	-	40.46	-	-	-	-	Orange County
Orange Co, FL	11.0	2015	-	-	138.39	-	-	-	-	Orange County
Total Size	194.9	21	1,102							
ITE	250.0	50								
Blended total	444.9									
							Average Trip Length:	3.07		
							Weighted Average Trip Length:	3.17		
							Weighted Percent New Trip Average:			70.8
							Weighted Average Trip Generation Rate:			98.67
							ITE Average Trip Generation Rate:			112.18
							Blend of FL Studies and ITE Average Trip Generation Rate:			106.26

Land Use 934: Fast Food Restaurant with Drive-Through Window

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Tampa, FL	-	Mar-86	61	-	-	-	2.70	-	-	Kimley-Horn & Associates
Tampa, FL	-	Mar-86	306	-	-	-	-	65.0	-	Kimley-Horn & Associates
Pinellas Co, FL	2.20	Aug-89	81	48	502.80	11a-2p	1.70	59.0	504.31	Tindale Oliver
Pinellas Co, FL	4.30	Oct-89	456	260	660.40	1 day	2.30	57.0	865.78	Tindale Oliver
Tarpon Springs, FL	-	Oct-89	233	114	-	7a-7p	3.60	49.0	-	Tindale Oliver
Marion Co, FL	1.60	Jun-91	60	32	967.50	48hrs.	0.91	53.3	466.84	Tindale Oliver
Marion Co, FL	4.00	Jun-91	75	46	625.00	48hrs.	1.54	61.3	590.01	Tindale Oliver
Collier Co, FL	-	Aug-91	66	44	-	-	1.91	66.7	-	Tindale Oliver
Collier Co, FL	-	Aug-91	118	40	-	-	1.17	33.9	-	Tindale Oliver
Hernando Co, FL	5.43	May-96	136	82	311.83	9a-6p	1.68	60.2	315.27	Tindale Oliver
Hernando Co, FL	3.13	May-96	168	82	547.34	9a-6p	1.59	48.8	425.04	Tindale Oliver
Orange Co, FL	8.93	1996	-	-	377.00	-	-	-	-	Orange County
Lake Co, FL	2.20	Apr-01	376	252	934.30	-	2.50	74.6	1742.47	Tindale Oliver
Lake Co, FL	3.20	Apr-01	171	182	654.90	-	-	47.8	-	Tindale Oliver
Lake Co, FL	3.80	Apr-01	188	137	353.70	-	3.30	70.8	826.38	Tindale Oliver
Pasco Co, FL	2.66	Apr-02	100	46	283.12	9a-6p	-	46.0	-	Tindale Oliver
Pasco Co, FL	2.96	Apr-02	486	164	515.32	9a-6p	2.72	33.7	472.92	Tindale Oliver
Pasco Co, FL	4.42	Apr-02	168	120	759.24	9a-6p	1.89	71.4	1024.99	Tindale Oliver
Total Size	48.8	13	4,463							
ITE	201.0	67								
Blended total	249.8									
	34.0									
							Average Trip Length:	2.11		
							Weighted Average Trip Length:	2.07		
							Weighted Percent New Trip Average:			57.9
							Weighted Average Trip Generation Rate:			530.19
							ITE Average Trip Generation Rate:			470.95
							Blend of FL Studies and ITE Average Trip Generation Rate:			482.53

Land Use 942: Automobile Care Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Largo, FL	5.5	Sep-89	34	30	37.64	9a-5p	2.40	88.0	79.50	Tindale Oliver
Jacksonville, FL	2.3	2/3-4/90	124	94	-	9a-5p	3.07	76.0	-	Tindale Oliver
Jacksonville, FL	2.3	2/3-4/90	110	74	-	9a-5p	2.96	67.0	-	Tindale Oliver
Jacksonville, FL	2.4	2/3-4/90	132	87	-	9a-5p	2.32	66.0	-	Tindale Oliver
Lakeland, FL	5.2	Mar-90	24	14	-	9a-4p	1.36	59.0	-	Tindale Oliver
Lakeland, FL	-	Mar-90	54	42	-	9a-4p	2.44	78.0	-	Tindale Oliver
Orange Co, FL	25.0	Nov-92	41	39	-	2-6p	4.60	-	-	LCE, Inc.
Orange Co, FL	36.6	-	-	-	15.17	-	-	-	-	Orange County
Orange Co, FL	7.0	-	-	-	46.43	-	-	-	-	Orange County
Total Size	86.2	6	519							
ITE	102.0	6								
Blended total	188.2									
	151.1									
							Average Trip Length:	2.74		
							Weighted Average Trip Length:	3.62		
							Weighted Percent New Trip Average:			72.2
							Weighted Average Trip Generation Rate:			22.14
							ITE Average Trip Generation Rate (adjusted):			31.10
							Blend of FL Studies and ITE Average Trip Generation Rate:			28.19

Land Use 944/945: Gasoline/Service Station with and without Convenience Market

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Largo, FL	0.6	Nov-89	70	14	-	8am-5pm	1.90	23.0	-	Tindale Oliver
Collier Co, FL	-	Aug-91	168	40	-	-	1.01	23.8	-	Tindale Oliver
Total Size	0.6		1	238			Average Trip Length: 1.46			
ITE LUC 944 (vip)	144.0		18				Weighted Average Trip Length: 1.99			
ITE LUC 945 (vip)	90.0		5				Weighted Percent New Trip Average: 23.0			
							ITE Average Trip Generation Rate - per fuel position (LUC 944):		172.01	
							ITE Average Trip Generation Rate - per fuel position (LUC 945):		205.36	
							Blended ITE Average Trip Generation Rate - per fuel position:		184.84	

Land Use 947: Self-Service Car Wash

Location	Size (Bays)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Largo, FL	10	Nov-89	111	84	-	8am-5pm	2.00	76.0	-	Tindale Oliver
Clearwater, FL	-	Nov-89	177	108	-	10am-5pm	1.30	61.0	-	Tindale Oliver
Collier Co, FL	11	Dec-09	304	-	30.24	-	2.50	57.0	-	Tindale Oliver
Collier Co, FL	8	Jan-09	186	-	22.75	-	1.95	72.0	-	Tindale Oliver
Total Size	29		3	778			Average Trip Length: 1.84			
Total Size (TGR)	19		2				Weighted Average Trip Length: 2.18			
ITE	5		1				Weighted Percent New Trip Average: 67.7			
Blended total	24						Weighted Average Trip Generation Rate:		27.09	
							ITE Average Trip Generation Rate:		108.00	
							Blend of FL Studies and ITE Average Trip Generation Rate:		43.94	

Land Use N/A: Dance Studio

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Collier Co, FL	7,000	Jul-08	-	-	30.29	-	-	-	-	Tindale Oliver
Collier Co, FL	20.48	Jul-08	-	-	17.19	-	-	-	-	Tindale Oliver
Collier Co, FL	8,705	Jul-08	-	-	23.89	-	-	-	-	Tindale Oliver
Total Size	36.2		3				Average Trip Length: n/a			
							Weighted Average Trip Length: n/a			
							Weighted Average Trip Generation Rate:		21.33	

Land Use N/A: Specialty Retail Center

Location	Size (1,000 sf)	Date	Total # Interviews	# Trip Length Interviews	Trip Gen Rate	Time Period	Trip Length	Percent New Trips	VMT	Source
Orlando, FL	56.5	Jan-96	-	602	-	varied	3.54	87.9	-	LCE, Inc.
Collier Co, FL	12.0	May-99	-	13	19.70	8a-6p	3.70	75.0	54.67	Tindale Oliver
Collier Co, FL	12.0	May-99	-	146	127.50	8a-6p	2.24	84.3	240.76	Tindale Oliver
Total Size	80.5		3				Average Trip Length: 3.16			
ITE	100.0		4				Weighted Average Trip Length: 3.37			
Blended total	156.5						Weighted Percent New Trip Average: 85.4			

Evaluation of Mixed-Use Developments

Mixed-Use Internal Capture

To correspond with adopted fiscal neutrality and sustainability guiding policies, Orange County has made efforts to define and encourage infill and redevelopment activity and create mixed-use developments, Traditional Neighborhood Developments (TND), and Transit Oriented Developments (TOD). In addition, the County's Comprehensive Plan historically has designated the International Drive tourist corridor as an Activity Center (AC) and implemented I-Drive District Overlay Zone within the past year. This Overlay Zone is an example of transect-based planning and describes the site design requirements in terms of road layout, intersection spacing, requirements of sidewalks, interconnectivity, spacing between uses, etc. These types of requirements are critical in mixed-use developments' ability to reduce trips. If designed correctly, these developments tend to have reduced travel demand which in turn reduces the need to provide additional transportation infrastructure.

Mixed-Use Models

This section provides a summary of more commonly used models in estimating the reduction of travel achieved by mixed-use development.

- Historically, the ITE model has been the primary model used to quantify internal capture. ITE groups land uses into three categories:
 - Residential;
 - Office; and
 - Retail.

Internal capture calculations focus on trip reduction, especially between residential and retail uses. The data is available for weekday P.M. peak hour, midday, and “daily,” which is based on data collection between noon and 6:30 PM. ITE calculations fail to capture much of the interaction between residential and office land uses. Compared to raw data used for verification, ITE method error rate is about one-half.

- Several publications by National Cooperative Highway Research Program (NCHRP) made improvements to the original ITE approach, which were summarized in the NCHRP 684. This improved estimate method was developed based on existing survey data from prior studies plus three pilot data collection surveys for this study.
 - Although the model developed as part of NCHRP 684 continued to focus on trip reduction, three land uses were added: restaurant, hotel, and cinema. These resulted for a higher internal capture percentage. **The authors caution users to limit their applications to these six uses, and that the model was not tested for any additional land uses.** The model should only be used for development up to 300 acres.
 - NCHRP Report 684 also added weekday A.M. peak hour and created a land use classification structure that would permit disaggregation of the six land uses to more detailed categories should enough data become available.
 - Included the **effects of proximity (convenient walking distance) between interacting land uses to represent both compactness and design.** The report states that several planners and architects recommend ¼-mile or longer walking distances. However, developers contacted for the study reported that acceptable walking distances range from 600 to 1,000 feet. The study found that when the major uses were within a convenient (e.g., covered walkways, etc.) and short walking distance, the capture rate increased.

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- This method reduced the estimation error by half compared to the original ITE method, resulting in an error rate of about one-fourth of the raw trip generation rates.
- Since the late 1980s, there have been numerous studies of various census and regional travel survey databases, limited site data collection, and studies and surveys of related travel and development characteristics that could contribute useful material for developing an improved estimation technique. Internal trip capture rates found in this research vary widely depending on conditions and land uses, but for developments with major commercial components, capture rates typically reached up to more than 30%. For mixed-use neighborhoods and small communities, internal capture reached 50% and even higher.
- Other widely used approach is a policy determined flat percentage reduction in external trips. Such percentages are established by local planning, zoning, or transportation engineering officials for use in transportation impact analyses (TIAs) prepared to support applications for zoning, subdivision, site plan approval, or access permits. The percentages are typically arbitrarily selected and tend to range from 5% to 25%, with 10% being most commonly used discount factor.

Table A-6 provides a summary of some of these studies and resulting internal capture levels.

Table A-6
Comparison of Mixed-Use Models

Source	Reference	Range of Internal Capture
Research Studies		
ITE 2nd Edition	Institute of Transportation Engineers Handbook, 2nd Ed.	5-25%
NCHRP 684/ITE 3rd Edition	National Cooperative Highway Research Program	28-41%
EPX MXD Model v4.0	EPA, Fehr & Peers	8-28%
ITE 1998 surveys (origins)	NCHRP 684, PDF pg 19	0-53%
ITE 1998 surveys (destinations)	NCHRP 684, PDF pg 19	0-37%
Districtwide TGR Study, FDOT, District IV, March 1995	NCHRP 684, PDF pg 20	28-41%
FDOT Trip Characteristics Study of MXDs, FDOT, District IV, March 1993	NCHRP 684, PDF pg 21 (Table 8)	7-62%
Trip Generation for MXDs, Technical Committee Report, Colorado-Wyoming Section, ITE, January 1986	NCHRP 684, PDF pg 23	25%
Brandermill PUD Traffic Generation Study, Technical Report, JHK & Associates, Alexandria, Virginia, June 1984	NCHRP 684, PDF pg 23	45-55%
Kittelson & Associates, Crocker Center, Mizner Park, Galleria	NCHRP 684, PDF pg 25	38-41%
Mehara and Keller	NCHRP 684, PDF pg 25	0-40%
Local Government Practices		
Transportation Impact Analyses (ITE Method)	NCHRP 684, PDF pg 11	5-25%

Internal Capture Sensitivity Analysis

This section illustrates potential internal capture reductions that may occur if proposed developments include the right mix of land uses. Note that this analysis only considers the mix of uses and not the specific design standards.

Tables A-7 through A-9 present a sensitivity analysis for internal capture that includes developments of all levels, in terms of both units of development and percent of travel. Observations include:

- When single family units dominate the overall development (generating over 60% of trips or over 80% of vehicle miles of travel (VMT)), there does not seem to be any substantial internal capture.
- In cases where there are three or more uses with some level of activity, the internal capture improves. The internal capture rate is higher when travel generated by each land use is balanced (e.g., no one land use exceeds 50% of trips).
- Availability of retail (including restaurants) is important in achieving high levels of internal capture.

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- Travel demand characteristics used in the standard impact fee calculations evolved over time to recognize reduction in travel due to the availability of multiple uses at a regional level.
- Any additional internal capture that is attributed to a mixed-use development needs to be due to the increase in pedestrian travel as well as travel within the development. Some of the variables that will determine the level internal capture include:
 - Scale of development;
 - Complementary land uses;
 - Proximity and connectivity between each pair of land uses, especially the layout of the land uses relative to each other; and
 - Other characteristics such as proximity to transit and pedestrian access within and around the site.
- Industry models used to measure internal capture suggest that to the extent travel distribution from each land use within the mixed-use development is balanced, the level of internal capture increases. When one land use is dominant, internal capture percentage decreases. For example, when residential development generates more than 60% of trips and 80% of VMT, the resulting internal capture is negligible. On the other hand, a mix of at least three different uses, with none of the uses generating more than 50% of travel, result in higher levels of internal capture.

As previously mentioned, the NCHRP model does not account for proximity of uses, density, and other design elements. It is recommended that potential mixed-use developments include elements of connectivity, promote walkability between land uses, and include access to other travel modes (transit, bike lanes, etc) when possible. These factors, along with a balanced mix of uses, will yield the most favorable internal capture rates.

Due to the large scale of potential future developments, it may be difficult to achieve reasonable walkability and enhanced trip capture. By focusing on smaller, inter-connected areas, developers can work towards creating a truly “mixed-use” community. The sensitivity analysis in Tables A-7 through A-9 provide general guidelines that can be applied to future development in order to achieve the best balance of uses.

Table A-7
Comparison of Mixed-Use Internal Capture

Scenario	Single Family DU's	Hotel Rooms	Retail Sq Ft	Office Sq Ft	Restaurant Sq Ft	AM Peak Hr: IC %	PM Peak Hr: IC %	Average Internal Capture %	Trip Distribution				
									Single Family	Hotel	Retail	Office	Restaurant
Scenario #1.01	50	50	10,000	10,000	2,000	19%	29%	24%	20%	17%	33%	24%	8%
Scenario #1.02	50	60	10,000	10,000	2,000	18%	29%	24%	20%	17%	32%	23%	8%
Scenario #1.03	50	75	10,000	10,000	2,000	18%	28%	23%	19%	20%	31%	22%	8%
Scenario #1.04	50	90	10,000	10,000	2,000	17%	27%	22%	18%	23%	30%	22%	8%
Scenario #1.05	50	120	10,000	10,000	2,000	15%	26%	21%	17%	28%	28%	20%	7%
Scenario #1.06	50	200	10,000	10,000	2,000	13%	22%	18%	15%	38%	24%	17%	6%
Scenario #1.07	50	300	10,000	10,000	2,000	10%	19%	15%	12%	47%	20%	15%	5%
Scenario #1.08	50	400	10,000	10,000	2,000	9%	17%	13%	11%	54%	18%	13%	4%
Scenario #1.09	50	500	10,000	10,000	2,000	8%	15%	12%	10%	59%	16%	11%	4%
Scenario #1.10	50	600	10,000	10,000	2,000	7%	14%	11%	9%	63%	14%	10%	4%
Scenario #1.11	50	50	20,000	10,000	2,000	19%	27%	23%	17%	12%	44%	20%	7%
Scenario #1.12	50	50	50,000	10,000	2,000	18%	22%	20%	12%	9%	59%	15%	5%
Scenario #1.13	50	50	80,000	10,000	2,000	16%	18%	17%	10%	7%	66%	12%	4%
Scenario #1.14	50	50	100,000	10,000	2,000	15%	16%	16%	9%	7%	69%	11%	4%
Scenario #1.15	50	50	300,000	10,000	2,000	10%	9%	10%	5%	4%	82%	6%	2%
Scenario #1.16	50	50	500,000	10,000	2,000	8%	7%	8%	4%	3%	87%	5%	2%
Scenario #1.17	50	50	1,000,000	10,000	2,000	6%	4%	5%	3%	2%	91%	3%	1%
Scenario #1.18	50	50	2,000,000	10,000	2,000	4%	3%	4%	2%	1%	94%	2%	1%
Scenario #1.19	50	50	3,000,000	10,000	2,000	3%	2%	3%	1%	1%	95%	2%	1%
Scenario #1.20	50	50	10,000	20,000	2,000	20%	28%	24%	19%	14%	31%	29%	8%
Scenario #1.21	50	50	10,000	50,000	2,000	19%	26%	23%	16%	12%	26%	39%	7%
Scenario #1.22	50	50	10,000	80,000	2,000	19%	24%	22%	14%	10%	23%	46%	6%
Scenario #1.23	50	50	10,000	100,000	2,000	18%	23%	21%	13%	10%	22%	50%	5%
Scenario #1.24	50	50	10,000	300,000	2,000	13%	15%	14%	8%	6%	13%	70%	3%
Scenario #1.25	50	50	10,000	500,000	2,000	9%	11%	10%	6%	4%	10%	78%	2%
Scenario #1.26	50	50	10,000	1,000,000	2,000	6%	7%	7%	4%	3%	6%	86%	2%
Scenario #1.27	50	50	10,000	2,000,000	2,000	3%	4%	4%	2%	2%	3%	92%	1%
Scenario #1.28	50	50	10,000	3,000,000	2,000	3%	3%	3%	2%	1%	2%	94%	1%
Scenario #1.29	50	50	10,000	10,000	5,000	22%	36%	29%	18%	13%	29%	21%	18%
Scenario #1.30	50	50	10,000	10,000	7,000	22%	40%	31%	17%	12%	27%	20%	24%
Scenario #1.31	50	50	10,000	10,000	10,000	19%	43%	31%	15%	11%	25%	18%	31%
Scenario #1.32	50	50	10,000	10,000	15,000	18%	45%	31%	13%	10%	22%	16%	40%
Scenario #1.33	50	50	10,000	10,000	30,000	10%	40%	25%	9%	7%	15%	11%	57%
Scenario #1.34	50	50	10,000	10,000	50,000	7%	32%	20%	7%	5%	11%	8%	69%
Scenario #1.35	50	50	10,000	10,000	100,000	4%	20%	12%	4%	3%	7%	5%	82%
Scenario #1.36	50	50	10,000	10,000	200,000	2%	11%	7%	2%	2%	4%	3%	90%
Scenario #1.37	50	50	10,000	10,000	400,000	1%	6%	4%	1%	1%	2%	1%	95%
Scenario #1.38	50	60	20,000	20,000	5,000	25%	32%	29%	14%	12%	37%	22%	15%
Scenario #1.39	50	75	50,000	50,000	7,000	28%	27%	28%	9%	10%	45%	23%	13%
Scenario #1.40	50	90	80,000	80,000	10,000	28%	26%	27%	7%	9%	46%	23%	15%
Scenario #1.41	50	120	100,000	100,000	15,000	28%	27%	28%	6%	10%	44%	22%	18%
Scenario #1.42	50	200	300,000	300,000	30,000	28%	23%	26%	3%	8%	46%	26%	18%
Scenario #1.43	50	300	500,000	500,000	50,000	28%	23%	26%	2%	8%	43%	26%	21%
Scenario #1.44	50	400	1,000,000	1,000,000	100,000	28%	24%	26%	1%	6%	40%	28%	24%
Scenario #1.45	50	500	2,000,000	2,000,000	200,000	27%	25%	26%	1%	4%	37%	30%	28%
Scenario #1.46	50	600	3,000,000	3,000,000	400,000	23%	30%	27%	0%	3%	31%	28%	37%
Scenario #1.47	50	50	3,000,000	3,000,000	400,000	65%	27%	46%	0%	0%	32%	29%	38%
Scenario #1.48	50	600	10,000	3,000,000	400,000	18%	11%	15%	1%	5%	1%	41%	53%
Scenario #1.49	50	600	3,000,000	10,000	400,000	6%	33%	20%	1%	5%	43%	1%	51%
Scenario #1.50	50	600	3,000,000	3,000,000	2,000	14%	7%	11%	1%	5%	50%	44%	0%

Notes:

- Each scenario includes a different mix of dwelling units, hotel rooms and non-residential development.
- Using the ITE 9th Edition handbook, AM and PM Peak Hour trip generation rates are applied to each land use and each development scenario. This results in the total AM and PM Peak Hour trips. Using the direction distribution provided in the ITE handbook, the "entering" and "exiting" trips are determined.
- The resulting trips are entered into the NCHRP internal capture model which outputs the internal capture percentages for both AM and PM Peak Hour.
- The average internal capture shown in the tab above reflects the average of the AM and PM Peak Hour internal capture.
- The trip distribution illustrates the proportion of trip that is attributed to each land use in each scenario. The scenarios which include a balanced distribution of trip tend to yield higher internal capture.

Table A-8
Comparison of Mixed-Use Internal Capture

Scenario	Single Family DU's	Hotel Rooms	Retail Sq Ft	Office Sq Ft	Restaurant Sq Ft	AM Peak Hr. IC %	PM Peak Hr. IC %	Average Internal Capture %	Trip Distribution				
									Single Family	Hotel	Retail	Office	Restaurant
Scenario #2.01	1,000	50	10,000	10,000	2,000	5%	11%	8%	79%	4%	9%	6%	2%
Scenario #2.02	1,000	60	10,000	10,000	2,000	5%	11%	8%	79%	4%	8%	6%	2%
Scenario #2.03	1,000	75	10,000	10,000	2,000	5%	11%	8%	78%	5%	8%	6%	2%
Scenario #2.04	1,000	90	10,000	10,000	2,000	5%	11%	8%	77%	6%	8%	6%	2%
Scenario #2.05	1,000	120	10,000	10,000	2,000	5%	11%	8%	76%	8%	8%	6%	2%
Scenario #2.06	1,000	200	10,000	10,000	2,000	5%	11%	8%	72%	12%	8%	6%	2%
Scenario #2.07	1,000	300	10,000	10,000	2,000	5%	10%	8%	68%	17%	7%	5%	2%
Scenario #2.08	1,000	400	10,000	10,000	2,000	4%	10%	7%	65%	21%	7%	5%	2%
Scenario #2.09	1,000	500	10,000	10,000	2,000	4%	9%	7%	62%	25%	7%	5%	2%
Scenario #2.10	1,000	600	10,000	10,000	2,000	4%	9%	7%	59%	28%	6%	5%	2%
Scenario #2.11	1,000	50	20,000	10,000	2,000	6%	13%	10%	76%	4%	13%	6%	2%
Scenario #2.12	1,000	50	50,000	10,000	2,000	7%	17%	12%	68%	3%	21%	5%	2%
Scenario #2.13	1,000	50	80,000	10,000	2,000	6%	19%	11%	64%	3%	27%	5%	2%
Scenario #2.14	1,000	50	100,000	10,000	2,000	6%	20%	11%	61%	3%	30%	5%	2%
Scenario #2.15	1,000	50	300,000	10,000	2,000	5%	25%	15%	46%	2%	47%	4%	1%
Scenario #2.16	1,000	50	500,000	10,000	2,000	5%	27%	16%	39%	2%	55%	3%	1%
Scenario #2.17	1,000	50	1,000,000	10,000	2,000	4%	22%	13%	30%	1%	66%	2%	1%
Scenario #2.18	1,000	50	2,000,000	10,000	2,000	3%	16%	10%	21%	1%	75%	2%	1%
Scenario #2.19	1,000	50	3,000,000	10,000	2,000	3%	12%	8%	17%	1%	80%	1%	0%
Scenario #2.20	1,000	50	10,000	20,000	2,000	6%	11%	9%	78%	4%	8%	8%	2%
Scenario #2.21	1,000	50	10,000	50,000	2,000	7%	11%	9%	75%	4%	8%	12%	2%
Scenario #2.22	1,000	50	10,000	80,000	2,000	8%	11%	10%	72%	3%	8%	15%	2%
Scenario #2.23	1,000	50	10,000	100,000	2,000	8%	11%	10%	70%	3%	8%	17%	2%
Scenario #2.24	1,000	50	10,000	300,000	2,000	9%	10%	10%	57%	3%	6%	32%	2%
Scenario #2.25	1,000	50	10,000	500,000	2,000	7%	9%	8%	49%	2%	5%	42%	1%
Scenario #2.26	1,000	50	10,000	1,000,000	2,000	5%	7%	6%	37%	2%	4%	57%	1%
Scenario #2.27	1,000	50	10,000	2,000,000	2,000	4%	5%	5%	25%	1%	3%	71%	1%
Scenario #2.28	1,000	50	10,000	3,000,000	2,000	3%	4%	4%	19%	1%	2%	78%	1%
Scenario #2.29	1,000	50	10,000	10,000	5,000	7%	13%	10%	77%	4%	8%	6%	5%
Scenario #2.30	1,000	50	10,000	10,000	7,000	7%	15%	11%	75%	4%	8%	6%	7%
Scenario #2.31	1,000	50	10,000	10,000	10,000	8%	18%	13%	73%	4%	8%	6%	10%
Scenario #2.32	1,000	50	10,000	10,000	15,000	9%	21%	13%	70%	3%	7%	5%	14%
Scenario #2.33	1,000	50	10,000	10,000	30,000	11%	24%	14%	61%	3%	7%	5%	25%
Scenario #2.34	1,000	50	10,000	10,000	50,000	13%	26%	16%	53%	3%	6%	4%	35%
Scenario #2.35	1,000	50	10,000	10,000	100,000	15%	26%	17%	39%	2%	4%	3%	52%
Scenario #2.36	1,000	50	10,000	10,000	200,000	9%	18%	14%	26%	1%	3%	2%	68%
Scenario #2.37	1,000	50	10,000	10,000	400,000	5%	11%	8%	15%	1%	2%	1%	81%
Scenario #2.38	1,000	60	20,000	20,000	5,000	9%	16%	12%	72%	4%	12%	7%	5%
Scenario #2.39	1,000	75	50,000	50,000	7,000	13%	21%	17%	61%	4%	19%	10%	6%
Scenario #2.40	1,000	90	80,000	80,000	10,000	15%	25%	20%	54%	4%	23%	11%	7%
Scenario #2.41	1,000	120	100,000	100,000	15,000	18%	28%	23%	49%	5%	24%	12%	10%
Scenario #2.42	1,000	200	300,000	300,000	30,000	24%	35%	30%	32%	5%	32%	18%	13%
Scenario #2.43	1,000	300	500,000	500,000	50,000	27%	39%	33%	24%	6%	34%	21%	16%
Scenario #2.44	1,000	400	1,000,000	1,000,000	100,000	30%	38%	34%	16%	5%	35%	24%	21%
Scenario #2.45	1,000	500	2,000,000	2,000,000	200,000	28%	34%	31%	10%	4%	34%	27%	26%
Scenario #2.46	1,000	600	3,000,000	3,000,000	400,000	24%	35%	30%	6%	3%	30%	26%	34%
Scenario #2.47	1,000	50	3,000,000	3,000,000	400,000	63%	33%	48%	7%	0%	30%	27%	35%
Scenario #2.48	1,000	600	10,000	3,000,000	400,000	20%	14%	17%	9%	4%	1%	37%	48%
Scenario #2.49	1,000	600	3,000,000	10,000	400,000	9%	39%	24%	9%	4%	40%	1%	47%
Scenario #2.50	1,000	600	3,000,000	3,000,000	2,000	13%	14%	14%	10%	5%	45%	40%	0%

Notes:

- Each scenario includes a different mix of dwelling units, hotel rooms and non-residential development.
- Using the ITE 9th Edition handbook, AM and PM Peak Hour trip generation rates are applied to each land use and each development scenario. This results in the total AM and PM Peak Hour trips. Using the direction distribution provided in the ITE handbook, the "entering" and "exiting" trips are determined.
- The resulting trips are entered into the NCHRP internal capture model which outputs the internal capture percentages for both AM and PM Peak Hour.
- The average internal capture shown in the tab above reflects the average of the AM and PM Peak Hour internal capture.
- The trip distribution illustrates the proportion of trip that is attributed to each land use in each scenario. The scenarios which include a balanced distribution of trip tend to yield higher internal capture.

Table A-9
Comparison of Mixed-Use Internal Capture

Scenario	Single Family DU's	Hotel Rooms	Retail Sq Ft	Office Sq Ft	Restaurant Sq Ft	AM Peak Hr: IC %	PM Peak Hr: IC %	Average Internal Capture %	Trip Distribution				
									Single Family	Hotel	Retail	Office	Restaurant
Scenario #3.01	5,000	50	10,000	10,000	2,000	1%	3%	2%	95%	1%	2%	2%	1%
Scenario #3.02	5,000	60	10,000	10,000	2,000	1%	3%	2%	94%	1%	2%	2%	1%
Scenario #3.03	5,000	75	10,000	10,000	2,000	1%	3%	2%	94%	1%	2%	2%	1%
Scenario #3.04	5,000	90	10,000	10,000	2,000	1%	3%	2%	94%	2%	2%	2%	1%
Scenario #3.05	5,000	120	10,000	10,000	2,000	1%	3%	2%	93%	2%	2%	2%	1%
Scenario #3.06	5,000	200	10,000	10,000	2,000	1%	3%	2%	92%	3%	2%	2%	1%
Scenario #3.07	5,000	300	10,000	10,000	2,000	1%	4%	2%	91%	5%	2%	2%	1%
Scenario #3.08	5,000	400	10,000	10,000	2,000	1%	4%	2%	89%	6%	2%	2%	1%
Scenario #3.09	5,000	500	10,000	10,000	2,000	1%	4%	2%	88%	8%	2%	1%	1%
Scenario #3.10	5,000	600	10,000	10,000	2,000	1%	4%	2%	87%	9%	2%	1%	1%
Scenario #3.11	5,000	50	20,000	10,000	2,000	1%	4%	2%	93%	1%	3%	2%	1%
Scenario #3.12	5,000	50	50,000	10,000	2,000	2%	6%	4%	91%	1%	6%	2%	1%
Scenario #3.13	5,000	50	80,000	10,000	2,000	2%	7%	5%	89%	1%	8%	2%	1%
Scenario #3.14	5,000	50	100,000	10,000	2,000	2%	7%	5%	88%	1%	9%	1%	1%
Scenario #3.15	5,000	50	300,000	10,000	2,000	3%	11%	7%	80%	1%	18%	1%	0%
Scenario #3.16	5,000	50	500,000	10,000	2,000	3%	14%	8%	75%	1%	23%	1%	0%
Scenario #3.17	5,000	50	1,000,000	10,000	2,000	3%	17%	10%	66%	1%	32%	1%	0%
Scenario #3.18	5,000	50	2,000,000	10,000	2,000	3%	21%	12%	55%	1%	43%	1%	0%
Scenario #3.19	5,000	50	3,000,000	10,000	2,000	3%	23%	13%	49%	1%	49%	1%	0%
Scenario #3.20	5,000	50	10,000	20,000	2,000	1%	3%	2%	94%	1%	2%	2%	1%
Scenario #3.21	5,000	50	10,000	50,000	2,000	2%	3%	2%	93%	1%	2%	3%	1%
Scenario #3.22	5,000	50	10,000	80,000	2,000	2%	4%	2%	92%	1%	2%	4%	1%
Scenario #3.23	5,000	50	10,000	100,000	2,000	2%	4%	2%	91%	1%	2%	5%	1%
Scenario #3.24	5,000	50	10,000	300,000	2,000	3%	5%	4%	86%	1%	2%	11%	1%
Scenario #3.25	5,000	50	10,000	500,000	2,000	3%	5%	4%	81%	1%	2%	15%	0%
Scenario #3.26	5,000	50	10,000	1,000,000	2,000	3%	5%	4%	72%	1%	2%	25%	0%
Scenario #3.27	5,000	50	10,000	2,000,000	2,000	3%	5%	4%	60%	1%	1%	38%	0%
Scenario #3.28	5,000	50	10,000	3,000,000	2,000	3%	4%	4%	52%	1%	1%	46%	0%
Scenario #3.29	5,000	50	10,000	10,000	5,000	2%	4%	2%	94%	1%	2%	2%	1%
Scenario #3.30	5,000	50	10,000	10,000	7,000	2%	5%	4%	93%	1%	2%	2%	2%
Scenario #3.31	5,000	50	10,000	10,000	10,000	2%	5%	4%	93%	1%	2%	2%	3%
Scenario #3.32	5,000	50	10,000	10,000	15,000	2%	6%	4%	91%	1%	2%	2%	4%
Scenario #3.33	5,000	50	10,000	10,000	30,000	3%	8%	6%	88%	1%	2%	1%	8%
Scenario #3.34	5,000	50	10,000	10,000	50,000	4%	10%	7%	84%	1%	2%	1%	12%
Scenario #3.35	5,000	50	10,000	10,000	100,000	7%	12%	10%	74%	1%	2%	1%	22%
Scenario #3.36	5,000	50	10,000	10,000	200,000	10%	15%	13%	61%	1%	1%	1%	36%
Scenario #3.37	5,000	50	10,000	10,000	400,000	14%	18%	16%	45%	0%	1%	1%	53%
Scenario #3.38	5,000	60	20,000	20,000	5,000	2%	5%	4%	92%	1%	3%	2%	1%
Scenario #3.39	5,000	75	50,000	50,000	7,000	4%	7%	6%	88%	1%	6%	3%	2%
Scenario #3.40	5,000	90	80,000	80,000	10,000	5%	10%	8%	84%	2%	8%	4%	2%
Scenario #3.41	5,000	120	100,000	100,000	15,000	6%	12%	9%	81%	2%	9%	4%	4%
Scenario #3.42	5,000	200	300,000	300,000	30,000	11%	19%	15%	68%	3%	15%	8%	6%
Scenario #3.43	5,000	300	500,000	500,000	50,000	15%	24%	20%	59%	3%	18%	11%	9%
Scenario #3.44	5,000	400	1,000,000	1,000,000	100,000	20%	31%	26%	46%	3%	22%	16%	13%
Scenario #3.45	5,000	500	2,000,000	2,000,000	200,000	25%	37%	31%	33%	3%	25%	20%	19%
Scenario #3.46	5,000	600	3,000,000	3,000,000	400,000	27%	44%	34%	24%	3%	24%	22%	28%
Scenario #3.47	5,000	50	3,000,000	3,000,000	400,000	57%	41%	49%	24%	0%	25%	22%	29%
Scenario #3.48	5,000	600	10,000	3,000,000	400,000	23%	19%	21%	31%	3%	1%	28%	37%
Scenario #3.49	5,000	600	3,000,000	10,000	400,000	16%	48%	32%	30%	3%	30%	1%	36%
Scenario #3.50	5,000	600	3,000,000	3,000,000	2,000	10%	23%	17%	33%	3%	33%	30%	0%

Notes:

- Each scenario includes a different mix of dwelling units, hotel rooms and non-residential development.
- Using the ITE 5th Edition handbook, AM and PM Peak Hour trip generation rates are applied to each land use and each development scenario. This results in the total AM and PM Peak Hour trips. Using the direction distribution provided in the ITE handbook, the "entering" and "exiting" trips are determined.
- The resulting trips are entered into the NCHRP internal capture model which outputs the internal capture percentages for both AM and PM Peak Hour.
- The average internal capture shown in the tab above reflects the average of the AM and PM Peak Hour internal capture.
- The trip distribution illustrates the proportion of trips that is attributed to each land use in each scenario. The scenarios which include a balanced distribution of trips tend to yield higher internal capture.

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Orange County Application

Table A-10 illustrates the projected internal capture reduction for local example developments. These development levels were derived from the County's Comprehensive Plan Future Land Use Element. As shown, both developments are weighted toward residential in terms of trips and result in a limited internal capture.

Table A-10
Orange County Internal Capture Example

Scenario	Single Family DU's	Hotel Rooms	Retail Sq Ft	Office Sq Ft	AM Peak Hr: IC %	PM Peak Hr: IC %	Average Internal Capture %	Trip Distribution			
								Single Family	Hotel	Retail	Office
Innovation Place	5,500	200	1,235,000	2,267,000	9%	18%	14%	49%	1%	24%	25%
Sunbridge	7,400	500	880,000	5,470,000	8%	12%	10%	45%	2%	13%	40%

Source: NCHRP 684 Internal Capture Model

Development details for Innovation Place as shown in FLU 8.1.4 of the County's Comprehensive Plan
Development details for Sunbridge as provided by staff via the "Sunbridge Fact Sheet"

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APPENDIX B
Cost Component Calculations

Appendix B: Cost Component

This appendix presents the detailed calculations for the cost component of the roadway impact fee update. Supporting data and estimates are provided for all cost variables, including:

- Design
- Right-of-Way
- Construction
- Roadway Capacity
- Transit Capital Costs

Design

The design cost factor for county roads was estimated as a percentage of the construction cost per lane mile. This factor was determined based on a review of recent local projects and from a review of design-to-construction cost ratios from previously completed roadway impact fee studies throughout Florida. As shown in Table B-1, local improvements average approximately \$207,000 per lane mile for design, which is eight (8) percent of the average construction cost per lane mile for local projects (\$2.62 million). For county roadways throughout Florida, the design factors ranged from 6 to 14 percent with a weighted average of 11 percent. For purposes of this study, the design cost for county roads was calculated at eight (8) percent of the construction cost per lane mile. See Tables B-1 and B-2 for additional information.

Right-of-Way

The ROW cost reflects the total cost of the acquisitions along a corridor that was necessary to have sufficient cross-section width to widen an existing road or, in the case of new construction, build a new road.

For impact fee purposes, the ROW cost for county roads was estimated as a percentage of the construction cost per lane mile. To determine a ROW acquisition cost per lane mile for county roads, Tindale Oliver conducted a review of recently completed ROW acquisitions and current ROW estimates along capacity expansion projects in Orange County and reviewed ROW-to-construction cost ratios from other counties in Florida. Recent Orange County improvements had significant variation in ROW-to-construction ratios, ranging from <1 percent to 106 percent,

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with a weighted average cost of \$1.11 million per lane mile. Compared to the weighted average cost per lane mile for construction (\$2.62 million), local projects average a ROW-to-construction ratio of 43 percent.

The ROW-to-construction factor for recent studies throughout Florida ranged from 26 percent to 60 percent with an average of 42 percent (see Table B-3). For purposes of this update study, a ratio of 40 percent was used to estimate ROW costs.

Construction

As shown in Table B-1, a review of construction cost data for recent (2012 to present) local county roadway capacity expansion improvements identified eight improvements (34 lane miles) with a weighted average construction cost of \$3.29 million per lane mile, which also includes construction engineering and inspection (CEI) costs. In addition to reviewing local data, a review of recently bid projects located throughout Florida was conducted. As shown in Table B-4, a total of 19 projects from 10 different counties estimated a weighted average construction cost per lane mile of \$2.65 million, excluding CEI cost. With CEI costs estimated at approximately nine percent of construction costs, the statewide figure would increase to approximately \$2.89 million per lane mile for county roadways.

For impact fee purposes, a construction cost of \$3.00 million per lane mile was estimated for county roads in Orange County. This estimate includes the CEI cost and reflects the higher cost observed in the more recent capacity expansion bids in the County.

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Table B-1
Orange County – Recent Capacity Expansion Improvements

CIP #	Project Name	From	To	Improvement	Length	Lanes Added	Lane Miles Added	Year	Design Cost	Design Cost per Lane Mile	Year	ROW Cost	ROW Cost per Lane Mile	Year	Construction Cost	Constr. Cost per Lane Mile	Design/Constr.	ROW/Constr.
3018a	Rouse Rd	Lake Underhill	Corporate Blvd	2 to 4 Lanes	4.15	2	8.30	-	-	-	2011	\$25,918,176	\$3,243,154	2008/13	\$35,075,000	\$4,225,904	-	77%
3038a	Clarcona-Ocoee Rd	Ocoee-Apopka Rd	Hiawasse Rd	2 to 4 Lanes	5.08	2	10.16	-	-	-	2009	\$15,082,963	\$1,484,544	2008/12	\$19,831,058	\$1,951,875	-	76%
3045	Holden Ave	JYP	OBT	0 to 4 Lanes	1.24	4	4.96	-	-	-	2015	\$14,157,581	\$2,854,351	-	-	-	-	-
5001a	John Young Parkway	SR 528	FL Turnpike	4 to 6 Lanes	2.34	2	4.68	2009	\$815,979	\$174,568	-	-	-	2012	\$13,722,494	\$2,932,157	6%	-
5024b	Econ Trail	SR 408	SR 50	2 to 4 Lanes	1.38	2	2.75	-	-	-	2011	\$1,069,186	\$87,386	2012	\$8,621,445	\$3,125,712	-	12%
5029c	Valencia College Ln	Goldenrod Rd	OOCEA	2 to 4 Lanes	0.90	2	1.80	-	-	-	2013	\$5,334,487	\$2,963,604	2012	\$4,216,177	\$2,265,361	-	106%
5059c	Woodbury Rd	S of SR 50	Challenger Pkwy	2 to 4 Lanes	0.65	2	1.30	-	-	-	-	-	-	2011	\$1,487,787	\$1,473,564	-	-
5062a	Alafaya Tr	Avalon Park Blvd	Mark Twain Blvd	2 to 4 Lanes	3.83	2	7.66	-	-	-	2011	\$723,164	\$94,408	2011	\$3,484,737	\$1,473,564	-	4%
5066a	CR 535 Seg A	Magnolia Park Ct	SR 429	2 to 4 Lanes	1.37	2	2.74	-	-	-	2011	\$2,352,940	\$931,730	2011	\$2,484,737	\$1,473,564	-	34%
5066b	CR 535 Seg C&E	Ficquette Rd	Butler Ridge Rd	2 to 4 Lanes	1.18	2	2.35	-	-	-	-	-	-	2014	\$3,836,448	\$3,197,040	8%	-
5067	CR 535 Seg F	Overstreet Rd	Fossick Rd	2 to 4 Lanes	0.69	2	1.38	2013	\$289,030	\$240,840	-	-	-	2017	\$5,487,872	\$4,573,227	5%	-
5068	Reams Rd	Deimar	Taborfield	2 to 4 Lanes	0.69	2	1.38	2013	\$256,518	\$213,765	-	-	-	2013	\$6,629,620	\$4,804,072	-	0%
5090b	Lake Underhill	Goldenrod Rd	Chickasaw Tr	2 to 4 Lanes	0.69	2	1.38	-	-	-	2012	\$30,688	\$22,235	2004	\$7,218,870	\$1,324,763	-	1%
5101	Narcoossee Rd	Ocoee Co. Line	SR 417	2 to 5 Lanes	3.80	4	15.20	-	-	-	2012	\$201,064	\$13,228	2001	\$6,883,254	\$6,883,377	-	-
5102	Sand Lake Rd	President's Dr	FL Mall	4 to 5 Lanes	1.00	2	2.00	-	-	-	-	-	-	2015	\$18,802,148	\$4,273,215	5%	0%
5107	International Dr	Westwood Blvd	Westwood Blvd	4 to 5 Lanes	2.20	2	4.40	2010	\$1,015,146	\$230,715	-	-	-	2010	\$4,119,620	\$4,119,620	-	-
5110	Taft Vineland Rd	Central FL Pkwy	John Young Pkwy	2 to 4 Lanes	0.50	2	1.00	-	-	-	-	-	-	-	-	-	-	-
Total (Design)						11.48			\$2,877,875	\$250,115								
Total (Right-of-Way)						59.36						\$66,082,672	\$1,111,811					
Total (Construction)						67.98									\$178,003,543	\$2,618,440	8%	43%
Total (Recent Construction ONLY, 2012-2017)						94.08									\$112,006,085	\$1,189,541		

Source: Orange County Transportation Planning Division and Orange County Development Engineering Division. The data shown represent the full detail that staff was able to provide

Table B-2
Design Factor for County Roads – Recent Impact Fee Studies

Year	County	County Roadways (Cost per Lane Mile)		
		Design	Constr.	Design Ratio
2012	Osceola	\$371,196	\$2,651,400	14%
2012	Orange	\$264,000	\$2,400,000	11%
2012	City of Orlando	\$288,000	\$2,400,000	12%
2012	City of Sarasota	\$240,000	\$2,400,000	10%
2013	Hernando	\$198,000	\$1,980,000	10%
2013	Charlotte	\$220,000	\$2,200,000	10%
2014	Indian River	\$159,000	\$1,598,000	10%
2015	Collier	\$270,000	\$2,700,000	10%
2015	Brevard	\$242,000	\$2,023,000	12%
2015	Sumter	\$210,000	\$2,100,000	10%
2015	Marion	\$167,000	\$2,668,000	6%
2015	Palm Beach	\$224,000	\$1,759,000	13%
2016	Hillsborough	\$348,000	\$2,897,000	12%
2016	St. Lucie	\$220,000	\$2,200,000	10%
2017	Clay County	\$239,000	\$2,385,000	10%
Average		\$244,013	\$2,290,760	11%

Source: Recent impact fee studies constructed throughout Florida

Table B-3
Right-of-Way Factor for County Roads – Recent Impact Fee Studies

Year	County	County Roadways (Cost per Lane Mile)		
		ROW	Constr.	ROW Ratio
2012	Osceola	\$1,087,074	\$2,651,400	41%
2012	Orange	\$1,080,000	\$2,400,000	45%
2012	City of Orlando	\$1,080,000	\$2,400,000	45%
2012	City of Sarasota	\$620,000	\$2,400,000	26%
2013	Hernando	\$811,800	\$1,980,000	41%
2013	Charlotte	\$1,034,000	\$2,200,000	47%
2014	Indian River	\$656,000	\$1,598,000	41%
2015	Collier	\$863,000	\$2,700,000	32%
2015	Brevard	\$708,000	\$2,023,000	35%
2015	Sumter	\$945,000	\$2,100,000	45%
2015	Marion	\$1,001,000	\$1,668,000	60%
2015	Palm Beach	\$721,000	\$1,759,000	41%
2016	Hillsborough	\$1,448,000	\$2,897,000	50%
2016	St. Lucie	\$990,000	\$2,200,000	45%
2017	Clay County	\$954,000	\$2,385,000	40%
Average		\$933,258	\$2,224,093	42%

Source: Recent impact fee studies constructed throughout Florida

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Table B-4
Construction Cost – Recent County Road Improvements from Other Jurisdictions throughout Florida

County	District	Description	From	To	Year	Status	Feature	Design	Length	Lanes Added	Lane Miles Added	Construction Cost	Construction Cost per Lane/Mile
Indian River	4	Oslo Rd Ph. III	43rd Ave	58th Ave	2012	Bid	2 to 4	Urban	1.15	2	2.30	\$3,812,202	\$1,657,479
Indian River	4	88th Ave	SR 60	49th St	2012	Bid	2 to 4	Urban	3.05	2	6.10	\$20,773,389	\$3,405,474
Polk	1	Kathleen Rd (CR35A) Ph. II	Galloway Rd	Duff Rd	2012	Bid	2 to 4	Urban	3.00	2	6.00	\$17,813,685	\$2,968,948
Polk	1	Bartow Northern Connector Ph. I	US 98	US 17	2012	Bid	0 to 4	Urban	2.00	4	8.00	\$11,255,736	\$1,406,967
Volusia	5	Timber Creek Rd	SR 40	Peruvian Ln	2012	Bid	2 to 4	Urban	0.75	2	1.50	\$5,276,057	\$3,517,371
Palm Beach	4	Jog Rd	N. of SR 710	N. of Florida's Turnpike	2012	Bid	0 to 4	Urban	0.70	4	2.80	\$3,413,874	\$1,219,241
Palm Beach	4	West Atlantic Ave	W. of Lyons Rd	Starkey Rd	2012	Bid	2 to 4	Urban	0.80	2	1.60	\$8,818,727	\$5,511,704
Palm Beach	4	60th St N & SR 7 Ext.	E. of Royal Palm Beach Blvd	SR 7	2012	Bid	0 to 2	Urban	1.50	2	3.00	\$3,821,404	\$1,273,801
Brevard	5	Babcock St	S. of Foundation Park Blvd	Malabar Rd	2013	Bid	2 to 4	Urban	12.40	2	24.80	\$56,000,000	\$2,258,065
Collier	1	Collier Blvd (CR 951)	Golden Gate Blvd	Green Blvd	2013	Bid	4 to 6	Urban	2.74	2	5.48	\$23,295,924	\$4,251,081
Marion	5	SW 110th St	US 41	SW 200th Ave	2013	Bid	0 to 2	Urban	0.11	2	0.22	\$438,765	\$1,994,386
Marion	5	NW 35th St	NW 35th Avenue Rd	NW 27th Ave	2013	Bid	0 to 4	Urban	0.50	4	4.60	\$8,616,236	\$1,873,095
Marion	5	NW 35th St	NW 27th Ave	US 441	2013	Bid	2 to 4	Urban	1.30	2	2.60	\$4,283,842	\$1,947,201
Sumter	5	C-466A, Ph. III	US 301 N	Powell Rd	2013	Bid	2 to 3/4	Urban	1.10	2	2.20	\$11,699,059	\$2,166,492
Sarasota	1	Honore Ave/Pinebrook Rd Ext.	SR 681	Laurel Rd	2013	Bid	0 to 2	Rural	2.70	2	5.40	\$51,402,161	\$4,501,065
Collier	1	Golden Gate Blvd	Wilson Blvd	Desoto Blvd	2014	Bid	2 to 4	Urban	5.71	2	11.42	\$16,763,567	\$2,695,107
Brevard	5	St. Johns Heritage Pkwy	SE of I-95 Intersection	US 192 (Space Coast Pkwy)	2014	Bid	0 to 2	Sub-Urb	3.11	2	6.22	\$3,166,000	\$1,130,714
Hillsborough	7	Turkey Creek Rd	Dr. MLK Blvd	Sydney Rd	2014	Bid	2 to 4	Urban	1.40	2	2.80	\$14,066,523	\$2,624,351
Sarasota	1	Bee Ridge Rd	Mauna Loa Blvd	Iona Rd	2014	Bid	2 to 4	Urban	2.68	2	5.36		
Total										Count:	19	\$264,717,151	\$13,927,218

Source: Roadway bids from recent impact fee studies throughout Florida as well as recent bids from the Tindale Oliver Cost Database, with information having been provided by each respective County

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Roadway Capacity

As shown in Table B-5, the average capacity per lane mile was based on the projects in the Metroplan 2040 Long Range Transportation Plan's Cost Feasible and Needs Plans. This listing of projects reflects the mix of improvements that will yield the vehicle-miles of capacity (VMC) that will be built in Orange County. The resulting weighted average capacity per lane mile of 9,000 was used in the impact fee calculation.

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Table B-5
Metropolitan 2040 Long Range Transportation Plan – Cost Feasible and Needs Plan Improvements

Jurisdiction	Description	From	To	Improvement	Length	Lanes Added	Lane Miles Added	Section Design	Initial Capacity	Future Capacity	Added Capacity	Vehicle Miles of Capacity Added
County/City	Central Florida Pkwy	International Dr	SR 423 (John Young Pkwy)	Widen to 6 Lanes	1.94	2	3.88	Curb/Gutter	37,350	54,900	17,550	34,047
County/City	International Dr	Hawaiian Ct	SR 482	Widen to 6 Lanes	2.05	2	4.10	Curb/Gutter	37,350	54,900	17,550	35,978
County/City	Apopka-Vineland Rd	CR 535	Fenton Ave	Widen to 6 Lanes	1.43	2	2.86	Curb/Gutter	37,350	54,900	17,550	25,097
County/City	Landstar Blvd	Osceola Co. Line	SR 417	Widen to 6 Lanes	1.53	2	3.06	Curb/Gutter	37,350	54,900	17,550	26,852
County/City	Apopka-Vineland Rd	Darlene Rd	Kilgore Rd	Widen to 6 Lanes	1.34	2	2.68	Curb/Gutter	37,350	54,900	17,550	23,517
County/City	New Independence Pkwy/Walr	Lake Co. Line	SR 429	New/Widen 4 Lanes	1.07/0.45	2	5.00	Curb/Gutter	0	30,420	30,420	46,238
County/City	Alafaya Tr	Huckleberry Finn Dr	Lake Underhill Rd	Widen to 6 Lanes	0.28	2	0.56	Curb/Gutter	37,350	54,900	17,550	4,914
County/City	Apopka-Vineland Rd	Kilgore Rd	SR 482	Widen to 6 Lanes	0.75	2	1.50	Curb/Gutter	30,420	45,810	15,390	11,543
County/City	Hiawasse Rd	SR 50 (Colonial Dr)	Silver Star Rd	Widen to 6 Lanes	1.76	2	3.52	Curb/Gutter	37,350	54,900	17,550	30,888
County/City	Apopka-Vineland Rd	Fenton Ave	Darlene Rd	Widen to 6 Lanes	1.01	2	2.02	Curb/Gutter	37,350	54,900	17,550	17,726
County/City	Universal Blvd	SR 482	Pointe Plaza Ave	Widen to 6 Lanes	1.00	2	2.00	Curb/Gutter	30,420	45,810	15,390	15,390
County/City	Central Florida Pkwy	SR 423 (John Young Pkwy)	Orange Blossom Tr	Widen to 6 Lanes	1.23	2	2.46	Curb/Gutter	37,350	54,900	17,550	21,587
County/City	International Dr	SR 482	Kirkman Rd	Widen to 6 Lanes	1.39	2	2.78	Curb/Gutter	30,420	45,810	15,390	21,392
County/City	International Dr South	Westwood Blvd	Hawaiian Ct	Widen to 6 Lanes	2.50	2	5.00	Curb/Gutter	37,350	54,900	17,550	43,875
County/City	Turkey Lake Rd	Sand Lake Commons Blvd	SR 482	Widen to 6 Lanes	1.63	2	3.26	Curb/Gutter	37,350	54,900	17,550	28,607
County/City	Boggy Creek Rd	Beacon Park Blvd	SR 417	Widen to 6 Lanes	1.56	2	3.12	Curb/Gutter	27,360	41,220	13,860	21,622
County/City	Clarke Rd	White Rd	SR 50	Widen to 6 Lanes	0.80	2	1.60	Curb/Gutter	37,350	54,900	17,550	14,040
County/City	Universal Blvd	SR 482	Carrier Dr	Widen to 6 Lanes	1.00	2	2.00	Curb/Gutter	37,350	54,900	17,550	17,550
County/City	Turkey Lake Rd	Central Florida Pkwy	Sand Lake Commons Blvd	Widen to 6 Lanes	1.38	2	2.76	Curb/Gutter	37,350	54,900	17,550	20,709
County/City	Apopka-Vineland Rd	Conroy-Windermere Rd	Westover Roberts Rd	Widen to 6 Lanes	1.77	2	3.54	Curb/Gutter	37,350	54,900	17,550	31,064
County/City	Avalon Rd (CR 545)	Seidel Rd	McKinney Rd	Widen to 4 Lanes	3.88	2	7.76	Curb/Gutter	16,830	37,350	20,520	79,618
County/City	Oakland Ave	Tubb St	Avalon Rd	Widen to 4 Lanes	1.32	2	2.64	Curb/Gutter	14,040	30,420	16,380	18,346
County/City	Avalon Rd (CR 545)	Tilden Rd	Marsh Rd	Widen to 4 Lanes	0.73	2	1.46	Curb/Gutter	16,830	37,350	20,520	14,980
County/City	Avalon Rd (CR 545)	McKinney Rd	Tilden Rd	Widen to 4 Lanes	2.26	2	4.52	Curb/Gutter	16,830	37,350	20,520	46,375
County/City	Hiawasse Rd	Clarcona-Ocoee Rd	John Land Apopka Expwy	Widen to 6 Lanes	0.58	2	1.16	Curb/Gutter	37,350	54,900	17,550	10,179
County/City	Apopka-Vineland Rd	SR 482	Conroy-Windermere Rd	Widen to 6 Lanes	3.15	2	6.30	Curb/Gutter	30,420	45,810	15,390	48,479
County/City	Avalon Rd (CR 545)	Flamingo Crossings Blvd	Seidel Rd	Widen to 4 Lanes	0.49	2	0.98	Curb/Gutter	16,830	37,350	20,520	10,055
County/City	Avalon Rd (CR 545)	US 192	Hartzog Rd	Widen to 4 Lanes	0.97	2	1.94	Curb/Gutter	16,830	37,350	20,520	19,904
County/City	Clarcona-Ocoee Rd	Apopka-Vineland Rd	Hiawasse Rd	Widen to 6 Lanes	1.37	2	2.74	Curb/Gutter	37,350	54,900	17,550	24,044
County/City	Clarcona-Ocoee Rd	Clarke Rd	Apopka-Vineland Rd	Widen to 6 Lanes	1.17	2	2.34	Curb/Gutter	27,360	41,220	13,860	16,216
County/City	Ocoee-Apopka Rd	SR 438	Fullers Cross Rd	Widen to 4 Lanes	1.50	2	3.00	Curb/Gutter	12,780	27,360	14,580	21,870
County/City	Wymore Rd	Lee Rd	Kennedy Blvd	Widen to 4 Lanes	0.89	2	1.78	Curb/Gutter	16,830	37,350	20,520	18,263
County/City	Ocoee-Apopka Rd	McCormick Rd	Binion Rd	Widen to 4 Lanes	0.65	2	1.30	Curb/Gutter	14,040	30,420	16,380	23,855
County/City	Glenridge Way	Winter Park Rd	Lakemont Ave	Widen to 4 Lanes	1.14	2	2.28	Curb/Gutter	14,040	30,420	16,380	18,673
County/City	Taft-Vineland Rd	American Eagle Way	US 441	Widen to 4 Lanes	0.21	2	0.42	Curb/Gutter	37,350	54,900	17,550	3,686
County/City	Boggy Creek Rd	Wetherbee Rd	Tradeport Dr	Widen to 4 Lanes	1.32	2	2.64	Curb/Gutter	16,830	37,350	20,520	27,086
County/City	Avalon Rd (CR 545)	SR 50	Oakland Ave	Widen to 4 Lanes	0.27	2	0.54	Curb/Gutter	16,830	37,350	20,520	5,540
County/City	Econlockhatchee Tr	Lee Vista Blvd	Curry Ford Rd	Widen to 4 Lanes	2.25	2	4.50	Curb/Gutter	14,040	30,420	16,380	36,855
County/City	Reams Rd	Summerlake Park Blvd	Center Dr	Widen to 4 Lanes	1.95	2	3.90	Curb/Gutter	16,830	37,350	20,520	40,014
County/City	Sadler Ave	Lake County Line	US 441	Widen to 4 Lanes	2.37	2	4.74	Curb/Gutter	12,780	27,360	14,580	34,555
County/City	Geneva St	Bluford Ave	Bowmess Rd	Widen to 4 Lanes	0.17	2	0.34	Curb/Gutter	14,040	30,420	16,380	2,785
County/City	Clarke Rd	Hackney-Prairie Rd	AD Mims Rd	Widen to 6 Lanes	0.72	2	1.44	Curb/Gutter	27,360	41,220	13,860	9,979
County/City	Clarcona Rd	McCormick Rd	Keene Rd	Widen to 4 Lanes	1.01	2	2.02	Curb/Gutter	12,780	27,360	14,580	14,726
County/City	Round Lake Rd	Sadler Ave	Kelly Park Rd	Widen to 4 Lanes	0.50	2	1.00	Curb/Gutter	14,040	30,420	16,380	18,350
County/City	Boggy Creek Rd	Dowden Rd	Landstreet Rd	Widen to 4 Lanes	0.59	2	1.18	Curb/Gutter	14,040	30,420	16,380	9,664

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Table B-5 (continued)
Metropolitan 2040 Long Range Transportation Plan – Cost Feasible and Needs Plan Improvements

Jurisdiction	Description	From	To	Improvement	Length	Lanes Added	Lane Miles Added	Section Design	Initial Capacity	Future Capacity	Added Capacity	Vehicle Miles of Capacity Added
County/City	Ocoee-Apopka Rd	West Rd	McCormick Rd	Widen to 4 Lanes	1.33	2	2.66	Curb/Gutter	14,300	51,000	36,700	48,811
County/City	Ocoee-Apopka Rd	Binion Rd	Keene Rd	Widen to 4 Lanes	0.55	2	1.10	Curb/Gutter	14,300	51,000	36,700	23,855
County/City	Jones Ave	US 441	Lake Co. Line	Widen to 4 Lanes	3.17	2	6.34	Curb/Gutter	12,780	27,360	14,580	46,219
County/City	Chuluota Rd (CR 419)	Lake Pickett Rd	SR 50	Widen to 4 Lanes	1.95	2	3.90	Curb/Gutter	12,870	45,900	33,030	64,409
County/City	Story Rd	9th St	Carter Rd	Widen to 4 Lanes	0.54	2	1.08	Curb/Gutter	14,040	30,420	16,380	10,483
County/City	Roberson Rd	Windermere Rd	Maguire Rd	Widen to 4 Lanes	1.00	2	2.00	Curb/Gutter	12,780	27,360	14,580	14,580
County/City	Clarke Rd	Clarcona-Ocoee Rd	Hackney-Prairie Rd	Widen to 4 Lanes	0.78	2	1.56	Curb/Gutter	12,780	27,360	14,580	11,372
County/City	Reams Rd	Center Dr	CR 535	Widen to 4 Lanes	1.94	2	3.88	Curb/Gutter	15,830	37,350	20,520	39,809
County/City	Story Rd	Carter Rd	Bowmess Rd	Widen to 4 Lanes	1.13	2	2.25	Curb/Gutter	14,040	30,420	16,380	18,509
County/City	Wallace Rd	Apopka-Vineland Rd	Dr. Phillips Blvd	Widen to 4 Lanes	0.50	2	1.00	Curb/Gutter	15,830	37,350	20,520	10,260
County/City	Plymouth-Sorrento Rd	Schopke Rd	SR 429	Widen to 4 Lanes	2.80	2	5.60	Curb/Gutter	29,970	37,350	7,380	20,664
County/City	Lake Pickett Rd	Percival Rd	South Tanner Rd	Widen to 4 Lanes	1.25	2	2.50	Curb/Gutter	12,780	27,360	14,580	18,225
County/City	Ponkan Rd	Round Lake Rd	Plymouth-Sorrento Rd	Widen to 4 Lanes	2.62	2	5.24	Curb/Gutter	12,870	27,360	14,490	37,964
County/City	Ocoee-Apopka Rd	Fullers Cross Rd	West Rd	Widen to 4 Lanes	0.53	2	1.06	Curb/Gutter	12,780	27,360	14,580	7,727
County/City	Chuluota Rd (CR 419)	Seminole Co.	Lake Pickett Rd	Widen to 4 Lanes	1.79	2	3.58	Curb/Gutter	14,300	51,000	36,700	65,693
County/City	Kelly Park Rd	Round Lake Rd	Plymouth-Sorrento Rd	Widen to 4 Lanes	2.03	2	4.06	Curb/Gutter	12,870	27,360	14,490	29,415
County/City	Lake Pickett Rd	SR 50	Percival Rd	Widen to 4 Lanes	1.07	2	2.14	Curb/Gutter	15,830	37,350	20,520	21,956
County/City	Lakewood Ave	Fullers Cross Rd	Pat's Lane	Widen to 4 Lanes	0.28	2	0.56	Curb/Gutter	12,780	27,360	14,580	4,082
County/City	Pope St	Young Pine Rd	Innovation Rd	Widen to 4 Lanes	1.95	2	3.90	Curb/Gutter	15,830	37,350	20,520	40,014
County/City	Young Pine Rd	Pope Rd	Lee Vista Blvd	Widen to 4 Lanes	0.80	2	1.60	Curb/Gutter	15,830	37,350	20,520	16,416
County/City	Bowmess Rd/Kissimmee Ave	Story Rd/Geneva St	Kissimmee Ave	Widen to 4 Lanes	0.19	2	0.38	Curb/Gutter	14,040	30,420	16,380	3,112
County/City	Rose Ave	Beggs Rd	Maitland Blvd	Widen to 4 Lanes	0.99	2	1.98	Curb/Gutter	15,830	37,350	20,520	20,315
County/City	Valencia College Ln	Frontage Rd	Econlockhatchee Tr	Widen to 4 Lanes	1.01	2	2.02	Curb/Gutter	15,830	37,350	20,520	20,725
County/City	Wallace Rd	Dr. Phillips Blvd	Turkey Lake Rd	Widen to 4 Lanes	1.02	2	2.04	Curb/Gutter	14,040	30,420	16,380	16,708
County/City	White Rd	Montgomery Ave	Clarke Rd	Widen to 4 Lanes	0.64	2	1.28	Curb/Gutter	14,040	30,420	16,380	10,483
County/City	Windermere Rd	Roberson Rd	Maguire Rd	Widen to 4 Lanes	1.83	2	3.66	Curb/Gutter	12,780	27,360	14,580	26,681
County/City	Apopka-Vineland Rd	AD Miris Rd	Clarcona-Ocoee Rd	Widen to 4 Lanes	1.67	2	3.34	Curb/Gutter	12,780	27,360	14,580	24,349
County/City	Boggy Creek Rd	Tradeport Dr	Dowden Rd	Widen to 4 Lanes	1.31	2	2.62	Curb/Gutter	15,830	37,350	20,520	26,881
County/City	Lake Margaret Dr	Bumby Ave	Semorau Blvd	Widen to 4 Lanes	2.60	2	5.20	Curb/Gutter	14,040	30,420	16,380	42,588
County/City	Winegard Rd	Sand Lake Rd	Lancaster Rd	Widen to 4 Lanes	0.85	2	1.70	Curb/Gutter	14,040	30,420	16,380	13,923
County/City	Lakewood Rd	Beggs Rd	Apopka Blvd	Widen to 4 Lanes	1.78	2	3.56	Curb/Gutter	12,780	27,360	14,580	25,952
County/City	Lakewood Rd	Clarcona-Ocoee Rd	Beggs Rd	Widen to 4 Lanes	0.83	2	1.66	Curb/Gutter	12,780	27,360	14,580	12,101
County/City	S Rio Grande Ave	Long St	W Anderson St	Widen to 4 Lanes	0.06	2	0.12	Curb/Gutter	15,830	37,350	20,520	1,231
County/City	Apopka-Vineland Rd	I-4 WB Ramp	CR 535	Widen to 8 Lanes	0.58	2	1.16	Curb/Gutter	54,900	72,990	18,090	10,492
County/City	Boggy Creek Rd	Jeff Fuqua Blvd	Wetherbee Rd	Widen to 4 Lanes	1.30	2	2.60	Curb/Gutter	54,900	72,990	18,090	23,517
County/City	CR 535	Buena Vista Dr	Equestrian Dr	Widen to 6 Lanes	1.17	2	2.34	Curb/Gutter	37,350	54,900	17,550	20,534
County/City	Curry Ford Rd	Goldenrod Rd	Dean Rd	Widen to 6 Lanes	3.10	2	6.20	Curb/Gutter	37,350	54,900	17,550	54,405
County/City	Dean Rd	University Blvd	McCulloch Rd	Widen to 4 Lanes	1.02	2	2.04	Curb/Gutter	15,830	37,350	20,520	20,930
County/City	John Young Pkwy	Osceola Co. Line	Town Center Blvd	Widen to 8 Lanes	1.77	2	3.54	Open Drainage	54,900	72,990	18,090	32,019
County/City	John Young Pkwy	Town Center Blvd	Deerfield Blvd	Widen to 8 Lanes	0.64	2	1.28	Open Drainage	54,900	72,990	18,090	11,578
County/City	John Young Pkwy	Central Florida Pkwy	Interstate 4	Widen to 8 Lanes	7.30	2	14.60	Open Drainage	54,900	72,990	18,090	132,057
County/City	John Young Pkwy	Interstate 4	SR 50	Widen to 8 Lanes	3.20	2	6.40	Curb/Gutter	54,900	72,990	18,090	57,888
County/City	Kennedy Blvd	Forest City Rd	Keller Rd	Widen to 4 Lanes	1.02	2	2.04	Curb/Gutter	15,830	37,350	20,520	20,930
County/City	Kennedy Blvd	Keller Rd	Wymore Rd	Widen to 4 Lanes	0.74	2	1.48	Curb/Gutter	15,830	37,350	20,520	15,185
County/City	Nova Rd (CR 532)	Osceola Co. Line	SR 520	Widen to 4 Lanes	2.63	2	5.26	Open Drainage	12,870	27,360	14,490	38,109

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Table B-5 (continued)
Metropolitan 2040 Long Range Transportation Plan – Cost Feasible and Needs Plan Improvements

Jurisdiction	Description	From	To	Improvement	Length	Lanes Added	Lane Miles Added	Section Design	Initial Capacity	Future Capacity	Added Capacity	Vehicle Miles of Capacity Added
County/City	Orange Ave	Osceola Co. Line	Town Center Blvd	Widen to 4 Lanes	1.22	2	2.44	Curb/Gutter	16,830	37,350	20,520	25,034
County/City	Orange Ave	Taft-Vineland Rd	Landstreet Rd	Widen to 6 Lanes	1.08	2	2.16	Curb/Gutter	30,420	45,810	15,390	16,621
County/City	Orange Ave	Landstreet Rd	SR 482	Widen to 6 Lanes	1.06	2	2.12	Curb/Gutter	37,350	54,900	17,550	18,603
County/City	Palm Pkwy/Turkey Lake Rd	SR 535	Central Florida Pkwy	Widen to 6 Lanes	2.66	2	5.32	Curb/Gutter	37,350	54,900	17,550	46,683
County/City	Sand Lake Rd	Apopka-Vineland Rd	Turkey Lake Rd	Widen to 6 Lanes	1.33	2	2.66	Curb/Gutter	37,350	54,900	17,550	23,342
County/City	West Lake Butler Rd	Winter Garden-Vineland Rd	McKinnon Rd	Widen to 4 Lanes	0.50	2	1.00	Curb/Gutter	12,780	27,360	14,580	7,290
Total:							270.44					2,437,462
VMC Added per Lane Mile:												9,345

Source: Metropolitan 2040 Long Range Transportation Plan, Tech memo #3, Table 9
VMC Added per Lane Mile reflects rounding to the nearest hundred.
Note: Letter references (i.e., "a") are used to assist with footnotes and sourcing.

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Transit Capital Costs – Multi-modal Fee

To convert the roadway impact fee into a multi-modal fee, the marginal cost of adding transit infrastructure needs to be considered. This section details the difference in cost per person-mile of capacity between expanding a roadway without transit amenities versus expanding a roadway with transit amenities. This calculation also accounts for the change in roadway PMC that occurs when a bus is on the road.

First, Table B-6 calculates the person-miles of capacity added for each new transit vehicle on the road. This calculation adjusts for the fact that buses have a significantly higher person-capacity than passenger vehicles. This table also identifies transit capital cost variables that will be used to calculate the added capital cost of constructing/expanding a roadway with transit facilities.

Next, Table B-7 combines the roadway VMC and the transit PMC to calculate the marginal change in cost per PMC. First, the roadway characteristics, including cost and capacity, were used to calculate the roadway cost per VMC for a generic 26-mile roadway segment. Then, an adjustment factor was applied to recognize that incorporating transit along a segment of roadway decreases the vehicle-capacity as the bus makes intermittent stops and interrupts the free-flowing traffic. As shown in Table B-7, the bus blockage adjustment factor is much higher for a 2-lane roadway than for a 4-lane roadway. On a 2-lane road, all cars get caught behind the bus during a stop, while on a 4-lane roadway, there is an unobstructed travel lane that cars can use to pass-by or maneuver around the slower transit vehicle. This adjusted VMC was then converted to PMC using the vehicle-miles to person-miles adjustment factor previously discussed in this report. The additional person-capacity from the buses was added to the adjusted roadway PMC. The person-miles of capacity that a transit system would add to the stretch of roadway (Table B-6) mitigates the decrease in vehicle-miles of capacity due to the bus blockage adjustments.

Next, the capital cost of transit infrastructure was added to the capital cost of the roadway expansion for both new road construction (0 to 2 lanes) and lane addition (2 to 4 lanes). With the transit infrastructure included, the updated cost per PMC was calculated, which now reflects the total cost of building a new road with transit, or expanding a roadway and adding transit amenities. When compared to the cost per PMC for simply building/expanding a roadway without transit, the added cost of transit is between two (2) percent and five (5) percent.

As a final step, the increased costs were then weighted by the lane mile distribution of new road construction and lane addition improvements in the Metroplan 2040 Long Range Transportation Plan. As shown, the plan calls for a higher number of lane addition improvements through 2040.

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When the marginal cost of transit is included and weighted by this ratio, the resulting percent change is approximately 2.70 percent. Essentially, adding transit does not have a significant effect on the cost per person-mile of capacity for new road construction and lane addition improvements.

As it is currently structured, the transit model detailed in Tables B-6 and B-7 assumes that transit-miles and road-miles will be added to the system at the same rate. If the County builds more transit-miles, this would increase the bus traffic on existing roads, adding more stops, higher stop frequency, and creating additional bus blockage. As a result, the capital cost per person-mile for a roadway with transit would increase in relation to the ratio of added transit-miles vs. roadway-miles. For example, if the transit-mile investment was double that of roadway construction/expansion, the 2.70 percent change calculated in Table B-7 would increase to approximately 5.40 percent. The annual construction figures for transit-miles and road-miles should be tracked by the County and adjusted for in subsequent multi-modal fee update studies.

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Table B-6
Multi-Modal Cost per Person-Mile of Capacity

Input	Local Transit	Source:
Transit Person-Miles of Capacity Calculation		
Vehicle Capacity ⁽¹⁾	50	1) Source: Local transit is assumed to have 40 seats with a 25 percent standing room capacity equivalent
Number of Vehicles (20% fleet margin) ⁽²⁾	2	2) Cycle time (Item 9) divided by headway time (Item 6) increased by 20 percent to accommodate the required fleet margin
Service Span (hours) ⁽³⁾	16	3) Source: Assumption based on current LYNX routes
Cycles/Hour (aka Peak Vehicles) ⁽⁴⁾	1.00	4) Headway time (Item 6) divided by 60
Cycles per Day ⁽⁵⁾	16	5) Service span (Item 3) multiplied by the cycles/hour (Item 4)
Headway Time (minutes) ⁽⁶⁾	60	6) Source: Assumption based on current LYNX routes
Speed (mph) ⁽⁷⁾	14	7) Source: Integrated National Transit Database Analysis System (INTDAS). 6-yr average
Round Trip Length (miles) ⁽⁸⁾	26.0	8) Source: Average trip length of current LYNX routes
Cycle Time (minutes) ⁽⁹⁾	111	9) Round trip length (Item 8) divided by speed (Item 7) multiplied by 60
Total Person-Miles of Capacity ⁽¹⁰⁾	20,800	10) Vehicle capacity (Item 1) multiplied by the cycles per day (Item 5) multiplied by the round trip length (Item 8)
Load Factor/System Capacity ⁽¹¹⁾	30%	11) Source: Optimistic assumption based on future goals
Adjusted Person-Miles of Capacity ⁽¹²⁾	6,240	12) Total person-miles of capacity (Item 10) multiplied by the load factor (Item 11)
Capital Cost Variables		
Stops per Mile (w/o Shelter) ⁽¹³⁾	3	13) Source: Model assumes 3 bench stops per mile
Shelters per Mile ⁽¹⁴⁾	1	14) Source: Model assumes 1 shelter stop per mile
Vehicle Cost ⁽¹⁵⁾	\$600,000	15) Source: Assumption based on local characteristics and industry knowledge
Simple Bus Stop ⁽¹⁶⁾	\$10,000	16) Source: Assumption based on local characteristics and industry knowledge
Sheltered Bus Stop ⁽¹⁷⁾	\$30,000	17) Source: Assumption based on local characteristics and industry knowledge

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Table B-7
Multi-Modal Fee: Transit Component Model

Item	New Road Construction		Lane Additions	
	Roadway	Transit	Roadway	Transit
Roadway Characteristics:				
Roadway Cost per Mile ⁽¹⁾	\$8,880,000		\$8,880,000	
Roadway Segment Length (miles) ⁽²⁾	26.0		26.0	
Roadway Segment Cost ⁽³⁾	\$230,880,000	PMC	\$230,880,000	PMC
Average Capacity Added (per mile) ⁽⁴⁾	18,000	25,200	18,000	25,200
VMC/PMC Added (entire segment) ⁽⁵⁾	468,000	655,200	468,000	655,200
Roadway Cost per VMC/PMC ⁽⁶⁾	\$493.33	\$352.38	\$493.33	\$352.38
Transit Capacity:				
Adjustment for Bus Blockage ⁽⁷⁾	3.2%	-	1.6%	-
VMC/PMC Added (transit deduction) ⁽⁸⁾	14,976	20,966	7,488	10,483
VMC/PMC Added (less transit deduction) ⁽⁹⁾	453,024	634,234	460,512	644,717
PMC Added (transit addition ONLY) ⁽¹⁰⁾		6,240		6,240
Net PMC Added (transit effect included) ⁽¹¹⁾		640,474		650,957
Road/Transit Cost per PMC (Road Capital) ⁽¹²⁾		\$360.48		\$354.68
Transit Infrastructure:				
Bus Stops Needed ⁽¹³⁾	2	\$1,200,000	2	\$1,200,000
Stops per mile (both sides of street) ⁽¹⁴⁾	3	\$1,560,000	3	\$1,560,000
Shelters per mile (both sides of street) ⁽¹⁵⁾	1	\$1,560,000	1	\$1,560,000
Total Infrastructure ⁽¹⁶⁾		\$4,320,000		\$4,320,000
Multi-Modal Cost per PMC:				
Road/Transit Cost per PMC ⁽¹⁷⁾		\$367.23		\$361.31
Percent Change ⁽¹⁸⁾		4.21%		2.54%
Weighted Multi-Modal Cost per PMC:				
Lane Mile Distribution w/Transit Facilities ⁽¹⁹⁾		10%		90%
Weighted Roadway Cost per PMC ⁽²⁰⁾		\$35.24		\$317.14
Weighted Road/Transit Cost per PMC ⁽²¹⁾		\$36.72		\$325.18
Weighted Average Multi-Modal Cost per PMC:				
Weighted Average Roadway Cost per PMC (new road construction and lane additions) ⁽²²⁾				\$352.38
Weighted Average Road/Transit Cost per PMC (new road construction and lane additions) ⁽²³⁾				\$361.90
Percent Change ⁽²⁴⁾				2.70%

Sources:

- 1) Source: Table 1, adjusted to cost "per mile"
- 2) Source: Average length of VMC route
- 3) Roadway cost per mile (Item 1) multiplied by the roadway segment length (Item 2)
- 4) Source: Table 2, adjusted to capacity "per mile"
- 5) Roadway segment length (Item 2) multiplied by the average capacity added (Item 4) for both VMC and PMC
- 6) Roadway segment cost (Item 3) divided by the VMC/PMC added (Item 5) individually
- 7) Source: 2010 Highway Capacity Manual, Equation 18-9
- 8) VMC added (Item 5) multiplied by the adjustment for bus blockage (Item 7). For PMC, multiply the VMC by 1.40 persons per vehicle
- 9) VMC/PMC added (entire segment) (Item 5) less the VMC/PMC added (transit deduction) (Item 8) for VMC and PMC individually
- 10) Source: Table B-6, Adjusted Person-Miles of Capacity (Item 12)
- 11) PMC added (less transit deduction) (Item 9) plus the PMC added (transit addition ONLY) (Item 10)
- 12) Road segment cost (Item 3) divided by the net PMC added (transit effect included) (Item 11)
- 13) Number of vehicles (see Table B-6, Item 2) multiplied by the vehicle cost (see Table B-6, Item 15)
- 14) Stops per mile (3) multiplied by the roadway segment length (Item 2) multiplied by the cost per stop (Table B-6, Item 16)
- 15) Shelters per mile (1) multiplied by the roadway segment length (Item 2) multiplied by the cost per shelter (Table B-6, Item 17)
- 16) Sum of buses needed (Item 13), stops needed (Item 14), and shelters needed (Item 15)
- 17) Sum of the roadway segment cost (Item 3) and the total transit infrastructure cost (Item 16) divided by the net PMC added (Item 11)
- 18) Percent difference between the road/transit cost per PMC (Item 17) and the Roadway cost per PMC (Item 6)
- 19) Source: Estimate based on mix of Cost Feasible and Needs Plan Improvements
- 20) Roadway cost per PMC (Item 6) multiplied by the lane mile distribution (Item 19)
- 21) Road/Transit cost per PMC (Item 17) multiplied by the lane mile distribution (Item 19)
- 22) Sum of the weighted roadway cost per PMC (Item 20) for new road construction and lane additions
- 23) Sum of the weighted road/transit cost per PMC (Item 21) for new road construction and lane additions
- 24) Percent difference between the weighted average road/transit cost per PMC (Item 23) and the weighted average roadway cost per PMC (Item 22)

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APPENDIX C
Credit Component Calculations

Appendix C: Credit Component

This appendix presents the detailed calculations for the credit component. County fuel taxes that are collected in Orange County are listed below, along with a few pertinent characteristics of each.

1. Constitutional Fuel Tax (2¢/gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county. Collected in accordance with Article XII, Section 9 (c) of the Florida Constitution.
- The State allocated 80 percent of this tax to Counties after first withholding amounts pledged for debt service on bonds issued pursuant to provisions of the State Constitution for road and bridge purposes.
- The 20 percent surplus can be used to support the road construction program within the county.
- Counties are not required to share the proceeds of this tax with their municipalities.
- Orange County currently dedicates these revenues to capacity improvements and operations/maintenance.

2. County Fuel Tax (1¢/gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county.
- Primary purpose of these funds is to help reduce a County's reliance on ad valorem taxes.
- Proceeds are to be used for transportation-related expenses, including the reduction of bond indebtedness incurred for transportation purposes. Authorized uses include acquisition of rights-of-way; the construction, reconstruction, operation, maintenance, and repair of transportation facilities, roads, bridges, bicycle paths, and pedestrian pathways; or the reduction of bond indebtedness incurred for transportation purposes.
- Counties are not required to share the proceeds of this tax with their municipalities.
- Orange County currently dedicates these revenues to capacity improvements and operations/maintenance.

3. 1st Local Option Tax (up to 6¢/gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county.
- Proceeds may be used to fund transportation expenditures.

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- To accommodate statewide equalization, all six cents are automatically levied on diesel fuel in every county, regardless of whether a county is levying the tax on motor fuel at all or at the maximum rate.
- Proceeds are distributed to a county and its municipalities according to a mutually agreed upon distribution ratio, or by using a formula contained in the Florida Statutes.
- Orange County currently dedicates a small portion to capacity expansion, with most of these revenues going towards operations/maintenance.

Each year, the Florida Legislature's Office of Economic and Demographic Research (EDR) produces the *Local Government Financial Information Handbook*, which details the estimated local government revenues for the upcoming fiscal year. Included in this document are the estimated distributions of the various fuel tax revenues for each county in the state. The 2016-17 data represent projected fuel tax distributions to Orange County for the current fiscal year. Table C-1 shows the distribution per penny for each of the fuel levies, and then the calculation of the weighted average for the value of a penny of fuel tax. The weighting procedure takes into account the differing amount of revenues generated for the various types of fuel taxes. It is estimated that approximately \$6.8 million of annual revenue will be generated for the County from one penny of fuel tax in Orange County.

Table C-1
Estimated Fuel Tax Distribution Allocated to Capital Programs for
Orange County & Municipalities, FY 2016-17⁽¹⁾

Tax	Amount of Levy per Gallon	Total Distribution	Distribution per Penny
Constitutional Fuel Tax	\$0.02	\$12,112,749	\$6,056,375
County Fuel Tax	\$0.01	\$5,331,087	\$5,331,087
1st Local Option (1-6 cents)	\$0.06	\$44,047,135	\$7,341,189
Total	\$0.09	\$61,490,971	
Weighted Average per Penny⁽²⁾			\$6,832,330

1) Source: Florida Legislature's Office of Economic and Demographic Research, <http://edr.state.fl.us/content/local-government/reports/> --

2) The weighted average distribution per penny is calculated by taking the sum of the total distribution and dividing that value by the sum of the total levies per gallon (multiplied by 100).

Capital Improvement Credit - Roadways

A revenue credit for the annual expenditures on roadway capacity-expansion projects in Orange County is presented below. The components of the credit are as follows:

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- City (Orlando) capital project funding (cash funding)
- County capital project funding (cash funding)
 - INVEST, CIP funds
 - LYNX capital contribution
- State capital project funding

The annual expenditures from each revenue source are converted to equivalent fuel tax pennies to be able to create a connection between travel by each land use and non-impact fee revenue contributions.

City Capital Project Funding (Roads ONLY)

A review of Orlando's future roadway financing programs indicate that the City is primarily funding roadway capacity-expansion improvements with fuel tax revenues. As shown in Table C-2, a City credit of 0.1 pennies will be included in the roadway impact fee calculation.

Table C-2
City Fuel Tax Equivalent Pennies - Roadways

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽²⁾	Equivalent Pennies ⁽³⁾
Projected CIP Expenditures (FY 2017-2021) ⁽¹⁾	\$3,480,000	5	\$6,832,330	\$0.001
Total				\$0.001

1) Source: Table C-8

2) Source: Table C-1

3) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

County Capital Project Funding (Roads ONLY)

A review of the County's future roadway financing programs indicate that a combination of fuel tax, ad valorem and I-Drive CRA and INVEST revenues are used to fund roadway capacity expansion projects. As shown in Table C-3, Orange County uses 4.3 equivalent pennies for capacity-expansion projects such as new road construction, lane additions, and intersection improvements.

Table C-3
County Fuel Tax Equivalent Pennies - Roadways

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽³⁾	Equivalent Pennies ⁽⁴⁾
Projected CIP Expenditures (FY 2018-2022) ⁽¹⁾	\$36,665,662	5	\$6,832,330	\$0.011
INVEST, CIP funds ⁽²⁾	\$127,954,706	5	\$6,832,330	\$0.037
Total				\$0.048

1) Source: Table C-9

2) Source: Table C-9

3) Source: Table C-1

4) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

State Capital Project Funding (Roads ONLY)

In the calculation of the equivalent pennies of fuel tax from the State, expenditures on roadway capacity-expansion spanning a 16-year period (from FY 2007 to FY 2022) were reviewed. The period represents past FDOT Work Program expenditures from FY 2007-2017 and also includes the projected FDOT Work Program expenditures from 2018 to 2022. From these, a list of improvements was developed, including lane additions, new road construction, intersection improvements, interchanges, traffic signal projects, etc. The use of a 16-year period, for purposes of developing a State credit for roadway capacity-expansion projects, results in a stable credit, as it accounts for the volatility in FDOT spending in the county over short periods of time.

The total cost of the roadway capacity-expansion projects for the “historical” periods and the “future” period:

- FY 2007-2012 work plan equates to 11.2 pennies
- FY 2013-2017 work plan equates to 11.6 pennies
- FY 2018-2022 work plan equates to 4.7 pennies

The combined weighted average over the 16-year period of state expenditure for capacity-expansion roadway projects results in a total of 9.3 equivalent pennies. Table C-4 documents this calculation. The specific projects that were used in the equivalent penny calculations are summarized in Table C-4.

Table C-4
State Fuel Tax Equivalent Pennies - Roadways

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽⁴⁾	Equivalent Pennies ⁽⁵⁾
Projected Work Program (FY 2018-2022) ⁽¹⁾	\$160,281,394	5	\$6,832,330	\$0.047
Historical Work Program (FY 2013-2017) ⁽²⁾	\$397,940,236	5	\$6,832,330	\$0.116
Historical Work Program (FY 2007-2012) ⁽³⁾	\$457,844,516	6	\$6,832,330	\$0.112
Total	\$1,016,066,146	16	\$6,832,330	\$0.093

1) Source: Table C-10

2) Source: Table C-10

3) Source: Table C-10

4) Source: Table C-1

5) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

Capital Improvement Credit – Multi-Modal

For the multi-modal fee, the capital improvement credit includes the roadway expenditures previously detailed along with the capacity-expansion expenditures for multi-modal improvements in Orange County.

City Capital Project Funding (Multi-Modal)

A review of Orlando's future transportation financing programs indicate that the City is primarily funding capacity-expansion improvements with fuel tax revenues. As shown in Table C-5, a City credit of 0.2 pennies will be included in the roadway impact fee calculation.

Table C-5
City Fuel Tax Equivalent Pennies – Multi-Modal

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽³⁾	Equivalent Pennies ⁽⁴⁾
Projected CIP Expenditures (FY 2017-2021) ⁽¹⁾	\$6,930,000	5	\$6,832,330	\$0.002
Total				\$0.002

1) Source: Table C-8

2) Source: Table C-1

3) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

County Capital Project Funding (Multi-Modal)

As shown in Table C-6, when capacity funding for multimodal projects is considered, Orange County uses 5.7 equivalent pennies from non-impact fee funding for projects such as new road construction, lane additions, transit lanes, sidewalks, and intersection improvements.

Table C-6
County Fuel Tax Equivalent Pennies – Multi-Modal

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽⁴⁾	Equivalent Pennies ⁽⁵⁾
Projected CIP Expenditures (FY 2018-2022) ⁽¹⁾	\$56,898,617	5	\$6,832,330	\$0.017
INVEST, CIP funds ⁽²⁾	\$127,954,706	5	\$6,832,330	\$0.037
Total	\$186,571,323			\$0.057

1) Source: Table C-9

2) Source: Table C-9

3) Source: Table C-1

4) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

State Capital Project Funding (Multi-Modal)

In the calculation of the equivalent pennies of fuel tax from the State, expenditures on transportation capacity-expansion spanning a 16-year period (from FY 2007 to FY 2022) were reviewed. From these, a list of improvements was developed, including lane additions, new road construction, intersection improvements, interchanges, traffic signal projects, vehicle acquisition, capital for fixed route service, sidewalks etc.

Several of the transit expenditures did not contain enough detail to determine if the expenditure was capacity expansion or operations/maintenance. For example, vehicle purchases are grouped into a single expenditure without indicating if the vehicles are replacements or are associated with expanded service. Therefore, the total transit expenditures were adjusted to 60 percent to account for the portion of expenditures associated with operations/maintenance. The use of a 60 percent adjustment factor was based on the distribution of Section 5307 expenditures projected in the County's latest Transit Development Plan.

The total cost of the transportation capacity-expansion projects for the "historical" periods and the "future" period:

- FY 2007-2012 work plan equates to 15.4 pennies
- FY 2013-2017 work plan equates to 17.9 pennies
- FY 2018-2022 work plan equates to 10.4 pennies

The combined weighted average over the 16-year period of state expenditure for capacity-expansion roadway projects results in a total of 14.7 equivalent pennies. Table C-7 documents this calculation. The specific projects that were used in the equivalent penny calculations are summarized in Tables C-10 and C-11.

Table C-7
State Fuel Tax Equivalent Pennies

Source	Cost of Projects	Number of Years	Revenue from 1 Penny ⁽⁴⁾	Equivalent Pennies ⁽⁵⁾
Projected Work Program (FY 2018-2022) ⁽¹⁾	\$356,800,239	5	\$6,832,330	\$0.104
Historical Work Program (FY 2013-2017) ⁽²⁾	\$612,351,225	5	\$6,832,330	\$0.179
Historical Work Program (FY 2007-2012) ⁽³⁾	\$632,448,718	6	\$6,832,330	\$0.154
Total	\$1,601,600,182	16	\$6,832,330	\$0.147

1) Source: Table C-11

2) Source: Table C-11

3) Source: Table C-11

4) Source: Table C-1

5) Cost of projects divided by number of years divided by revenue from 1 penny (Item 3) divided by 100

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Table C-8
City of Orlando - Capital Improvement Program, FY 2016/17 to FY 2020/21

ID	Project Name	Road	Multi-Modal	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	Total
81-755-004	Area Wide Signal System Fiber Interconnect	yes	yes	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000
89-757-017	Developer Signals - Matching Funds	yes	yes	\$0	\$150,000	\$150,000	\$150,000	\$150,000	\$600,000
94-812-008	Miscellaneous Transportation Enhancements	-	yes	\$0	\$100,000	\$100,000	\$100,000	\$100,000	\$400,000
08-660-001	New Traffic Signal Locations	yes	yes	\$0	\$370,000	\$370,000	\$370,000	\$370,000	\$1,480,000
16-TRE-002	Radebaugh Way Road Widening	yes	yes	\$0	\$200,000	\$200,000	\$0	\$0	\$400,000
84-722-039	School Safety Sidewalk Program	-	yes	\$1,050,000	\$500,000	\$500,000	\$500,000	\$500,000	\$3,050,000
05-734-026	Traffic Counts and Travel Time Studies	yes	yes	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000
Total - Roadway:				\$200,000	\$920,000	\$920,000	\$720,000	\$720,000	\$3,480,000
Total - Multi-Modal:				\$1,250,000	\$1,520,000	\$1,520,000	\$1,320,000	\$1,320,000	\$6,930,000

Source: City of Orlando CIP, FY 2017-2021

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Table C-9
Orange County - Capital Improvement Program, FY 2017/18 to FY 2021/22

ID	Project Name	Road	Multi-Modal	Funding	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	Total
2722	Intersections & Ped Safety	Yes	Yes	Other	\$3,000,217	\$3,000,100	\$3,000,100	\$3,000,100	\$3,000,100	\$15,000,617
2752	Richard Crotty Pkwy (436-Dean)	Yes	Yes	INVEST	\$0	\$0	\$0	\$2,047,822	\$500,000	\$2,547,822
2883	Sand Lake Rd	Yes	Yes	Other	\$3,950	\$0	\$0	\$0	\$0	\$3,950
3075	Boggy Creek Rd (Wetherbee-SR 417)	Yes	Yes	Other	\$3,520	\$0	\$0	\$0	\$0	\$3,520
		Yes	Yes	INVEST	\$11,505,000	\$0	\$0	\$0	\$0	\$11,505,000
3096	Kennedy Blvd (E of All American to Forest City Rd)	Yes	Yes	Other	\$3,000,000	\$1,750,000	\$412,384	\$0	\$0	\$5,162,384
		Yes	Yes	INVEST	\$1,200,000	\$1,820,000	\$5,000,000	\$6,000,000	\$2,000,000	\$16,020,000
3097	All American (Edgewater to Forest City)	Yes	Yes	Other	\$0	\$900,000	\$1,000,000	\$709,688	\$0	\$2,609,688
5000	Street Lights - County Rds	Yes	Yes	Other	\$467,946	\$0	\$0	\$0	\$0	\$467,946
5001	John Young Pkwy/SLR-Interchange	Yes	Yes	Other	\$50,000	\$100	\$500,000	\$100	\$0	\$550,200
5004	Chuluota Rd	Yes	Yes	Other	\$395,596	\$0	\$0	\$0	\$0	\$395,596
		Yes	Yes	INVEST	\$609,000	\$1,238,000	\$609,000	\$3,488,400	\$3,488,400	\$9,432,800
5005	McCulloch Rd	Yes	Yes	INVEST	\$686,272	\$796,272	\$1,946,160	\$1,946,160	\$0	\$5,374,864
5024	Econ Trail (Lake Underhill-SR 50)	Yes	Yes	INVEST	\$1,200,000	\$725,000	\$7,168,667	\$10,603,000	\$3,035,333	\$22,732,000
5027	Texas Ave (Oak Ridge-Holden)	Yes	Yes	INVEST	\$0	\$0	\$3,025,014	\$0	\$0	\$3,025,014
5059	Woodbury Rd (Lk Underhill to SR 50)	Yes	Yes	Other	\$370,000	\$0	\$0	\$0	\$0	\$370,000
5068	Reams Rd (Delmar to Taborfield)	Yes	Yes	Other	\$2,374	\$0	\$0	\$0	\$0	\$2,374
5070	I-Drive Transit Lanes	-	Yes	Other	\$1,000,000	\$9,000,000	\$9,000,000	\$532,955	\$0	\$19,532,955
5085	Boggy Creek Rd (Osceola Co. Line to SR 417)	Yes	Yes	Other	\$908,951	\$0	\$0	\$0	\$0	\$908,951
		Yes	Yes	INVEST	\$4,956,049	\$3,933,157	\$340,000	\$320,000	\$0	\$9,549,206
5089	Destination Pkwy Seg 1B/2A	Yes	Yes	Other	\$600,000	\$220,000	\$0	\$0	\$0	\$820,000
5090	Lake Underhill (Chickasaw-Rouse)	Yes	Yes	Other	\$19,884	\$0	\$0	\$0	\$0	\$19,884
		Yes	Yes	INVEST	\$1,000,000	\$1,600,000	\$3,950,000	\$9,200,000	\$5,400,000	\$21,150,000
5107	I-Drive (Westwood)	Yes	Yes	Other	\$500,000	\$0	\$0	\$0	\$0	\$500,000
5109	Holden Ave (JYP-OBT)	Yes	Yes	Other	\$1,720,000	\$2,966,025	\$0	\$0	\$0	\$4,686,025
5116	Legacy - Rouse Rd	Yes	Yes	Other	\$100	\$0	\$0	\$0	\$0	\$100
5121	Texas Ave (Oak Ridge-American)	Yes	Yes	Other	\$1,900,000	\$2,444,300	\$0	\$0	\$0	\$4,344,300
5122	Legacy - Valencia College Ln East	Yes	Yes	Other	\$100	\$0	\$0	\$0	\$0	\$100
5135	North of Alberts Sect C-1 Road	Yes	Yes	Other	\$20,000	\$0	\$0	\$0	\$0	\$20,000
5138	Ficquette/Dorman Road	Yes	Yes	Other	\$200,000	\$0	\$0	\$0	\$0	\$200,000
5139	Reams (Summerlake to Taborfield)	Yes	Yes	INVEST	\$1,380,000	\$1,500,000	\$1,000,000	\$3,550,000	\$3,500,000	\$10,930,000
5140	Ficquette (Summerlake to Overstreet)	Yes	Yes	Other	\$27	\$0	\$0	\$0	\$0	\$27
		Yes	Yes	INVEST	\$1,068,000	\$1,380,000	\$2,940,000	\$5,100,000	\$5,200,000	\$15,688,000
EN09	Kirkman Road Extension	Yes	Yes	Other	\$600,000	\$0	\$0	\$0	\$0	\$600,000
EN10	International Dr Ultimate Transit Network	-	Yes	Other	\$350,000	\$350,000	\$0	\$0	\$0	\$700,000
Total - Roadway (Other):					\$13,762,663	\$11,280,525	\$4,912,484	\$3,709,888	\$3,000,100	\$36,665,660
Total - Roadway (INVEST):					\$23,604,321	\$12,952,439	\$25,978,841	\$42,255,382	\$23,123,733	\$127,914,726
Total - Roadway:					\$37,366,984	\$24,232,964	\$30,891,325	\$45,965,270	\$26,123,833	\$164,580,386
Total - Multi-Modal (Other):					\$15,112,665	\$20,630,525	\$13,912,484	\$4,242,843	\$3,000,100	\$56,898,617
Total - Multi-Modal (INVEST):					\$23,604,321	\$12,952,439	\$25,978,841	\$42,255,382	\$23,123,733	\$127,914,726
Total - Multi-Modal:					\$38,716,986	\$33,622,964	\$39,891,325	\$46,498,225	\$26,123,833	\$184,813,343

Source: Orange County Transportation Planning Division

Tindale Oliver
April 2018

C-10

Orange County
Transportation Impact Fee

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Table C-10 (continued)

Florida Department of Transportation, District 5 – Orange County Work Program FY 2007 to FY 2022, Roadways ONLY

[illegible]

Source: EDOT, District 5.

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Table C-1

Florida Department of Transportation, District 5 – Orange County Work Program FY 2007 to FY 2022, Multi-Modal ONLY

[illegible]

Source: FDOT, District 5.

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Table C-12
Average Motor Vehicle Fuel Efficiency – Excluding Interstate Travel

Travel				Percent VMT	
Vehicle Miles of Travel (VMT) @				@ 22.0 mpg	@ 6.4 mpg
	22.0	6.4			
Other Arterial Rural	307,948,000,000	44,807,000,000	352,755,000,000	87%	13%
Other Rural	301,199,000,000	29,717,000,000	330,916,000,000	91%	9%
Other Urban	1,517,331,000,000	89,461,000,000	1,606,792,000,000	94%	6%
Total	2,126,478,000,000	163,985,000,000	2,290,463,000,000	93%	7%

Fuel Consumed				Total Mileage and Fuel	
	Gallons @ 22.0 mpg	Gallons @ 6.4 mpg		2,290,463 miles (millions)	
Other Arterial Rural	13,997,636,364	7,001,093,750	20,998,730,114	122,281 gallons (millions)	
Other Rural	13,690,863,636	4,643,281,250	18,334,144,886	15.73 mpg	
Other Urban	68,969,590,909	13,978,281,250	82,947,872,159		
Total	96,658,090,909	25,622,656,250	122,280,747,159		

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2015*, Section V, Table VM-1
Annual Vehicle Distance Traveled in Miles and Related Data - 2015 by Highway Category and Vehicle Type
<http://www.fhwa.dot.gov/policyinformation/statistics.cfm>

Source: See Table C-13

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Table C-13
Annual Vehicle Distance Traveled in Miles and Related Data (2015) - By Highway Category and Vehicle Type^{1/}

Published January 2017										
TABLE VM-1										
YEAR	ITEM	LIGHT DUTY VEHICLES SHORT WB ⁽²⁾	MOTOR-CYCLES	BUSES ⁽⁶⁾	LIGHT DUTY VEHICLES LONG WB ⁽²⁾	SINGLE-UNIT TRUCKS ⁽³⁾	COMBINATION TRUCKS	SUBTOTALS		ALL MOTOR VEHICLES
								ALL LIGHT VEHICLES ⁽²⁾	SINGLE-UNIT 2-AXLE 6-TIRE OR MORE AND COMBINATION TRUCKS	
2015	Motor-Vehicle Travel: (millions of vehicle-miles)									
2015	Interstate Rural	133,747	1,185	1,643	42,100	9,623	47,468	175,847	57,091	235,766
2015	Other Arterial Rural	221,643	2,710	1,966	86,304	16,171	28,636	307,948	44,807	357,431
2015	Other Rural	212,993	2,790	2,002	88,206	16,174	13,543	301,199	29,717	335,708
2015	All Rural	568,383	6,685	5,611	216,610	41,967	89,648	784,993	131,615	928,905
2015	Interstate Urban	383,245	2,530	2,521	94,124	17,540	41,227	477,369	58,767	541,186
2015	Other Urban	1,196,213	10,391	8,098	321,118	50,089	39,372	1,517,331	89,461	1,625,282
2015	All Urban	1,579,458	12,921	10,619	415,242	67,630	80,599	1,994,700	148,228	2,166,468
2015	Total Rural and Urban ⁽⁵⁾	2,147,840	19,606	16,230	631,852	109,597	170,246	2,779,693	279,844	3,095,373
2015	Number of motor vehicles registered ⁽²⁾	189,818,308	8,600,936	888,907	53,298,884	8,456,302	2,746,882	242,917,192	11,203,184	263,610,219
2015	Average miles traveled per vehicle	11,327	2,280	18,258	11,855	12,960	61,978	11,443	24,979	11,742
2015	Person-miles of travel ⁽⁴⁾ (millions)	2,984,178	21,118	344,073	844,123	109,597	170,246	3,828,301	279,844	4,473,336
2015	Fuel consumed (thousand gallons)	90,017,583	447,879	2,228,059	36,436,054	14,850,153	28,884,134	126,453,637	43,734,287	172,863,862
2015	Average fuel consumption per vehicle (gallons)	475	52	2,507	684	1,756	10,515	521	3,904	656
2015	Average miles traveled per gallon of fuel consumed	23.9	43.8	7.3	17.3	7.4	5.9	22.0	6.4	17.9

(1) The FHWA estimates national trends by using State reported Highway Performance and Monitoring System (HPMS) data, fuel consumption data (MF-21 and MF-27), vehicle registration data (MV-1, MV-9, and MV-10), other data such as the R.L. Polk vehicle data, and a host of modeling techniques. Starting with the 2009 VM-1, an enhanced methodology was used to provide timely indicators on both travel and travel behavior changes.

(2) Light Duty Vehicles Short WB - passenger cars, light trucks, vans and sport utility vehicles with a wheelbase (WB) equal to or less than 121 inches. Light Duty Vehicles Long WB - large passenger cars, vans, pickup trucks, and sport/utility vehicles with wheelbases (WB) larger than 121 inches. All Light Duty Vehicles - passenger cars, light trucks, vans and sport utility vehicles regardless of

(3) Single-Unit - single frame trucks that have 2-Axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 lbs.

(4) Vehicle occupancy is estimated by the FHWA from the 2009 National Household Travel Survey (NHTS); For single unit truck and heavy trucks, 1 motor vehicle mile travelled = 1 person-mile traveled.

(5) VMT data are based on the latest HPMS data available; it may not match previous published results.

(6) The change in the number of buses is primarily due to the decline of reported public operated school buses.

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APPENDIX D
Calculated Impact Fee Schedule

Appendix D: Calculated Impact Fee Schedule

This appendix presents the detailed impact fee calculations for each land use in Orange County's roadway impact fee schedule.

Table D-1 presents a summary of current Orange County impact fee rates and the calculated rates for each option. If the County opts to keep the current assessment areas, the updated fee rates will come from Table D-2 (Urban) and Table D-3 (Non-Urban). If the County elects to move to three fee areas, the updated impact fee rates can be found in Table D-2 (Urban), Table D-3 (Suburban), and Table D-4 (Rural).

Table D-1
Impact Fee Rate Summary

ITE LUC	Land Use	Unit	2012 Calculated (100%) ⁽¹⁾		Current Adopted (56%) ⁽²⁾		2018 Calculated Rates (100%)		
			Non-AMA	AMA	Non-AMA	AMA	Urban ⁽³⁾	Non-Urban/ Suburban ⁽⁴⁾	Rural ⁽⁵⁾
RESIDENTIAL:									
210	Single Family (Detached)	du	\$6,961	\$6,716	\$3,898	\$3,761	\$8,037	\$9,841	\$11,257
220	Multi-Family Housing (Low-Rise, 3-2 Floors)	du	\$4,507	\$4,348	\$2,524	\$2,435	\$5,783	\$7,085	\$8,107
221	Multi-Family Housing (Mid-Rise, 3-10 Floors)	du	\$4,507	\$4,348	\$2,524	\$2,435	\$4,299	\$5,266	\$6,026
222	Multi-Family Housing (High-Rise, >10 Floors)	du	\$2,854	\$2,756	\$1,598	\$1,543	\$3,522	\$4,316	\$4,938
231	Mid-Rise Residential w/1st Floor Commercial	du	-	-	-	-	\$2,709	\$3,328	\$3,808
232	High-Rise Residential w/1st Floor Commercial	du	-	-	-	-	\$1,221	\$1,487	\$1,702
240	Mobile Home Park	du	\$2,565	\$2,480	\$1,436	\$1,389	\$2,967	\$3,637	\$4,162
251	Retirement Community/Age-Restricted Single-Family	du	\$2,275	\$2,203	\$1,274	\$1,234	\$2,943	\$3,609	\$4,128
265	Time Share	du	\$3,707	\$3,570	\$2,076	\$1,999	\$5,263	\$6,482	\$7,419
n/a	Student Housing	du	\$1,927	\$1,866	\$1,079	\$1,045	\$2,227	\$2,729	\$3,123
LODGING:									
310	Hotel	room	\$3,532	\$3,410	\$1,978	\$1,910	\$3,568	\$4,367	\$4,995
320	Motel	room	\$2,519	\$2,419	\$1,411	\$1,355	\$1,724	\$2,125	\$2,432
RECREATIONAL:									
430	Golf Course	acre	\$4,049	\$3,901	\$2,267	\$2,185	\$3,471	\$4,240	\$4,850
437	Bowling Alley	1,000 sf	\$20,722	\$19,984	\$11,604	\$11,191	\$9,330	\$11,446	\$13,096
443	Movie Theater	1,000 sf	\$19,912	\$19,103	\$11,151	\$10,698	\$24,195	\$30,003	\$34,392
491	Racquet Club	1,000 sf	\$9,117	\$8,783	\$5,106	\$4,918	\$14,767	\$18,105	\$20,716
492	Health/Fitness Club	1,000 sf	\$21,382	\$20,620	\$11,974	\$11,547	\$25,858	\$31,719	\$36,291
n/a	Dance Studio (Marital Arts/Music Lessons)	1,000 sf	-	-	-	-	\$9,360	\$11,525	\$13,196
INSTITUTIONAL:									
522	School	1,000 sf	\$12,453	\$12,025	\$6,974	\$6,734	\$6,836	\$8,444	\$9,674
560	Public Assembly	1,000 sf	\$8,239	\$7,943	\$4,614	\$4,448	\$3,146	\$3,877	\$4,440
565	Day Care	1,000 sf	\$12,576	\$12,038	\$7,043	\$6,741	\$9,179	\$11,453	\$13,142
590	Library	1,000 sf	\$21,456	\$20,694	\$12,015	\$11,589	\$30,427	\$37,286	\$42,658
MEDICAL:									
610	Hospital	bed	\$7,086	\$6,827	\$3,958	\$3,823	\$15,009	\$18,395	\$21,044
620	Nursing Home	1,000 sf	\$659	\$634	\$369	\$355	\$886	\$1,093	\$1,253
640	Animal Hospital/Veterinary Clinic	1,000 sf	\$15,930	\$15,351	\$8,921	\$8,597	\$4,012	\$5,012	\$5,753
OFFICE:									
710	General Office 50,000 sf or less	1,000 sf	\$9,953	\$9,596	\$5,574	\$5,374	\$7,943	\$9,738	\$11,142
710	General Office 50,001-100,000 sf	1,000 sf	\$8,479	\$8,170	\$4,748	\$4,575	\$7,783	\$9,541	\$10,917
710	General Office 100,001-200,000 sf	1,000 sf	\$7,232	\$6,974	\$4,050	\$3,905	\$7,625	\$9,344	\$10,692
710	General Office greater than 200,000 sf	1,000 sf	\$6,169	\$5,947	\$3,455	\$3,330	\$7,476	\$9,157	\$10,478
720	Small Medical/Dental Office (10,000 sf or less)	1,000 sf	\$23,035	\$22,725	\$12,900	\$12,446	\$18,248	\$22,372	\$25,594
720	Medical/Dental Office	1,000 sf	\$23,035	\$22,725	\$12,900	\$12,446	\$26,141	\$32,019	\$36,632
732	Post Office	1,000 sf	\$36,621	\$35,318	\$20,508	\$19,778	\$40,622	\$49,804	\$56,984
RETAIL:									
815	Free-Standing Discount Store	1,000 sf	\$10,507	\$10,069	\$5,884	\$5,639	\$10,763	\$13,379	\$15,343
816	Hardware/Paint Store	1,000 sf	\$6,033	\$5,770	\$3,378	\$3,231	\$1,190	\$1,491	\$1,711
820	Retail 50,000 sf or less	1,000 sf	\$10,178	\$9,741	\$5,700	\$5,455	\$9,735	\$12,193	\$13,996
820	Retail 50,001-100,000 sf	1,000 sf	\$10,956	\$10,493	\$6,135	\$5,876	\$10,710	\$13,324	\$15,283
820	Retail 100,001-200,000 sf	1,000 sf	\$9,780	\$9,368	\$5,477	\$5,246	\$9,755	\$12,132	\$13,912
820	Retail 200,001-300,000 sf	1,000 sf	\$9,476	\$9,090	\$5,307	\$5,090	\$9,577	\$11,892	\$13,635
820	Retail 300,001-400,000 sf	1,000 sf	\$9,230	\$8,857	\$5,169	\$4,960	\$9,406	\$11,679	\$13,387
820	Retail 400,001-500,000 sf	1,000 sf	\$9,170	\$8,796	\$5,135	\$4,926	\$9,413	\$11,667	\$13,372
820	Retail 500,001-1,000,000 sf	1,000 sf	\$9,498	\$9,139	\$5,319	\$5,118	\$9,960	\$12,315	\$14,107
820	Retail 1,000,001-1,200,000 sf	1,000 sf	\$9,664	\$9,292	\$5,412	\$5,204	\$10,186	\$12,570	\$14,397
820	Retail greater than 1,200,000 sf	1,000 sf	\$9,883	\$9,499	\$5,534	\$5,319	\$10,473	\$12,909	\$14,782
840/841	New/Used Auto Sales	1,000 sf	\$11,207	\$10,786	\$6,276	\$6,040	\$11,534	\$14,192	\$16,245
850	Supermarket	1,000 sf	\$13,609	\$13,034	\$7,621	\$7,299	\$15,505	\$19,348	\$22,198
853	Convenience Market w/Gas Pumps	1,000 sf	\$36,448	\$34,734	\$20,411	\$19,451	\$32,447	\$40,908	\$47,012
862	Home Improvement Superstore	1,000 sf	\$5,462	\$5,238	\$3,059	\$2,933	\$6,228	\$7,747	\$8,883
863	Electronics Superstore	1,000 sf	\$2,682	\$2,542	\$1,502	\$1,424	\$5,321	\$6,672	\$7,658
880/881	Drug Store	1,000 sf	\$19,928	\$19,173	\$11,160	\$10,737	\$8,664	\$10,814	\$12,408
SERVICES:									
911	Bank/Savings Walk-In	1,000 sf	\$20,581	\$19,733	\$11,525	\$11,050	\$8,470	\$10,532	\$12,075
912	Bank/Savings Drive-In	1,000 sf	\$20,581	\$19,733	\$11,525	\$11,050	\$14,642	\$18,198	\$20,865
925	Drinking Place	1,000 sf	\$6,739	\$6,411	\$3,774	\$3,590	\$14,748	\$18,447	\$21,177
931	Quality Restaurant	1,000 sf	\$25,452	\$24,447	\$14,253	\$13,690	\$26,567	\$32,849	\$37,634
932	High-Turnover Restaurant	1,000 sf	\$30,310	\$29,132	\$16,974	\$16,314	\$30,538	\$37,750	\$43,250
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	\$68,684	\$65,731	\$38,463	\$36,809	\$71,581	\$89,353	\$102,526
942	Auto Service	1,000 sf	\$12,306	\$11,876	\$6,891	\$6,651	\$9,423	\$11,618	\$13,306
944/945	Gasoline/Service Station w/ or w/o Conv./Car Wash	fuel pos.	\$8,321	\$7,957	\$4,660	\$4,456	\$10,074	\$12,595	\$14,456
947	Self-Service Car Wash	wash station	\$18,197	\$17,421	\$10,190	\$9,756	\$8,176	\$10,186	\$11,684
INDUSTRIAL:									
110	General Light Industrial	1,000 sf	\$3,863	\$3,728	\$2,163	\$2,088	\$3,047	\$3,746	\$4,286
140	Manufacturing	1,000 sf	\$2,116	\$2,043	\$1,185	\$1,144	\$2,411	\$2,957	\$3,385
150	Warehouse	1,000 sf	\$1,977	\$1,903	\$1,107	\$1,066	\$1,068	\$1,314	\$1,503
151	Mini-Warehouse	1,000 sf	\$707	\$682	\$396	\$382	\$610	\$761	\$872

1) Source: Orange County Transportation Impact Fee Update, November 29, 2012

2) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and increased to 56 percent in 2014

3) Source: Table D-2

4) Source: Table D-3

5) Source: Table D-4

Highlight indicates a new land use or re-alignment of uses. Additional detail on page 7

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Table D-2
Calculated Multi-Modal Impact Fee Schedule – Urban Assessment Area

		Gasoline Tax \$5 per gallon to capital facility (16 years) interest rate 4.0%		City Revenues: County Revenues: State Revenues:		Cost per VMT: Cost per PMV: Fuel Efficiency: mpg		Interstate/Toll Facility Adjustment Factor: 36.1%	
		\$0.0080 20 \$0.1470		\$0.0030 \$0.2570 \$0.1470		\$493.33 \$552.58 18.73		36.1%	
ITE LUC	Land Use	Unit	Rate	Rate Source	Initial Trip Length mi	Initial Trip Length mi	Initial Trip Length mi	Initial Trip Length mi	Initial Trip Length mi
210	Single-Family (Detached)	du	7.81	ITE 10th Edition	6.62	1.25	8.78	8.78	Appendix A LUC 210
220	Multi-Family Housing (Low-Rise, 1-2 floors)	du	7.32	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A LUC 220/221/222
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	5.44	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A LUC 220/221/222
222	Multi-Family Housing (High-Rise, >10 floors)	du	4.45	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A LUC 220/221/222
231	Mid-Rise Residential w/1st floor Commercial	du	3.44	ITE 10th Edition	5.10	1.25	6.38	6.88	Same as LUC 220
232	High-Rise Residential w/1st floor Commercial	du	1.54	ITE 10th Edition	5.10	1.25	6.38	6.88	Same as LUC 220
240	Mobile Home Park	du	4.17	Appendix A LUC 240	4.60	1.25	5.75	6.25	Appendix A LUC 240
251	Retirement Community/Age-Restricted Single-Family	du	3.50	Appendix A LUC 251	5.43	1.25	6.78	7.28	Appendix A LUC 251
260	Time Share	du	8.83	ITE 10th Edition	3.87	1.25	4.86	5.46	Previous Report
n/a	Student Housing	du	3.82	Previous Report	5.10	1.25	6.38	6.88	Same as LUC 210
310	Hotel	room	3.55	Appendix A LUC 310	6.28	1.25	7.83	8.33	Appendix A LUC 310
320	Motel	room	3.35	ITE 10th Edition	4.34	1.25	5.43	5.93	Appendix A LUC 320
430	Golf Course	hole	3.74	ITE 10th Edition	6.62	1.25	8.78	8.78	Same as LUC 210
437	Bowling Alley	1,000 sf	13.00	ITE 10th Edition (adjusted)	8.15	1.25	6.44	6.94	Same as LUC 710
444	Movie Theater with or without Matinee	1,000 sf	82.30	Appendix A LUC 444	2.24	1.25	2.80	3.30	Appendix A LUC 444
491	Recreation Club	1,000 sf	19.70	ITE 10th Edition (adjusted)	5.18	1.25	6.44	6.94	Same as LUC 710
492	Health/fitness Club	1,000 sf	34.50	ITE 10th Edition (adjusted)	5.18	1.25	6.44	6.94	Same as LUC 710
n/a	Dance Studio (Ballet, Arts, Music lessons)	1,000 sf	21.33	Appendix A LUC N/A Dance Studio	3.37	1.25	4.21	4.71	Appendix A LUC N/A Specialty Detail
522	School	1,000 sf	20.17	ITE 10th Edition	3.31	1.05	3.48	3.88	50% of LUC 210: Travel Demand Model Midpoint of LUC 710 & LUC 820 (Avg. A)
560	Public Assembly	1,000 sf	6.95	ITE 10th Edition	3.91	1.05	4.11	4.81	Based on LUC 710
565	Day Care	1,000 sf	49.63	Appendix A LUC 565	2.03	1.05	2.13	2.63	Appendix A LUC 565
590	Library	1,000 sf	22.05	ITE 10th Edition	6.62	1.05	6.95	7.45	Same as LUC 210
610	Hospital	bed	22.32	ITE 10th Edition	6.62	1.05	6.95	7.45	Midpoint of LUC 510 & LUC 720
620	Nursing Home	1,000 sf	3.03	Appendix A LUC 620	3.39	1.05	3.72	3.32	Appendix A LUC 620
640	Animal Hospital/Veterinary Clinic	1,000 sf	24.20	Appendix A LUC 640	1.90	1.05	2.00	2.50	Appendix A LUC 640

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Table D-2 (continued)
Calculated Multi-Modal Impact Fee Schedule – Urban Assessment Area

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source*	Initial Trip/Unit	Trip Length Adj. Factor	Adjusted Trip/Unit	Total Trip Length	Trip Length Source*	% New Trips	% New Trips Source*	Net VMT	Intersecting Factor	Supermajor	Initial Impact Fee	Adjusted Imp. Fee	Net Trip Length	Cost Adj'd. Multiplier	Calculated Fee**	% Change
General Office																				
710	General Office 50,000 sf or less ⁽⁴⁾	1,000 sf	10.83	ITE 10th equation	5.15	1.25	6.44	6.94	Appendix A LUC 710	97%	Appendix A LUC 710	20.50	1.40	28.70	\$10,114	\$139	\$2,171	\$1,760	\$5,374	48%
710	General Office 50,001 - 100,000 sf ⁽⁴⁾	1,000 sf	10.61	ITE 10th equation	5.15	1.25	6.44	6.94	Appendix A LUC 710	97%	Appendix A LUC 710	20.08	1.40	28.11	\$9,808	\$136	\$2,123	\$1,760	\$4,575	79%
710	General Office 100,001 - 200,000 sf ⁽⁴⁾	1,000 sf	10.39	ITE 10th equation	5.15	1.25	6.44	6.94	Appendix A LUC 710	97%	Appendix A LUC 710	19.67	1.40	27.54	\$9,709	\$133	\$2,078	\$1,760	\$3,825	93%
710	General Office 200,001 - 500,000 sf ⁽⁴⁾	1,000 sf	10.18	ITE 10th equation	5.15	1.25	6.44	6.94	Appendix A LUC 710	97%	Appendix A LUC 710	19.27	1.40	26.98	\$9,507	\$130	\$2,031	\$1,760	\$3,330	125%
720	Small Medical/Dental Office 75,000 sf or less	1,000 sf	23.83	Small Medical/Dental	5.55	1.25	6.94	7.44	Appendix A LUC 720	89%	Appendix A LUC 720	47.03	1.40	65.84	\$23,200	\$317	\$4,852	\$18,129	\$12,446	47%
720	Medical/Dental Office	1,000 sf	34.12	Appendix A LUC 720	5.55	1.25	6.94	7.44	Appendix A LUC 720	89%	Appendix A LUC 720	67.33	1.40	94.26	\$33,218	\$453	\$7,077	\$26,165	\$12,446	110%
732	Post Office	1,000 sf	103.94	ITE 10th Equation	5.15	1.25	6.44	6.94	Same as LUC 710	45%	Previous Report	104.79	1.40	146.71	\$51,638	\$709	\$11,076	\$8,607	\$19,778	105%
Retail																				
813	Free Standing Discount Store	1,000 sf	53.12	ITE 10th Equation	2.40	1.05	2.52	3.02	Same as LUC 830 (100-200)	67%	Same as LUC 820 (100-200)	38.66	1.40	40.13	\$14,137	\$216	\$3,374	\$1,238	\$5,839	91%
814	Hardware/Paint	1,000 sf	9.14	ITE 10th Equation	1.87	1.05	1.96	2.46	Same as LUC 830 (100)	58%	Same as LUC 830 (100)	1.21	1.40	4.49	\$1,581	\$25	\$391	\$1,080	\$3,731	43%
820	Retail 50,000 sf or less ⁽⁴⁾	1,000 sf	75.05	ITE 10th equation	1.87	1.05	1.96	2.46	Appendix A Figure A-1	56%	Appendix A Figure A-2	26.32	1.40	36.85	\$12,884	\$208	\$3,249	\$2,470	\$5,455	78%
820	Retail 50,001 - 100,000 sf ⁽⁴⁾	1,000 sf	69.12	ITE 10th equation	2.29	1.05	2.40	2.90	Appendix A Figure A-1	62%	Appendix A Figure A-2	28.58	1.40	40.01	\$14,100	\$217	\$3,390	\$1,230	\$5,876	87%
820	Retail 100,001 - 200,000 sf ⁽⁴⁾	1,000 sf	48.16	ITE 10th equation	2.40	1.05	2.52	3.02	Appendix A Figure A-1	67%	Appendix A Figure A-2	25.98	1.40	36.37	\$12,817	\$196	\$3,062	\$1,100	\$5,246	86%
820	Retail 200,001 - 500,000 sf ⁽⁴⁾	1,000 sf	42.30	ITE 10th equation	2.52	1.05	2.65	3.15	Appendix A Figure A-1	71%	Appendix A Figure A-2	25.43	1.40	35.60	\$12,545	\$190	\$2,968	\$1,070	\$5,090	84%
820	Retail 500,001 - 1,000,000 sf ⁽⁴⁾	1,000 sf	38.58	ITE 10th equation	2.64	1.05	2.77	3.27	Appendix A Figure A-1	73%	Appendix A Figure A-2	24.93	1.40	34.80	\$12,296	\$185	\$2,890	\$1,040	\$4,860	90%
820	Retail 1,000,001 - 2,000,000 sf ⁽⁴⁾	1,000 sf	33.92	ITE 10th equation	2.75	1.05	2.89	3.39	Appendix A Figure A-1	73%	Appendix A Figure A-2	24.88	1.40	34.83	\$12,272	\$183	\$2,892	\$1,030	\$4,826	91%
820	Retail 2,000,001 - 5,000,000 sf ⁽⁴⁾	1,000 sf	28.78	ITE 10th equation	3.24	1.05	3.51	4.01	Appendix A Figure A-1	81%	Appendix A Figure A-2	26.14	1.40	36.60	\$12,897	\$188	\$2,937	\$1,060	\$5,118	93%
820	Retail 5,000,001 - 10,000,000 sf ⁽⁴⁾	1,000 sf	27.14	ITE 10th equation	3.57	1.05	3.75	4.25	Appendix A Figure A-1	82%	Appendix A Figure A-2	26.66	1.40	37.32	\$13,154	\$190	\$2,968	\$1,070	\$5,204	96%
820	Retail greater than 10,000,000 sf ⁽⁴⁾	1,000 sf	25.84	ITE 10th equation	3.80	1.05	3.99	4.49	Appendix A Figure A-1	82%	Appendix A Figure A-2	27.34	1.40	38.38	\$13,488	\$193	\$3,015	\$1,070	\$5,319	97%
840/841	New/Used Auto Sales	1,000 sf	24.58	Appendix A LUC 840/841	4.60	1.05	4.83	5.23	Appendix A LUC 840/841	79%	Appendix A LUC 840/841	29.97	1.40	41.86	\$14,783	\$208	\$3,249	\$1,070	\$5,040	91%
850	Supermarket	1,000 sf	106.64	Appendix A LUC 850	2.08	1.05	2.18	2.68	Appendix A LUC 850	56%	Appendix A LUC 850	41.39	1.40	58.23	\$20,520	\$321	\$5,015	\$15,148	\$7,099	112%
853	Convenience Market w/Gas Pumps	1,000 sf	626.25	Appendix A LUC 853	1.51	1.05	1.59	2.09	Appendix A LUC 853	28%	Appendix A LUC 853	89.08	1.40	124.71	\$43,845	\$736	\$11,498	\$80,040	\$19,451	67%
862	Home Improvement Superstore	1,000 sf	30.74	ITE 10th Equation	2.40	1.05	2.52	3.02	Same as LUC 830 (100-200)	67%	Same as LUC 830 (100-200)	38.20	1.40	40.31	\$14,181	\$215	\$3,351	\$1,230	\$5,831	112%
863	Electronics Superstore	1,000 sf	41.05	ITE 10th Equation	1.87	1.05	1.96	2.46	Same as LUC 830 (100)	56%	Same as LUC 830 (100)	14.40	1.40	20.16	\$7,102	\$114	\$1,781	\$1,070	\$3,424	174%
880/881	Drug Store	1,000 sf	104.37	Appendix A LUC 880/881	2.08	1.05	2.18	2.68	Appendix A LUC 880/881	52%	Appendix A LUC 880/881	33.26	1.40	46.56	\$16,476	\$180	\$3,812	\$8,868	\$10,787	18%
Services																				
911	Bank/Savings Walk-in	1,000 sf	59.39	ITE 10th Equation (adj. 100)	2.46	1.05	2.58	3.08	Same as LUC 912	46%	Same as LUC 912	22.52	1.40	31.53	\$11,110	\$169	\$2,640	\$8,470	\$11,050	-23%
912	Bank/Savings Drive-in	1,000 sf	102.66	Appendix A LUC 912	2.46	1.05	2.58	3.08	Appendix A LUC 912	46%	Appendix A LUC 912	38.93	1.40	54.50	\$19,204	\$292	\$4,562	\$14,642	\$11,050	33%
920	Drinking Place	1,000 sf	113.60	ITE 10th Equation (adj. 100)	1.87	1.05	1.96	2.46	Same as LUC 830 (100)	56%	Same as LUC 830 (100)	18.84	1.40	26.38	\$9,433	\$114	\$4,005	\$14,144	\$1,580	511%
931	Quality Restaurant	1,000 sf	86.03	Appendix A LUC 931	3.14	1.05	3.30	3.80	Appendix A LUC 931	77%	Appendix A LUC 931	69.84	1.40	97.78	\$34,456	\$505	\$7,883	\$26,573	\$13,690	94%

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Table D-2 (continued)
Calculated Multi-Modal Impact Fee Schedule – Urban Assessment Area

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source ¹	Initial Trip Length	Trip Length Adj. Factor ²	Adjusted Trip Length	Initial Trip Length	Trip Length Source ³	Trip Rate	% New Trips Source ⁴	Net VMT	Person-Trip Factor	Person-Trip Factor	Total Impact Cost	Annualized Fee	Gas Fee Credit	Net Multi-Modal Fee	Uninc. Fee	% Change
932	High-Turnover Restaurant	1,000 sq ft	206.26	Appendix A LUC 932	3.17	1.05	3.33	3.81	Appendix A LUC 932	71%	Appendix A LUC 932	80.27	1.40	112.38	\$39,599	\$380	\$9,061	\$39,019	\$16,314	87%
934	Fast Food Restaurant w/Drive Thru	1,000 sq ft	482.53	Appendix A LUC 934	2.05	1.05	2.15	2.61	Appendix A LUC 934	58%	Appendix A LUC 934	192.25	1.40	269.15	\$94,842	\$1,489	\$23,261	\$93,353	\$36,809	94%
942	Auto Service	1,000 sq ft	28.12	Appendix A LUC 942	3.62	1.05	3.80	4.30	Appendix A LUC 942	71%	Appendix A LUC 942	24.64	1.40	34.50	\$12,157	\$125	\$2,734	\$11,873	\$6,853	42%
944/945	Gasoline/Service Station with or without Convenience Store & Car Wash	Fuel Disp.	184.84	Appendix A LUC 944/945	1.80	1.05	1.89	2.30	Appendix A LUC 944/945	70%	Appendix A LUC 944/945	27.17	1.40	38.24	\$13,402	\$213	\$3,328	\$13,189	\$4,456	225%
947	Self-Service Car Wash	wash slot	43.94	Appendix A LUC 947	2.18	1.05	2.29	2.79	Appendix A LUC 947	68%	Appendix A LUC 947	21.86	1.40	30.60	\$10,785	\$167	\$2,609	\$10,618	\$9,756	16%
110	General Light Industrial	1,000 sq ft	4.95	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	7.89	1.40	11.05	\$3,891	\$24	\$844	\$3,867	\$2,088	46%
140	Manufacturing	1,000 sq ft	3.83	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	6.25	1.40	8.75	\$3,083	\$43	\$672	\$3,040	\$1,144	111%
150	Warehousing	1,000 sq ft	1.74	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	2.77	1.40	3.88	\$1,365	\$19	\$297	\$1,346	\$1,066	0%
151	Mini Warehouse	1,000 sq ft	1.49	Appendix A LUC 151	3.51	1.05	3.69	4.19	Same as LUC 710 & LUC 930-935	92%	Same as LUC 710	1.62	1.40	2.27	\$797	\$12	\$187	\$785	\$382	90%

1) Initial trip length multiplied by the trip length adjustment factor

2) Net PMT calculated as ((Trip Generation Rate * Trip Length * % New Trips) * (1 - Interstate/Toll Facility Adjustment Factor)) / 2 * Person-Trip Factor. This reflects the unit of person-miles of capacity consumed per unit of development and is multiplied by the cost per person

3) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and phased to 56 percent in 2014

4) The trip rates for office and retail/shopping center use an end-point regression value

5) The percent new trips for schools was estimated at 90 percent, based on LUC 710, but then adjusted to 80% to provide a conservative fee rate. This adjustment reflects the nature of the elementary and middle school uses where attendees are unable to drive and are dropped off by parents on their way to another destination

*Refer to the Trip Characteristics Database section of Appendix A for additional support detail and backup information

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Table D-3
Calculated Transportation Impact Fee Schedule – Non-Urban/Suburban Assessment Area

		Gasoline Tax \$5 per gallon to capital:		City Revenue:		County Revenue:		State Revenue:		Cost per VMT: Fuel Efficiency:		Interstate/Toll Facility Adjustment Factor		36.1%	
		\$0.1420		\$0.0010		\$0.0480		\$0.0930		\$548.15		18.73 mpg		365	
		Interest rate:		Effective days per year:											
ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source*	Initial Trip Length	Trip Length Adj. Factor	Adjusted Trip Length**	Trip Length Source*	ITE LUC	ITE LUC	ITE LUC	ITE LUC	ITE LUC	ITE LUC	ITE LUC
Residential															
210	Single Family (Detached)	sq	7.81	ITE 10th Edition	6.62	1.25	8.28	Appendix A, LUC 210	100%	n/a	22.85	\$11,925	\$95	\$1,484	\$1,898
220	Multi-Family Housing (Low-Rise, 1-2 floors)	sq	7.32	ITE 10th Edition	5.10	1.25	6.38	Appendix A, LUC 220/221/222	100%	n/a	14.92	\$8,179	\$70	\$1,094	\$1,524
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	sq	5.44	ITE 10th Edition	5.10	1.25	6.38	Appendix A, LUC 220/221/222	100%	n/a	11.09	\$6,078	\$52	\$812	\$1,094
222	Multi-Family Housing (High-Rise, >10 floors)	sq	4.45	ITE 10th Edition	5.10	1.25	6.38	Appendix A, LUC 220/221/222	100%	n/a	9.07	\$4,972	\$42	\$656	\$1,098
231	Mid-Rise Residential w/1st floor Commercial	sq	3.44	ITE 10th Edition	5.10	1.25	6.38	Appendix A, LUC 220	100%	n/a	7.01	\$3,844	\$33	\$519	\$1,098
232	High-Rise Residential w/1st floor Commercial	sq	1.54	ITE 10th Edition (adjusted)	5.10	1.25	6.38	Appendix A, LUC 220	100%	n/a	3.14	\$1,721	\$15	\$234	\$1,098
240	Mobile Home Park	sq	4.17	Appendix A, LUC 240	4.60	1.25	5.75	Appendix A, LUC 240	100%	n/a	7.86	\$4,189	\$36	\$562	\$1,436
251	Retirement Community/Age Restricted Single Family	sq	3.50	Appendix A, LUC 251	5.42	1.25	6.78	Appendix A, LUC 251	100%	n/a	7.38	\$4,156	\$35	\$547	\$1,274
265	Time Share	sq	8.63	ITE 10th Edition	3.97	1.25	4.96	Previous Report	100%	n/a	13.68	\$7,497	\$65	\$1,015	\$2,078
n/a	Student Housing	sq	2.82	Previous Report	5.10	1.25	6.38	Appendix A, LUC 220	100%	n/a	5.75	\$3,151	\$27	\$422	\$1,079
Hotels															
310	Hotel	room	5.55	Appendix A, LUC 310	6.28	1.25	7.83	Appendix A, LUC 310	66%	Appendix A, LUC 310	9.16	\$5,623	\$42	\$656	\$1,978
320	Model	room	3.35	ITE 10th Edition	4.34	1.25	5.43	Appendix A, LUC 320	77%	Appendix A, LUC 320	4.48	\$2,453	\$21	\$328	\$1,411
Recreation															
430	Golf Course	acre	3.74	ITE 10th Edition	6.62	1.25	8.28	Appendix A, LUC 430	90%	Based on LUC 430	8.80	\$4,881	\$41	\$641	\$1,267
437	Bowling Alley	1,000 sf	13.00	ITE 10th Edition (adjusted)	5.15	1.25	6.44	Appendix A, LUC 430	90%	Based on LUC 430	24.07	\$13,196	\$112	\$1,750	\$1,804
444	Movie Theater with/without Matinee	1,000 sf	82.30	Appendix A, LUC 444	2.24	1.25	2.80	Appendix A, LUC 444	87%	Appendix A, LUC 444	64.05	\$35,111	\$327	\$5,108	\$11,151
491	Racquet Club	1,000 sf	19.70	ITE 10th Edition (adjusted)	5.15	1.25	6.44	Appendix A, LUC 490	94%	Appendix A, LUC 492	38.10	\$20,886	\$178	\$2,781	\$5,108
492	Health/Fitness Club	1,000 sf	34.50	ITE 10th Edition (adjusted)	5.15	1.25	6.44	Appendix A, LUC 492	94%	Appendix A, LUC 492	66.73	\$36,177	\$311	\$4,858	\$11,974
n/a	Dance Studio (Ballet/Arts/Music Lessons)	1,000 sf	21.33	Appendix A, LUC N/A	3.37	1.25	4.21	Appendix A, LUC N/A	85%	Appendix A, LUC N/A	24.39	\$13,368	\$118	\$1,843	\$11,974
Education															
522	School	1,000 sf	20.17	ITE 10th Edition	3.91	1.05	4.11	50% of LUC 210: Travel Demand Model	80%	Based on LUC 710 (adjusted)	17.84	\$9,834	\$89	\$1,390	\$6,974
560	Public Assembly	1,000 sf	6.95	ITE 10th Edition	3.91	1.05	4.11	Midpoint of LUC 710 & LUC 820 (App. A)	90%	Based on LUC 710	8.21	\$4,502	\$40	\$615	\$4,614
565	Day Care	1,000 sf	49.63	Appendix A, LUC 565	2.03	1.05	2.13	Appendix A, LUC 565	73%	Appendix A, LUC 565	24.66	\$13,515	\$132	\$2,062	\$7,043
580	Library	1,000 sf	72.05	ITE 10th Edition	6.62	1.05	6.95	Appendix A, LUC 580	49%	Previous Report	78.39	\$42,072	\$364	\$5,686	\$12,015

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Table D-3 (continued)
Calculated Transportation Impact Fee Schedule – Non-Urban/Suburban Assessment Area

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source*	Initial Trip Length	Trip Length Adj. Factor	Adjusted Trip Length	Initial Trip Length	Trip Length Source*	% New Trip	% New Trip Source*	Net VMT ⁽¹⁾	Total Impact Cost	Annualized Tax	Gas Tax Credit ⁽²⁾	Net Impact Fee	Current Fee ⁽³⁾	% Change
Hospital																		
610	Hospital	bed	22.32	ITE 10th Edition	6.62	1.05	6.95	7.65	Same as LUC 210	78%	Midpoint of LUC 510 & LUC 720	38.66	\$21,181	\$179	\$2,795	\$18,507	\$3,958	354%
620	Nursing Home	1,000 sf	3.02	Appendix A, LUC 620	2.59	1.25	2.72	3.22	Appendix A, LUC 620	89%	Appendix A, LUC 620	2.34	\$1,280	\$12	\$187	\$4,081	\$369	104%
640	Animal Hospital/Veterinary Clinics	1,000 sf	24.20	Appendix A, LUC 640	1.80	1.05	2.00	2.50	Appendix A, LUC 640	70%	Appendix A, LUC 640	10.82	\$5,934	\$59	\$822	\$8,029	\$8,021	-44%
Office																		
710	General Office 50,000 sf or less ⁽⁴⁾	1,000 sf	10.83	ITE 10th edition	5.15	1.25	6.44	6.94	Appendix A, LUC 710	92%	Appendix A, LUC 710	20.50	\$11,238	\$95	\$1,500	\$9,643	\$5,574	75%
710	General Office 50,001-100,000 sf ⁽⁴⁾	1,000 sf	10.61	ITE 10th edition	5.15	1.25	6.44	6.94	Appendix A, LUC 710	92%	Appendix A, LUC 710	20.08	\$11,059	\$94	\$1,458	\$9,501	\$4,748	101%
710	General Office 100,001-200,000 sf ⁽⁴⁾	1,000 sf	10.39	ITE 10th edition	5.15	1.25	6.44	6.94	Appendix A, LUC 710	92%	Appendix A, LUC 710	19.67	\$10,781	\$92	\$1,437	\$9,344	\$4,050	131%
710	General Office 200,001-500,000 sf ⁽⁴⁾	1,000 sf	10.18	ITE 10th edition	5.15	1.25	6.44	6.94	Appendix A, LUC 710	92%	Appendix A, LUC 710	19.27	\$10,563	\$90	\$1,406	\$9,157	\$3,455	105%
720	Small Medical/Dental Office (10,000 sf or less)	1,000 sf	23.83	Appendix A, LUC 720 Small Medical/Dental	5.55	1.25	6.94	7.44	Appendix A, LUC 720	89%	Appendix A, LUC 720	47.03	\$25,778	\$218	\$3,408	\$22,370	\$17,900	77%
720	Medical/Dental Office	1,000 sf	34.12	Appendix A, LUC 720	5.55	1.25	6.94	7.44	Appendix A, LUC 720	89%	Appendix A, LUC 720	67.33	\$36,909	\$313	\$4,890	\$31,709	\$17,900	148%
730	Post Office	1,000 sf	103.84	ITE 10th Edition	5.15	1.25	6.44	6.94	Same as LUC 710	49%	Previous Report	104.79	\$57,843	\$489	\$7,639	\$49,714	\$20,508	143%
Retail																		
815	Free-Standing Discount Store	1,000 sf	53.12	ITE 10th Edition	3.40	1.05	2.52	3.02	Same as LUC 820 (100-200)	67%	Same as LUC 820 (100-200)	28.66	\$15,707	\$149	\$2,328	\$13,329	\$5,884	127%
816	Hardware/Paint	1,000 sf	9.14	ITE 10th Edition	1.87	1.05	1.96	2.46	Same as LUC 820 (50-99)	58%	Same as LUC 820 (50-99)	3.21	\$1,757	\$17	\$266	\$1,471	\$3,376	-56%
820	Retail 50,000 sf or less ⁽⁴⁾	1,000 sf	75.05	ITE 10th edition	1.87	1.05	1.96	2.46	Appendix A, Figure A-1	55%	Appendix A, Figure A-2	26.32	\$14,427	\$143	\$2,234	\$12,193	\$5,700	114%
820	Retail 50,001-100,000 sf ⁽⁴⁾	1,000 sf	60.12	ITE 10th edition	2.29	1.05	2.40	2.80	Appendix A, Figure A-1	62%	Appendix A, Figure A-2	28.58	\$15,567	\$150	\$2,343	\$13,224	\$6,135	117%
820	Retail 100,001-200,000 sf ⁽⁴⁾	1,000 sf	48.16	ITE 10th edition	2.40	1.05	2.52	3.02	Appendix A, Figure A-1	67%	Appendix A, Figure A-2	25.98	\$14,241	\$135	\$2,109	\$12,132	\$5,477	122%
820	Retail 200,001-300,000 sf ⁽⁴⁾	1,000 sf	42.30	ITE 10th edition	2.52	1.05	2.65	3.15	Appendix A, Figure A-1	71%	Appendix A, Figure A-2	25.43	\$13,938	\$131	\$2,046	\$11,891	\$5,307	124%
820	Retail 300,001-400,000 sf ⁽⁴⁾	1,000 sf	38.58	ITE 10th edition	2.64	1.05	2.77	3.27	Appendix A, Figure A-1	73%	Appendix A, Figure A-2	24.93	\$13,653	\$127	\$1,984	\$11,669	\$5,169	126%
820	Retail 400,001-500,000 sf ⁽⁴⁾	1,000 sf	35.92	ITE 10th edition	2.75	1.05	2.89	3.39	Appendix A, Figure A-1	75%	Appendix A, Figure A-2	24.88	\$13,635	\$126	\$1,968	\$11,667	\$5,135	127%
820	Retail 500,001-1,000,000 sf ⁽⁴⁾	1,000 sf	28.78	ITE 10th edition	3.34	1.05	3.51	4.01	Appendix A, Figure A-1	81%	Appendix A, Figure A-2	26.14	\$14,330	\$129	\$2,015	\$12,315	\$5,319	132%
820	Retail 1,000,001-1,500,000 sf ⁽⁴⁾	1,000 sf	27.14	ITE 10th edition	3.57	1.05	3.75	4.25	Appendix A, Figure A-1	82%	Appendix A, Figure A-2	26.66	\$14,616	\$131	\$2,046	\$12,570	\$5,412	132%
820	Retail greater than 1,500,000 sf ⁽⁴⁾	1,000 sf	25.84	ITE 10th edition	3.80	1.05	3.99	4.49	Appendix A, Figure A-1	83%	Appendix A, Figure A-2	27.34	\$14,987	\$133	\$2,078	\$12,909	\$5,534	133%
840/841	New/Used Auto Sales	1,000 sf	24.58	Appendix A, LUC 840/841	4.60	1.05	4.83	5.33	Appendix A, LUC 840/841	78%	Appendix A, LUC 840/841	29.97	\$16,826	\$143	\$2,234	\$14,591	\$6,276	128%
850	Supermarket	1,000 sf	106.64	Appendix A, LUC 850	2.08	1.05	2.18	2.68	Appendix A, LUC 850	58%	Appendix A, LUC 850	41.59	\$22,800	\$221	\$3,452	\$19,327	\$7,621	154%
853	Convenience Market w/Flas Pumps	1,000 sf	626.25	Appendix A, LUC 853	1.51	1.05	1.59	2.09	Appendix A, LUC 853	28%	Appendix A, LUC 853	89.08	\$48,828	\$507	\$7,620	\$40,701	\$20,411	100%
862	Home Improvement Superstore	1,000 sf	30.74	ITE 10th Edition	2.40	1.05	2.52	3.02	Same as LUC 820 (100-200)	67%	Same as LUC 820 (100-200)	16.58	\$8,090	\$88	\$1,343	\$7,747	\$3,059	153%

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Table D-3 (continued)
Calculated Transportation Impact Fee Schedule – Non-Urban/Suburban Assessment Area

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source*	Initial Trip Length	Trip Length Adj. Factor	Adjusted Trip Length	Total Trip Length	Trip Length Source*	% New Trips	% New Trips Source*	Net VMT ¹⁾	Total Impact Cost	Annual Gas Tax	Gas Tax Credit	Net Impact Cost	Current Fee	% Change
Offices																		
853	Electronics Superstore	1,000 sf	41.05	ITE 10th Edition	1.87	1.25	1.95	2.45	Same as LUC 820 (SQD)	55%	Same as LUC 820 (SQD)	14.40	\$7,891	\$78	\$1,219	\$8,678	\$1,502	344%
880/881	Drug Store	1,000 sf	104.37	Appendix A: LUC 880/881	2.08	1.05	2.18	2.68	Appendix A: LUC 880/881	32%	Appendix A: LUC 880/881	23.25	\$12,751	\$124	\$1,937	\$13,812	\$11,180	-3%
Restaurants																		
911	Barb/Savings Walk-In	1,000 sf	59.39	ITE 10th Edition (adjusted)	2.45	1.05	2.58	3.08	Same as LUC 912	46%	Same as LUC 912	27.52	\$12,844	\$118	\$1,812	\$13,774	\$11,525	9%
912	Barb/Savings Drive-In	1,000 sf	102.66	Appendix A: LUC 912	2.45	1.05	2.58	3.08	Appendix A: LUC 912	46%	Appendix A: LUC 912	38.93	\$21,338	\$201	\$3,140	\$24,679	\$17,525	58%
925	Drinking Place	1,000 sf	113.60	ITE 10th Edition (adjusted)	1.87	1.05	1.95	2.45	Same as LUC 820 (SQD)	56%	Same as LUC 820 (SQD)	39.84	\$21,837	\$217	\$3,390	\$25,444	\$3,774	389%
931	Quality Restaurant	1,000 sf	86.03	Appendix A: LUC 931	3.14	1.05	3.30	3.80	Appendix A: LUC 931	77%	Appendix A: LUC 931	60.84	\$38,085	\$348	\$5,436	\$43,869	\$14,253	130%
932	High-Turnover Restaurant	1,000 sf	106.26	Appendix A: LUC 932	3.17	1.05	3.33	3.83	Appendix A: LUC 932	71%	Appendix A: LUC 932	80.77	\$43,999	\$400	\$6,249	\$50,248	\$16,974	122%
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	482.53	Appendix A: LUC 934	3.05	1.05	3.15	3.65	Appendix A: LUC 934	54%	Appendix A: LUC 934	192.23	\$105,381	\$1,026	\$16,028	\$122,435	\$38,463	132%
942	Auto Service	1,000 sf	28.19	Appendix A: LUC 942	3.62	1.05	3.80	4.30	Appendix A: LUC 942	72%	Appendix A: LUC 942	24.64	\$13,108	\$123	\$1,890	\$15,121	\$6,891	69%
944/945	Gasoline/Service Station with or without Convenience Store & Car Wash	fuel pos.	184.84	Appendix A: LUC 944/945	1.90	1.05	2.00	2.50	Appendix A: LUC 944/945	23%	Appendix A: LUC 944/945	27.17	\$14,891	\$147	\$2,296	\$17,334	\$4,680	170%
947	Self-Service Car Wash	wash/eth.	43.94	Appendix A: LUC 947	2.18	1.05	2.29	2.79	Appendix A: LUC 947	68%	Appendix A: LUC 947	21.85	\$11,383	\$115	\$1,797	\$13,295	\$10,190	0%
Industrial																		
110	General Light Industrial	1,000 sf	4.96	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	7.89	\$4,324	\$37	\$578	\$5,739	\$2,163	73%
140	Manufacturing	1,000 sf	3.93	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	6.25	\$3,426	\$30	\$469	\$3,925	\$1,185	150%
150	Warehousing	1,000 sf	1.74	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	2.77	\$1,517	\$13	\$203	\$2,333	\$1,107	19%
151	Mini Warehouse	1,000 sf	1.49	Appendix A: LUC 151	3.51	1.05	3.69	4.19	Midpoint of LUC 710 & LUC 820 (SQD)	92%	Same as LUC 710	1.62	\$886	\$8	\$125	\$919	\$396	92%

- 1) Initial trip length multiplied by the trip length adjustment factor
 - 2) Net VMT calculated as [(Trip Generation Rate * Trip Length * % New Trips) * (1 - Interstate/Toll Facility Adjustment Factor) / 2]. This reflects the unit of vehicle-miles of capacity consumed per unit of development and is multiplied by the cost per vehicle
 - 3) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and phased to 56 percent in 2014
 - 4) The trip rates for office and retail/shopping center use an end-point regression value
 - 5) The percent new trips for schools was estimated at 90 percent, based on LUC 710, but then adjusted to 80% to provide a conservative fee rate. This adjustment reflects the nature of the elementary and middle school uses where attendees are unable to drive and are dropped off by parents on their way to another destination
- *Refer to the Trip Characteristics Database section of Appendix A for additional support detail and backup information

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Table D-4
Calculated Transportation Impact Fee Schedule – Rural Assessment Area

Calculated Transportation Impact Fee Schedule – Rural Assessment Area													Interstate/Toll Facility Adjustment Factor: 36.1%					
Gasoline Tax		\$5 per gallon to capital:		City Revenues:		\$0.0010		Cost per VMT:		\$816.67								
Facility (life years):		25		County Revenues:		\$0.0460		Fuel Efficiency:		18.73 mpg								
Interest rate:		4.0%		State Revenues:		\$0.0930		Effective days per year:		365								
ITS Cost	Land Use	Size	Trip Rate	Trip Rate Source*	Initial Trip Length	Trip Length Adj. Factor	Intermediate Trip Length**	Total Trip Length	Trip Length Source*	% Same Trips	% New Trips Source**	New VMT†	Total Impact Cost	Annualized Cost	Gas Tax Levied	Net Impact Fee	Current Fee**	% Change
Residential																		
210	Single Family (Detached)	du	7.81	PL Studies	6.62	1.25	8.28	8.78	Appendix A: IUC 210	100%	n/a	20.66	\$11,741	\$85	\$1,484	\$11,653	\$3,808	180%
219	Multi-Family Housing (Low-Rise, 1-2 floors)	du	7.32	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A: IUC 220/221/222	100%	n/a	14.92	\$9,201	\$70	\$1,094	\$8,107	\$2,524	221%
221	Multi-Family Housing (Mid-Rise, 3-10 floors)	du	5.44	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A: IUC 220/221/222	100%	n/a	11.09	\$6,838	\$52	\$812	\$6,026	\$2,524	139%
222	Multi-Family Housing (High-Rise, >10 floors)	du	4.45	ITE 10th Edition	5.10	1.25	6.38	6.88	Appendix A: IUC 220/221/222	100%	n/a	9.07	\$5,594	\$42	\$656	\$4,938	\$1,598	209%
231	Mid-Rise Residential w/1st floor Commercial	du	3.44	ITE 10th Edition	5.10	1.25	6.38	6.88	Same as IUC 220	100%	n/a	7.01	\$4,324	\$33	\$516	\$3,808		
232	High-Rise Residential w/1st floor Commercial	du	1.94	ITE 10th Edition (adjusted)	5.10	1.25	6.38	6.88	Same as IUC 220	100%	n/a	3.14	\$1,936	\$15	\$234	\$1,702		
240	Mobile Home Park	du	4.17	Appendix A: IUC 240	4.60	1.25	5.75	6.25	Appendix A: IUC 240	100%	n/a	7.66	\$4,724	\$36	\$562	\$4,162	\$1,436	192%
251	Retirement Community/Age-Restricted Single Family	du	3.50	Appendix A: IUC 251	5.42	1.25	6.78	7.28	Appendix A: IUC 251	100%	n/a	7.58	\$4,675	\$35	\$547	\$4,128	\$1,274	224%
265	Time Share	du	8.63	ITE 10th Edition	3.97	1.25	4.96	5.46	Previous Report	100%	n/a	13.68	\$8,434	\$65	\$1,015	\$7,419	\$2,076	257%
n/a	Student Housing	du	2.82	Previous Report	5.10	1.25	6.38	6.88	Same as IUC 220	100%	n/a	5.75	\$3,545	\$27	\$422	\$3,123	\$1,079	189%
Recreation																		
310	Hotel	room	5.55	Appendix A: IUC 310	6.26	1.25	7.83	8.33	Appendix A: IUC 310	66%	Appendix A: IUC 310	9.16	\$5,651	\$42	\$656	\$5,005	\$1,978	153%
320	Motel	room	3.95	ITE 10th Edition	4.34	1.25	5.43	5.93	Appendix A: IUC 320	77%	Appendix A: IUC 320	4.48	\$2,760	\$21	\$328	\$2,432	\$1,411	71%
Recreation (Cont.)																		
430	Golf Course	acre	3.74	ITE 10th Edition	6.62	1.25	8.28	8.78	Same as IUC 210	90%	Based on IUC 710	8.90	\$5,491	\$41	\$641	\$4,850	\$2,287	114%
437	Bowling Alley	1,000 sf	13.00	ITE 10th Edition (adjusted)	5.15	1.25	6.44	6.94	Same as IUC 710	90%	Based on IUC 710	24.07	\$14,846	\$112	\$1,750	\$13,096	\$11,604	11%
444	Movie Theater with or without Matinee	1,000 sf	82.30	Appendix A: IUC 444	2.24	1.25	2.80	3.30	Appendix A: IUC 444	87%	Appendix A: IUC 444	64.05	\$39,500	\$327	\$5,108	\$34,392	\$11,251	208%
491	Racquet Club	1,000 sf	19.70	ITE 10th Edition (adjusted)	5.15	1.25	6.44	6.94	Same as IUC 710	94%	Same as IUC 492	38.10	\$23,497	\$178	\$2,781	\$20,716	\$5,106	306%
492	Health/Fitness Club	1,000 sf	34.50	ITE 10th Edition (adjusted)	5.15	1.25	6.44	6.94	Same as IUC 710	94%	Appendix A: IUC 492	66.73	\$41,249	\$311	\$4,858	\$36,391	\$11,874	201%
n/a	Dance Studio (Marital Arts/Music Lessons)	1,000 sf	21.32	Appendix A: IUC N/A Dance Studio	3.97	1.25	4.21	4.71	Appendix A: IUC N/A Specialty Retail	85%	Appendix A: IUC N/A Specialty Retail	24.39	\$15,039	\$118	\$1,843	\$13,196		
Education																		
522	School	1,000 sf	20.12	ITE 10th Edition	3.31	1.05	3.48	3.98	50% of IUC 710: Travel Demand Model Midpoint of IUC 710 & IUC 810 (App. A)	80%	Based on IUC 710 (adjusted)††	17.84	\$11,064	\$80	\$1,390	\$9,674	\$6,974	39%
560	Public Assembly	1,000 sf	6.95	ITE 10th Edition	3.91	1.05	4.11	4.61	Same as IUC 710	90%	Based on IUC 710	8.21	\$5,065	\$40	\$625	\$4,440	\$4,041	-4%
565	Day Care	1,000 sf	49.63	Appendix A: IUC 565	7.03	1.05	7.13	7.63	Appendix A: IUC 565	73%	Appendix A: IUC 565	24.66	\$15,204	\$132	\$2,062	\$13,142	\$7,043	87%
568	Warehouse	1,000 sf	73.08	ITE 10th Edition	6.63	1.25	6.65	7.45	Same as IUC 710	88%	Previous Report	78.30	\$49,344	\$364	\$5,686	\$43,658	\$13,015	255%

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Table D-4 (continued)
Calculated Transportation Impact Fee Schedule – Rural Assessment Area

ITE #142	Land Use	Unit	Trip Rate ^a	Trip Rate Source ^a	Initial Trip Length	Trip Length Adj. Factor	Assessment Trip Length	Total Trip Length ^b	Trip Length Source ^b	% New Trip	% New Trips Source ^b	Net VMT ^c	Total Impact Cost	Annualized Fee	Gas Tax Credit	Net Impact Cost	Current Fee ^d	% Change
Healthcare																		
610	Hospital	bed	22.32	ITE 10th Edition	5.62	1.05	5.95	7.45	Same as LUC 210	78%	Midpoint of LUC 810 & LUC 720	38.66	\$23,840	\$179	\$2,796	\$11,144	\$3,968	430%
620	Nursing Home	1,000 sf	3.02	Appendix A: LUC 630	2.59	1.05	2.72	3.22	Appendix A: LUC 630	89%	Appendix A: LUC 630	2.34	\$1,440	\$12	\$187	\$2,259	\$369	240%
640	Animal Hospital/Veterinary Clinic	1,000 sf	24.20	Appendix A: LUC 640	1.90	1.05	2.00	2.50	Appendix A: LUC 640	70%	Appendix A: LUC 640	10.82	\$6,675	\$59	\$922	\$5,753	\$8,921	-35%
Office																		
710	General Office 50,000 sf or less ⁽⁴⁾	1,000 sf	10.83	ITE 10th Edition	5.15	1.25	6.44	6.94	Appendix A: LUC 710	92%	Appendix A: LUC 710	20.50	\$12,642	\$96	\$1,500	\$11,142	\$5,574	102%
710	General Office 50,001-100,000 sf ⁽⁴⁾	1,000 sf	10.61	ITE 10th Edition	5.15	1.25	6.44	6.94	Appendix A: LUC 710	92%	Appendix A: LUC 710	20.08	\$12,385	\$94	\$1,458	\$10,927	\$4,748	130%
710	General Office 100,001-200,000 sf ⁽⁴⁾	1,000 sf	10.39	ITE 10th Edition	5.15	1.25	6.44	6.94	Appendix A: LUC 710	92%	Appendix A: LUC 710	19.67	\$12,129	\$92	\$1,437	\$10,692	\$4,050	164%
710	General Office 200,001-250,000 sf ⁽⁴⁾	1,000 sf	10.18	ITE 10th Edition	5.15	1.25	6.44	6.94	Appendix A: LUC 710	92%	Appendix A: LUC 710	19.27	\$11,884	\$90	\$1,406	\$10,478	\$3,455	203%
720	Small Medical/Dental Office (10,000 sf or less)	1,000 sf	23.83	Appendix A: LUC 720 Small Medical/Dental	5.55	1.25	6.94	7.44	Appendix A: LUC 720	89%	Appendix A: LUC 720	47.03	\$29,000	\$218	\$3,406	\$25,594	\$12,900	98%
720	Medical/Dental Office	1,000 sf	34.12	Appendix A: LUC 720	5.55	1.25	6.94	7.44	Appendix A: LUC 720	89%	Appendix A: LUC 720	67.33	\$41,522	\$313	\$4,890	\$36,632	\$12,900	184%
732	Post Office	1,000 sf	103.94	ITE 10th Edition	5.15	1.25	6.44	6.94	Same as LUC 710	49%	Previous Report	104.79	\$64,623	\$489	\$7,639	\$56,984	\$20,508	178%
Retail																		
815	Free-Standing Discount Store	1,000 sf	53.12	ITE 10th Edition	2.40	1.05	2.52	3.02	Same as LUC 820 (100-200k)	67%	Same as LUC 820 (100-200k)	28.66	\$17,671	\$149	\$2,328	\$15,343	\$5,884	161%
816	Hardware/Paint	1,000 sf	9.14	ITE 10th Edition	1.87	1.05	1.96	2.46	Same as LUC 820 (500k)	56%	Same as LUC 820 (500k)	3.21	\$1,977	\$17	\$266	\$1,711	\$3,378	-49%
820	Retail 50,000 sf/ga or less ⁽⁴⁾	1,000 sf/ga	75.05	ITE 10th Edition	1.87	1.05	1.96	2.46	Appendix A: Figure A-1	56%	Appendix A: Figure A-2	26.32	\$16,230	\$143	\$2,234	\$14,000	\$5,700	146%
820	Retail 50,001-100,000 sf/ga ⁽⁴⁾	1,000 sf/ga	60.12	ITE 10th Edition	2.29	1.05	2.40	2.90	Appendix A: Figure A-1	62%	Appendix A: Figure A-2	28.58	\$17,626	\$150	\$2,343	\$15,283	\$6,135	149%
820	Retail 100,001-200,000 sf/ga ⁽⁴⁾	1,000 sf/ga	48.16	ITE 10th Edition	2.40	1.05	2.52	3.02	Appendix A: Figure A-1	67%	Appendix A: Figure A-2	25.98	\$16,021	\$135	\$2,109	\$13,912	\$5,477	154%
820	Retail 200,001-300,000 sf/ga ⁽⁴⁾	1,000 sf/ga	42.30	ITE 10th Edition	2.52	1.05	2.65	3.15	Appendix A: Figure A-1	71%	Appendix A: Figure A-2	25.43	\$15,681	\$131	\$2,046	\$13,635	\$5,307	157%
820	Retail 300,001-400,000 sf/ga ⁽⁴⁾	1,000 sf/ga	38.58	ITE 10th Edition	2.64	1.05	2.77	3.27	Appendix A: Figure A-1	73%	Appendix A: Figure A-2	24.93	\$15,371	\$127	\$1,984	\$13,387	\$5,169	159%
820	Retail 400,001-500,000 sf/ga ⁽⁴⁾	1,000 sf/ga	35.92	ITE 10th Edition	2.75	1.05	2.89	3.39	Appendix A: Figure A-1	75%	Appendix A: Figure A-2	24.48	\$15,140	\$126	\$1,968	\$13,172	\$5,135	160%
820	Retail 500,001-1,000,000 sf/ga ⁽⁴⁾	1,000 sf/ga	28.78	ITE 10th Edition	3.34	1.05	3.51	4.01	Appendix A: Figure A-1	81%	Appendix A: Figure A-2	26.14	\$16,132	\$129	\$2,015	\$14,117	\$5,019	163%
820	Retail 1,000,001-1,200,000 sf/ga ⁽⁴⁾	1,000 sf/ga	27.14	ITE 10th Edition	3.57	1.05	3.75	4.35	Appendix A: Figure A-1	82%	Appendix A: Figure A-2	26.66	\$16,443	\$131	\$2,046	\$14,397	\$5,012	166%
820	Retail greater than 1,200,000 sf/ga ⁽⁴⁾	1,000 sf/ga	25.84	ITE 10th Edition	3.80	1.05	3.99	4.49	Appendix A: Figure A-1	83%	Appendix A: Figure A-2	27.34	\$16,860	\$133	\$2,078	\$14,782	\$5,034	167%
840/841	New/Used Auto Sales	1,000 sf	24.58	Appendix A: LUC 840/841	4.60	1.05	4.83	5.33	Appendix A: LUC 840/841	79%	Appendix A: LUC 840/841	29.97	\$18,479	\$143	\$2,234	\$16,245	\$6,276	159%
850	Supermarket	1,000 sf	106.64	Appendix A: LUC 850	2.08	1.05	2.18	2.68	Appendix A: LUC 850	56%	Appendix A: LUC 850	41.59	\$25,650	\$221	\$3,452	\$22,199	\$7,621	191%
853	Convenience Market w/Gas Pump	1,000 sf	626.25	Appendix A: LUC 853	1.51	1.05	1.59	2.09	Appendix A: LUC 853	28%	Appendix A: LUC 853	89.08	\$54,932	\$507	\$7,920	\$47,012	\$20,413	130%
862	Home Improvement Superstore	1,000 sf	30.74	ITE 10th Edition	2.40	1.05	2.52	3.02	Same as LUC 820 (100-200k)	67%	Same as LUC 820 (100-200k)	16.58	\$10,226	\$86	\$1,343	\$9,883	\$3,059	180%

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Table D-4 (continued)
Calculated Transportation Impact Fee Schedule – Rural Assessment Area

ITE LUC	Land Use	Unit	Trip Rate	Trip Rate Source*	Initial Trip Length	Trip Length Adj. Factor	Adjusted Trip Length	Initial Trip Length	Trip Length Source*	% New Trips	% New Trips Source*	Net VMT	Total Impact Cost	Annual Gas Tax	Gas Tax Credit	Net Impact Cost	Impact Fee	% Change
Residential																		
863	Electronics Superstore	1,000 sf	41.05	ITE 10th Edition	1.87	1.05	1.96	2.46	Same as LUC 820 (L506)	58%	Same as LUC 820 (L506)	14.40	\$8,877	\$78	\$1,219	\$7,658	\$1,002	410%
880/881	Drug Store	1,000 sf	104.97	Appendix A: LUC 880/881	2.08	1.05	2.18	2.68	Appendix A: LUC 880/881	32%	Appendix A: LUC 880/881	23.26	\$14,945	\$124	\$1,937	\$14,821	\$11,160	11%
Commercial																		
911	Bank/Savings Walk-In	1,000 sf	59.39	ITE 10th Edition (adjusted)	2.46	1.05	2.58	3.08	Same as LUC 912	46%	Same as LUC 912	22.52	\$13,887	\$116	\$1,812	\$12,075	\$11,525	5%
912	Bank/Savings Drive-In	1,000 sf	102.66	Appendix A: LUC 912	2.46	1.05	2.58	3.08	Appendix A: LUC 912	46%	Appendix A: LUC 912	38.93	\$24,005	\$201	\$3,140	\$23,864	\$11,525	81%
925	Drinking Place	1,000 sf	113.60	ITE 10th Edition (adjusted)	1.87	1.05	1.96	2.46	Same as LUC 820 (L506)	58%	Same as LUC 820 (L506)	39.84	\$24,567	\$217	\$3,380	\$24,150	\$3,774	461%
931	Quality Restaurant	1,000 sf	86.01	Appendix A: LUC 931	3.14	1.05	3.30	3.80	Appendix A: LUC 931	77%	Appendix A: LUC 931	69.84	\$41,070	\$348	\$5,636	\$40,324	\$14,253	164%
932	High-Turnover Restaurant	1,000 sf	106.26	Appendix A: LUC 932	3.17	1.05	3.33	3.83	Appendix A: LUC 932	71%	Appendix A: LUC 932	80.27	\$48,489	\$400	\$6,249	\$47,640	\$16,974	135%
934	Fast Food Restaurant w/Drive-Thru	1,000 sf	482.53	Appendix A: LUC 934	2.05	1.05	2.15	2.65	Appendix A: LUC 934	58%	Appendix A: LUC 934	192.35	\$118,554	\$1,026	\$16,028	\$117,528	\$38,463	167%
942	Auto Service	1,000 sf	28.15	Appendix A: LUC 942	3.62	1.05	3.80	4.30	Appendix A: LUC 942	72%	Appendix A: LUC 942	24.64	\$15,196	\$131	\$1,890	\$14,306	\$6,891	91%
944/945	Gasoline/Service Station with or without Convenience Store & Car Wash	fuel pos.	184.84	Appendix A: LUC 944/945	1.90	1.05	2.00	2.50	Appendix A: LUC 944/945	23%	Appendix A: LUC 944/945	27.17	\$16,752	\$147	\$2,296	\$16,405	\$4,660	210%
947	Self-Service Car Wash	wash slot	43.94	Appendix A: LUC 947	2.18	1.05	2.29	2.79	Appendix A: LUC 947	68%	Appendix A: LUC 947	21.86	\$13,481	\$115	\$1,797	\$13,286	\$10,180	35%
Industrial																		
110	General Light Industrial	1,000 sf	4.96	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	7.89	\$4,864	\$37	\$578	\$4,386	\$2,163	88%
140	Manufacturing	1,000 sf	3.93	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	6.25	\$3,854	\$30	\$469	\$3,385	\$1,185	180%
150	Warehousing	1,000 sf	1.74	ITE 10th Edition	5.15	1.05	5.41	5.91	Same as LUC 710	92%	Same as LUC 710	2.77	\$1,708	\$13	\$203	\$1,495	\$1,107	36%
151	Mini-Warehouse	1,000 sf	1.49	Appendix A: LUC 151	3.51	1.05	3.69	4.19	Midpoint of LUC 710 & LUC 820 (L506)	92%	Same as LUC 710	1.62	\$997	\$8	\$125	\$870	\$396	120%

- 1) Initial trip length multiplied by the trip length adjustment factor
 - 2) Net VMT calculated as (Trip Generation Rate * Trip Length * % New Trips) * (1 - Interstate/Toll Facility Adjustment Factor) / 2). This reflects the unit of vehicle-miles of capacity consumed per unit of development and is multiplied by the cost per vehicle
 - 3) Source: Orange County Planning and Development Department. Fees were adopted at 42 percent in 2012 and phased to 56 percent in 2014
 - 4) The trip rates for office and retail/shopping center use an end-point regression value
 - 5) The percent new trips for schools was estimated at 90 percent, based on LUC 710, but then adjusted to 80% to provide a conservative fee rate. This adjustment reflects the nature of the elementary and middle school uses where attendees are unable to drive and are dropped off by parents on their way to another destination
- *Refer to the Trip Characteristics Database section of Appendix A for additional support detail and backup information