

**Limited Review of the
Traffic Engineering Division –
Pay-As-You-Go Program**

**Report by the
Office of County Comptroller**

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December 14, 2005

Richard T. Crotty, County Mayor
And
Board of County Commissioners

We have conducted a limited review of the Traffic Engineering Division – Pay-As-You-Go Program. The review was limited to an examination of the application of the Pay-As-You-Go formula and related issues. The period reviewed was October 1, 2004 through June 30, 2005; however, we also reviewed certain Pay-As-You-Go issues beginning September 1, 1999 through September 30, 2004. Our review was conducted in accordance with generally accepted government auditing standards, and included such tests as we considered necessary in the circumstances.

Responses to our Recommendations for Improvement were received from the Director of Public Works and are incorporated herein.

We appreciate the cooperation of the personnel of the Public Works Department during the course of the review.

Martha O. Haynie, CPA
County Comptroller

c: Ajit Lalchandani, County Administrator
William P. Baxter, Director, Public Works Department
Ruby Rozier, Manager, Traffic Engineering Division

EXECUTIVE SUMMARY

Executive Summary

We have conducted a limited review of the Pay-As-You-Go (PAYG) formula, the estimated total cost of improvements for each PAYG road, the accuracy of the peak hour trips in the concurrency agreements, application of the PAYG formula in computing the per trip fees for the PAYG roads and the total fees charged to PAYG applicants. The review period was October 1, 2004 to June 30, 2005; however, we also reviewed a sample of PAYG agreements that occurred during the period September 1, 1999 to September 30, 2004. The specific objectives of this review are noted within the scope and methodology section.

Based upon the work performed, we noted that the Division's overall application of the PAYG formula, as interpreted by County staff, was not consistent. Specifically, with respect to the various components of the formula, we noted the following:

- The Division consistently applied generally accepted methodologies to calculate the Project's P.M. Peak Hr. Peak Directional Traffic (numerator).
- The Division consistently applied the "LOS [Level of Service] 'C' of the Existing Facility" factor (denominator) subsequent to March 2003. Documentation was insufficient to determine consistency in the three instances prior to March 2003.
- The Division did not consistently apply the Total Cost of Improvement component (multiplier).

Further, based on the work performed, there was insufficient documentation to determine if the Division was materially accurate in its calculation of the number of trips to be used in the PAYG formula for each PAYG applicant. The Orange County Public Works Department (Department) was not consistently updating, on a timely basis, the best available Total Cost of Improvement component of the PAYG formula.

Lastly, based on the work performed, we could not determine whether the total fees charged to applicants were accurate, as the best available cost data was not used in the computations and the accuracy of the number of trips generated by developments could not be validated. Mathematical errors were found in the calculations tested; however, the net effect of the errors was not material. Improvements are needed as outlined in the following paragraphs.

Applicants that want to develop property that impacts a road that has been deemed "over-capacity" are denied that ability by state law (FS163.3180 (2)(c)). However, one of the exceptions allowed by state law (FS163.3180 (1)(d) and (e)) is that if the applicant makes a binding commitment to pay the fair share of the cost of improving the road needed to serve the proposed development (among other requirements), the development is allowed to proceed under the Pay-As-You-Go (PAYG) system. In May 1996, the County adopted Ordinance No. 96-15 that outlined the procedures for this process. Included in the Ordinance was the formula to be used to calculate the

applicant's fair-share of the improvement. During our review of the PAYG formula as applied by staff, we had the following concerns:

- The language, "LOS 'C' Capacity of Existing Facility," used in describing the denominator of the concurrency formula provided by County Code Sec. 30-622(c)(3) appears unclear.
- Our review of the Division's application of the "Total Cost of Improvement" (TCI) component in its application of the PAYG formula for the nine PAYG roads noted that total cost was based upon varying road lengths. For the first four PAYG road cost calculations made during the period April 26, 1999 to December 30, 2003, the PAYG road costs were calculated using the total cost of the entire length of the road improvement project in the first instance (Colonial Drive 1.55 miles), average cost per mile of the project in the second instance (Hoffner Road 1.56 miles), the entire length of the project in the third instance (Dean Road 1.1 mile) and the average cost per mile in the fourth instance (Lake Underhill Road 3.5 miles). Beginning November 2, 2004, the remainder of the PAYG road costs was calculated based on an average cost per mile of the project.
- The Level of Service Factor "C" ("LOS C") used to compute the cost per trip (CPT) for the three PAYG roads (Colonial, Hoffner, and Dean) during the period April 1999 to March 2003 could not be traced to the generalized capacity tables in FDOT's Level of Service Handbook. In addition, there was no documentation in the files to explain the origin of the numbers used.

The Division did not always use the best available estimated total cost of improvement. Based upon our review, the total road cost could have been updated to a more current number in eight of the nine PAYG roads. In addition, the Division did not have a standard policy on how the costs would be developed and by whom. As a result of inconsistent procedures, we found numerous instances where different components of total cost were omitted or not correctly calculated.

Information contained in the PAYG cost table should be expanded to include all the PAYG roads, when a road was designated as PAYG, and when the Cost Per Trip (CPT) was updated.

The Division applies PAYG fees based upon the CPT applicable at the date of receipt of the application for capacity (trip) encumbrance. This is an internal policy set by Division staff and is not addressed in the Ordinance or Code. As a result, in several instances, the Division applied outdated fees to certain agreements because the applications were filed before the costs were revised.

The Division should incorporate procedures to utilize updated costs at the time of approval.

The Division needs to develop and implement written procedures regarding its analysis and calculation of the number of trips on a PAYG road. These procedures should, at a minimum, address the following:

- The various methodologies that may be used to calculate total trips generated by a project, which method to use for what projects (and under what circumstances), and documented justification for any deviation resulting from engineering judgment;
- Analysis and distribution of trips on all roads including roads with multiple segments;
- Written guidelines for consultants to follow when preparing analysis of trips generated by development projects and requirements for signing, dating and sealing of the reports; and,
- A review process for the calculation of the number of trips on affected roads.

Decisions regarding when a road becomes constrained (no further development affecting roadway allowed) and how the determination of a road being designated as constrained were not always consistent and documented.

The Public Works Division concurred with all of the Recommendations for Improvement. Corrective action is either underway, planned, or completed.

ACTION PLAN

**LIMITED REVIEW OF THE TRAFFIC ENGINEERING DIVISION – PAY AS YOU GO PROGRAM
ACTION PLAN**

| NO. | RECOMMENDATIONS | MANAGEMENT RESPONSE | | | IMPLEMENTATION STATUS | |
|-----|---|---------------------|------------------|---------------|-----------------------|---------|
| | | CONCUR | PARTIALLY CONCUR | DO NOT CONCUR | UNDERWAY | PLANNED |
| 1. | We recommend County staff takes appropriate steps to ensure all terms are clear and adequately defined in Ordinances. In some cases, it may be appropriate to return to the Board for guidance. | ✓ | | | | ✓ |
| 2. | We recommend the Division ensures the level of service factors to be used in the calculation of CPTs are obtained from the generalized capacity tables in FDOT's Level of Service Handbook. Any adjustments to these numbers should be justified and adequately documented. | ✓ | | | | ✓ |
| 3. | We recommend the Division establishes written policies and procedures governing the computation of costs per trip. Such policy and procedures should, at a minimum, include the following areas: | | | | | |
| A) | The duties and responsibilities of each area involved in the calculation of TCI, including assigning responsibility to a particular division or position within a division other than the Traffic Engineering Division for the collection, documentation, and determination of TCIs (Such TCIs should then be provided to the Traffic Engineering Division in writing); | ✓ | | | | ✓ |
| B) | Periodic updates of TCI as new cost data becomes available, not later than annually; | ✓ | | | | ✓ |
| C) | The specific cost data that should be included in each computation; | ✓ | | | | ✓ |
| D) | The methods that should be utilized to obtain proper cost data; and, | ✓ | | | | ✓ |

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| E) | Periodic reviews by management to ensure compliance. | ✓ | | | | ✓ |
| 4. | We recommend the Division establishes written policies and procedures to provide guidelines for the completeness and use of the PAYG cost table. | ✓ | | | | ✓ |
| 5. | We recommend the County institutes a policy and amends the capacity encumbrance letters and PAYG agreements to include language that allows the collection of a fee that is applicable at the time a PAYG agreement is presented for approval. | ✓ | | | | ✓ |
| 6. | We recommend the Division develops and implements written procedures regarding its analysis and calculation of the number of trips on a PAYG road. These procedures should, at a minimum, address the following: | | | | | |
| A) | The various methodologies that may be used to calculate total trips generated by a project, which method to use for what projects (and under what circumstances), and a documented justification for any deviation resulting from engineering judgment; | ✓ | | | | ✓ |
| B) | Analysis and distribution of trips on all roads including roads with multiple segments; | ✓ | | | | ✓ |
| C) | Written guidelines for consultants to follow when preparing an analysis of trips generated by development projects and requirements for signing, dating and sealing of the consultant reports; and, | ✓ | | | | ✓ |
| D) | A review process for the calculation of the number of trips on affected roads. | ✓ | | | | ✓ |

**LIMITED REVIEW OF THE TRAFFIC ENGINEERING DIVISION – PAY AS YOU GO PROGRAM
ACTION PLAN**

| NO. | RECOMMENDATIONS | MANAGEMENT RESPONSE | | | IMPLEMENTATION STATUS | |
|-----|---|---------------------|------------------|---------------|-----------------------|---------|
| | | CONCUR | PARTIALLY CONCUR | DO NOT CONCUR | UNDERWAY | PLANNED |
| 7. | We recommend the Division maintains adequate documentation on all constrained roads, including the date the road became constrained. In addition, the Division should develop and implement written procedures regarding constrained roads. At a minimum, this should address the following: | | | | | |
| A) | Requiring documentation justifying deviations from standard operating procedures. In addition, the Division should establish and apply consistent procedures for measuring the affected roadways, including starting points, for new development. This procedure should be approved by the Board; | ✓ | | | | ✓ |
| B) | Requiring adequate documentation to explain increases in road capacity; and, | ✓ | | | | ✓ |
| C) | Management's approval of the constraint declaration as well as any revision of trip capacity. | ✓ | | | | ✓ |

INTRODUCTION

**Background**

As required by Chapter 163, Florida Statutes, on December 10, 1991, the Board of County Commissioners (Board) approved Ordinance No. 91-27 which, among other things, established procedures for the implementation of concurrency management in Orange County. Subsequently, on May 14, 1996, the Board approved an amended Ordinance No. 96-15 that included the creation of a Long-term Transportation Concurrency Management System and a Pay-As-You-Go (PAYG) System Option. This Ordinance became effective on July 1, 1996.

The PAYG provision of the Ordinance is triggered only when there is insufficient capacity on a road to handle the impact of a proposed development and, as a result, the application for capacity encumbrance is denied. Thus, the invoking of the PAYG system allows applicants to proceed with their development if they make binding commitments to pay a fair share of the cost of improving the roads needed to serve the proposed developments. The Ordinance provides the following formula for the calculation of the project's fair share of the road improvement costs:

$$\frac{\text{Project's P.M. Peak Hr. Peak Directional Traffic}}{\text{LOS "C" Capacity of Existing Facility}} \times \text{Total Cost of Improvement}$$

The Division applied "LOS 'C' Capacity of Existing Facility" as the level of service "C" volume of the existing facility after improvements are completed.

Administration of the PAYG system (program) is handled by the Traffic Engineering Division (Division) of the Public Works Department. For fiscal year 2004-05, the Division had 62 authorized positions.

During the period September 1, 1999 to June 30, 2005 the County entered into approximately 66 PAYG agreements relating to nine PAYG roads. From these agreements, the

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County collected approximately \$4.2 million in PAYG fees as shown below:

| PAYG AGREEMENTS APPROVED BY THE BOARD | | | |
|---------------------------------------|-------------------------------|----------------|------------------------------------|
| FISCAL YEAR | NUMBER OF AGREEMENTS APPROVED | FEES COLLECTED | PERCENTAGE OF TOTAL FEES COLLECTED |
| 1996 | 0 | \$ 0 | 0% |
| 1997 | 0 | 0 | 0% |
| 1998 | 0 | 0 | 0% |
| 1999 | 1 | 71,198 | 2% |
| 2000 | 2 | 65,582 | 2% |
| 2001 | 7 | 223,285 | 5% |
| 2002 | 4 | 112,909 | 3% |
| 2003 | 5 | 160,857 | 4% |
| 2004 | 17 | 394,720 | 9% |
| 2005* | 30 | 3,134,950 | 75% |
| TOTAL | 66 | \$4,163,501 | 100% |

* Fiscal year 2005 to June 30, 2005

As will be noted, of the 66 agreements, 30 (45%) were entered into during the period October 1, 2004 to June 30, 2005.

Scope, Objectives, and Methodology

The scope consisted of a limited review of the PAYG formula, the estimated total cost of improvements for each PAYG road, the accuracy of the peak hour trips in the concurrency agreements, application of the formula in computing the per trip fees for the PAYG roads and the total fees charged to PAYG applicants. The review period was October 1, 2004 to June 30, 2005; however, we also reviewed a sample of agreements that occurred during the period September 1999 to September 30, 2004.

The primary objectives were as follows:

- A) To determine whether the Orange County Public Works Traffic Engineering Division (Division) was applying their interpretation of the Pay-As-You-Go (PAYG) formula {Orange County Code Sec. 30-622(c)(3)} to calculate PAYG fees on a consistent basis;

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- B) To determine whether the Division was accurately determining the number of trips to be used in the PAYG formula for each PAYG applicant;
- C) To determine if the Orange County Public Works Department (Department) was updating, on a timely basis, the best available total cost of improvement component of the PAYG formula {Sec. 30-622(c)(3)} and using these updated costs to calculate PAYG fees; and,
- D) To determine whether the fees charged for development on PAYG roads were accurately computed based on the above criteria.

Described below are the procedures used to achieve the objectives:

- A) To determine whether the Division was applying their interpretation of the PAYG formula to calculate PAYG fees on a consistent basis, we performed the following:
 - 1) Obtained a copy of the Division's PAYG cost table and reviewed the table for comprehensiveness and adequacy. Also, we validated the population of PAYG roads shown on the cost table; and,
 - 2) Verified the use of the PAYG formula and whether their interpretation of the "LOS 'C' Capacity of Existing Facility" (as noted above) was consistently applied in computing the cost per trip (CPT) for all PAYG roads. We also verified the accuracy of the Level of Service (LOS) factor used in the CPT computations for all the PAYG roads.
- B) To determine whether the Division was accurately determining the number of trips to be used in the PAYG formula, we selected a sample of segments

from the 46 road segments affected by PAYG agreements during the audit period as follows:

- First, we selected the 10 road segments, represented in the five most recent PAYG agreements.
- Next, from the remaining 36 segments of the population of segments, we selected a random sample of 10 segments, represented in seven PAYG agreements.
- As a result, 12 PAYG agreements that affected 20 different road segments were selected for our verification of the number of trips generated by the various developments.

We then performed the following for each development project covered by the agreements selected in the sample as follows:

- 1) Recreated the trip distribution and determined the number of trips assigned to each project using information in the project files, Institute of Transportation Engineers (ITE) Trip Generation book and ITE Trip Generation Handbook;
- 2) Recalculated the total fees based upon the audited number of trips and compared the results to the amount included in the PAYG agreements;
- 3) Determined whether the projects affected roads that were declared constrained (no capacity available with no alternate or corridor route available and no further development permitted);
- 4) Reviewed the Division's documentation and applicants' consultants reports for completeness and consistency in the methods used; and,

- 5) Reviewed the capacity encumbrance and denial letters for compliance with the 21 day response period required by the Ordinance.
- C) To determine if the Department was updating, on a timely basis, the total cost of improvement component of the PAYG formula for all PAYG roads and using these updated costs to calculate PAYG fees, we performed the following:
- 1) Reviewed the PAYG process as it relates to the compilation of total cost of improvement (TCI) and computation of the cost per trip (CPT);
 - 2) Examined the compilation of the TCI and whether the implicit cost components (Roadway Conceptional Analysis (RCA), design, right-of-way, mitigation, and construction) were based upon one mile, an applicable segment or the total length of the segment of the road being improved. Also, we examined timeliness and reasonableness of the TCI;
 - 3) In cases where the TCI were not considered current at the time the CPT was computed by the Division, we identified the best cost information available at the time and compiled a revised TCI and recomputed a new CPT. We then compared this new CPT with the CPT shown on the PAYG cost table; and,
 - 4) Identified all PAYG roads that were included in the PAYG program prior to November 2004 and reviewed the computation of the CPT for consistent application of the LOS factor, length of road segment used to determine TCI, and the make-up of the TCI.
- D) To determine whether the fees charged for development on PAYG roads were accurately

computed, we verified the amounts included in the agreements selected in the sample noted in (B) above. Also, a random sample of five agreements was selected and fees verified from the population of agreements executed during the period September 28, 1999 to September 30, 2004, based upon the number of trips and CPT computed in steps (A) through (C) above.

Our review did not consider whether the current application of the Code by County staff is legally based on the Ordinance wording, or whether the current program is in accordance with Florida Statutes.

Overall Evaluation

Based upon the work performed, we noted the following:

- A) The Division's overall application of the PAYG formula, as interpreted by County staff, was not consistent. Specifically, with respect to the various components of the formula, we note the following:
- The Division consistently applied generally accepted methodologies to calculate the Project's P.M. Peak Hr. Peak Directional Traffic (numerator).
 - The Division consistently applied the "LOS 'C' of the Existing Facility" factor (denominator) subsequent to March 2003. Documentation was insufficient to determine consistency in the three instances prior to March 2003.
 - The Division did not consistently apply the Total Cost of Improvement component (multiplier).
- B) There was insufficient documentation to determine if the Division was materially accurate in its calculation of the number of trips to be used in the PAYG formula for each PAYG applicant.

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- C) The Orange County Public Works Department (Department) was not consistently updating, on a timely basis, the best available Total Cost of Improvement component of the PAYG formula.
- D) We could not determine whether the total fees charged to applicants was accurate, as the best available cost data was not used in the computations and the accuracy of the number of trips generated by developments could not be validated. Mathematical errors were found in the calculations tested; however, the net effect of the errors was not material.

RECOMMENDATIONS FOR IMPROVEMENT



1. All Terms Should Be Defined in Instances Where Clarification is Needed

Applicants who want to develop property that impacts a road that has been deemed “over-capacity” are denied that ability by state law (FS163.3180 (2)(c)). However, one of the exceptions allowed by state law (FS163.3180 (11)(d) and (e)) is that, if the applicant makes a binding commitment to pay the fair share of the cost of improving the road needed to serve the proposed development (among other requirements), the development is allowed to proceed under the Pay-As-You-Go (PAYG) system. In May 1996, the County adopted Ordinance No. 96-15 that outlined the procedures for this process. Included in the Ordinance was the formula to be used to calculate the applicant’s fair-share of the improvement. This formula is as follows:

$$\frac{\text{Project's P.M. Peak Hr. Peak Directional Traffic}}{\text{LOS "C" Capacity of Existing Facility}} \times \text{Total Cost of Improvement}$$

During our review of the PAYG formula as applied by staff, we had the following concerns:

- A) The language used in describing the denominator of the concurrency formula provided by County Code Sec. 30-622(c)(3) appears unclear. The Code describes the denominator as, “LOS ‘C’ Capacity of the Existing Facility.” It is, therefore, not clear whether this level of service (LOS) should be applied to the road as it exists (likely to be level of service¹ “D” or “E”) before improvements or as it will exist after

¹ The FDOT has adopted statewide minimum acceptable LOS standards. LOS is represented by the letters “A” through “E”, with “A” generally representing the most favorable driving conditions and “E” representing the least favorable. “C” is generally accepted to be adequate.

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improvements are completed and it reaches level of service "C". There was also no definition of the term "Existing Facility" in the governing County Ordinance or Code.

Except for the first three PAYG fee calculations (during April 1999 to March 2003), we noted County staff applied the term LOS "C" Capacity of the Existing Facility to mean the level of service for the road after improvements are completed. This application was based upon their belief that a broken road does not function at a LOS "C" (acceptable) capacity and that the roads being improved are broken roads. However, the formula could logically be interpreted to mean the level of service of the road before it is improved.

To demonstrate the impact of these interpretations, if a road is being improved from four to six lanes, the denominator, would be 1,810² if the interpretation is "as the road exists (four lanes) before improvement." However, if the interpretation were "as the road will be after improvement (six lanes)," the denominator would be 2,720. The difference in the cost per trip would be approximately 33 percent less. This is shown by the following calculations:

(1 trip divided by 1,810) X \$7 million = \$3,867 per trip,
or,
(1 trip divided by 2,720) X \$7 million = \$2,574 per trip.

- B) Our review of the Division's application of the "Total Cost of Improvement" (TCI) component in its application of the PAYG formula for the nine PAYG roads during the period September 28, 1999 to June 30, 2005 revealed the following:

² LOS or, level of service, factor as shown in the Florida Department of Transportation's Generalized Peak Hour Directional Volumes for Florida's Urbanized Areas tables – year 2002.

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- As shown by a Division's memo to the County Attorney's Office, in calculating the Cost Per Trip³ (CPT) on April 26, 1999, for the first PAYG road (Colonial Drive), the Division used the cost applicable to the entire length (1.55 miles) of the segment of the road being improved for the TCI.
- In making similar calculations on December 5, 2000, for the next PAYG road (Hoffner Road – 1.56 miles), the calculation for TCI was only the total cost of one mile. The total cost per mile was not correctly calculated (as shown in Recommendation for Improvement No. 3), but the intent at this time appears to have been to use only one mile of road cost as total cost. An applicant's consultant (Consultant No. 1) made these calculations and, apparently, the Division did not detect the differences.
- Another consultant (No. 2) calculated the CPT for the next PAYG road (Dean Road) on March 11, 2003. This consultant used the total cost of the entire length of segment (1.1 miles) being improved as the total cost of improvement component in the PAYG formula.
- Consultant No. 1 then made the fourth calculation for Lake Underhill Road (3.5 miles) on December 30, 2003. As in the case of Hoffner Road, this consultant computed the CPT based upon the average cost per mile of improvements.
- Subsequently (beginning November 2, 2004), in six instances, Consultant No. 1 and/or the Division used the average cost per mile of improvement as the total cost of improvement

³ Trips are assigned to each new development to reflect the increased traffic that is generated by the development. The total number of trips for a project is obtained using the Institute of Transportation Engineers (ITE) Trip Generation book and is distributed to roads affected by the project.

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component of PAYG formula to compute the CPT rather than the entire segment to be improved.

According to Division personnel, in calculating the TCI during the revisions of the CPT made in November 2004, staff followed the methodology used by Consultant No. 1 and computed the TCI based upon an average cost per mile. The other CPT calculations were made by this consultant (Consultant No. 1) who continued to compute the TCI using an average cost per mile number instead of total cost for the entire segment of the road being improved. As a result, all CPT computations subsequent to March 11, 2003, have been based upon the average estimated cost of one mile instead of the total cost of the segment or an applicable segment of the road being improved.

Section 30-622(c)(3) of the Orange County Code provides the formula, with a "Total Cost of Improvement" component, for the calculation of the CPT for PAYG roads. Standard operating practices require a consistent application of the various components of the formula. However, neither the County Ordinance (96-15) nor the County Code provided a definition of "Total Cost of Improvement" that differs from how it was first applied by the Division (entire road length).

While it is understandable and possibly reasonable to utilize a cost other than the entire cost of the road, because some road projects may be much longer than other road projects, the Ordinance did not specify anything other than the "Total Cost of Improvement." All terms used in ordinances should be clear and defined, particularly if they are subject to interpretation. Without an understanding of the terms and consistent application, incorrect fees could be charged to applicants.

We Recommend County staff takes appropriate steps to ensure all terms are clear and adequately defined in

Ordinances. In some cases, it may be appropriate to return to the Board for guidance.

Management's Response:

The Traffic Engineering Division concurs with this recommendation and is in the process of updating the County's Concurrency Management System Procedures to comply with the new Growth Management Act. All terms used in the updated ordinance will be clearly defined.

2. The Process of Applying Level of Service Factors Should Be Improved

The LOS factors used to compute the CPT for the three PAYG roads (Colonial, Hoffner and Dean) during the period April 1999 to March 2003 could not be traced to the generalized capacity tables in FDOT's 1998 Level of Service Handbook (we were able to trace the LOS factors to the tables for all seven computations made subsequent to March 2003.) The Division stated that,

- The LOS factor for Colonial was not directly listed on the FDOT tables and may have been adjusted; however, there was no documentation to show how the factor of 2,240 was determined.
- According to the staff, the LOS factor of 1,850 used for Hoffner Road was incorrect. They added that this factor should have been either 2,590 or 1,750 based upon the characteristics of the road.
- The LOS factor of 1850 for Dean Road was also incorrect according to staff. This occurred because the consultant performing the calculations used the same factor that was used for Hoffner.

All LOS factors should be obtained from the generalized capacity tables, with any adjustments (which are allowed or needed under certain circumstances) adequately

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documented. Without compliance with this procedure, there is no assurance that the Division computed the correct CPT.

We Recommend the Division ensures the level of service factors to be used in the calculation of CPTs are obtained from the generalized capacity tables in FDOT's Level of Service Handbook. Any adjustments to these numbers should be justified and adequately documented.

Management's Response:

The Traffic Engineering Division concurs. The level of service factors to be used in the calculation of cost per trip are obtained from the FDOT Generalized Capacity tables or determined using approved capacity software. We concur that any and all adjustments to the tables be justified and documented.

3. The Process for Calculating the Total Cost of Improvement Should Be Standardized

As previously noted, the final fee to be charged an applicant for their fair share of an improvement is derived from a formula that, among other items, includes the total cost of the improvement. Relating to the calculation of total cost, we noted the following:

- A) Different assumptions were made in the use of lane mile cost from the impact fee study to develop TCI. The TCI determined on April 26, 1999 for Colonial Drive was based upon the lane mile cost of \$812,307.98 taken from an impact fee study. The improvements involved the addition of two lanes to an existing four lane segment for a distance of 1.55 miles. The calculations included adding one-third of the cost to reconstruct the existing four lanes for the entire length of the road segment.

In the case of Alafaya Road, where the TCI was also developed from the impact fee lane mile cost, the

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Division included the entire cost applicable to the existing lanes.

As noted above, in the first instance, costs were added for one-third of the cost to reconstruct the existing four lanes for the length of the road. In the second instance, the entire cost of the existing two lanes for one mile was included in the average estimated cost per mile. There was no written justification as to why two different methods were used.

B) The Division did not always use the best available estimate of total cost of improvement. Based upon our review, the TCI could have been updated to a more current number in eight of the nine PAYG roads. In this regard, we noted the following:

- The TCI was not updated for inflationary costs over periods extending for several years. For example, the CPT was computed on December 5, 2000, for Hoffner Road. However, when an update of the CPT for some PAYG roads was done in November 2004, the Division used the same TCI that was used in December 5, 2000 in the calculations.
- In one instance (Hoffner Road), the Division continued to use per mile construction costs from the Year 2000 FDOT Office of Policy Planning publications without any adjustments even though the updated annual publications were available.
- In another instance (Colonial Drive), the design costs in excess of \$8 million were not included in the TCI. In this instance, the right of way (ROW) and construction costs were provided by the state of Florida. However, the Division did not ensure that the design costs were included in the state's numbers. The inclusion of the design cost in the TCI would have

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increased the CPT from \$4,832 to \$5,058, or \$226.

- In one instance (Alafaya Trail), the lane mile cost from the April 2004 impact fee study was used to compute the TCI when more accurate design costs were available from the Design section of the PWD Engineering Division. Also, more reasonable construction costs could have been obtained from Year 2004 FDOT's Office of Policy Planning publications.
- In one instance (Lake Underhill Road), the TCI was taken from the County's proposed budget. However, the amount (\$26,543,900) was rounded down to \$26 million.
- In one instance (Alafaya Trail), the RCA and design costs were double counted in the TCI. The net effect of this error, even after adjustments reflecting the use of more reasonable estimated costs from FDOT publications, was an overstatement of the CPT by approximately \$72, from the \$4,066 CPT used.
- In two instances (Hoffner Road & Winter Garden-Vineland Road), total costs amounts were added to average costs in computing the TCI (not in accordance with mathematical principles). The net effect of the lack of adjustment for inflation, the use of the outdated FDOT's costs and the mathematical error was an overstatement of approximately \$435 of the \$4,521 CPT for Hoffner Road. The CPT of \$3,790 for Winter Garden-Vineland was overstated by approximately \$90. In addition, since the CPT for Winter Garden-Vineland Road was used for Reams and Fiquette Roads, it follows that the CPTs for these roads could have been overstated.

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- In one instance (Dean Road), an average was taken of an already average cost per mile. As a result, the CPT of \$5,017 was understated by approximately \$500.

As noted above, the TCI (and subsequent CPT) appear to be under and overstated in various instances.

- C) Transmittal of the estimated cost per mile (\$7 million) for the Winter Garden Vineland Road was communicated to the Division verbally by the Transportation Planning Division during November 2004. This was later documented in an e-mail dated July 19, 2005, after our audit had commenced. We also noted that there was no documentation to show the entire basis of the \$7 million. We were informed that this was an estimated number derived from experience. Without adequate documentation, we could not verify how the number was developed.
- D) The TCI was provided by the design section of the Engineering Division for one road, by the Transportation Planning Division for most of the roads, and determined by the Division itself for some roads. In several instances, the TCI was provided to the Division verbally. Without documentation, verification of the TCI was not possible.
- E) The TCI for Winter Garden-Vineland Road was applied to Reams and Fiquette Roads and the TCI for Rouse Road was applied to Dean Road. This occurred as a result of the following verbal policy that was documented after the fact in a July 19, 2005 e-mail:

...If we have a pay as you go project where we do not have project cost estimates, but in close proximity to one where estimates have been developed, project cost estimates may be used for the pay as you go project. This process should be used when the two

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projects are within a mile of each other, and/or where there are comparable land uses, drainage characteristics and where the improvements are compatible with each other.

There was no documentation to show that evaluations were performed for Dean, Reams and Fiquette Roads and that these roads satisfied the criteria noted in the policy. As a result, we could not verify whether these roads met the criteria noted in the policy.

Best practices require that the best-updated TCI be used when calculating the CPT. No written procedures exist for the calculation of total cost of improvement of a road. Without written policies and procedures to detail how costs will be determined, what items will be included in costs, and who is responsible for determining costs, as well as a review process to ensure correct numbers are used, errors and inconsistencies are more likely to occur.

As a result of inconsistent procedures, we found numerous instances where different components of total cost were omitted or not correctly calculated.

We Recommend the Division establishes written policies and procedures governing the computation of costs per trip. Such policy and procedures should, at a minimum, include the following areas:

- A) The duties and responsibilities of each area involved in the calculation of TCI, including assigning responsibility to a particular division or position within a division other than the Traffic Engineering Division for the collection, documentation, and determination of TCIs; (Such TCIs should then be provided to the Traffic Engineering Division in writing).
- B) Periodic updates of TCI as new cost data becomes available, not later than annually;

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- C) The specific cost data that should be included in each computation;
- D) The methods that should be utilized to obtain proper cost data; and,
- E) Periodic reviews by management to ensure compliance.

Management's Response:

The Traffic Engineering Division concurs with this recommendation. The process of calculating and validating construction cost has already been implemented. Roadway construction cost is calculated, signed and sealed by a licensed engineer in our Public Works Engineering Division. The data is periodically updated, no less than once per year. The methodology used was approved by the County Engineer and upheld by the Alternative Impact Fee Committee and the Development Review Committee.

4. Information Included in the PAYG Cost Table Should Be Expanded

The PAYG cost table represents a summary of PAYG roads and included information such as the affected segments, the length of the segments and the CPT. However, the table in use did not show all the PAYG roads, when the roads were designated as PAYG, nor when the individual CPT's were updated. Without this information, staff may overlook the need to update the CPT or may use an outdated cost. Best practices require that such cost table reflect up-to-date information. There were no written policy and procedures that addressed the preparation and use of a PAYG cost table.

We Recommend the Division establishes written policies and procedures to provide guidelines for the completeness and use of the PAYG cost table.



Management’s Response:

The Traffic Engineering Division concurs with this recommendation. The department will maintain a comprehensive summary of all Pay-As-You-Go roads including a history of when the road met the Pay-As-You-Go status.

5. Fees Applicable at the Time PAYG Applications Are Presented for Approval Should Be Used

The Division applies PAYG fees based upon the CPT applicable at the date of receipt of the application for capacity (trip) encumbrance. This is an internal policy set by Division staff and is not addressed in the Ordinance or Code. However, according to County staff, there is no PAYG agreement until the Board approves the agreement. In several instances, the Division applied outdated fees to certain agreements because the applications were filed before the costs were revised. In all these instances, according to the Division, the delay in approval by the Board was not the fault of County staff, but the applicant. For example, we noted that agreements relating to Colonial Drive were approved five to nine months subsequent to the date of the applications, as shown below.

| Number | Date of Application | Date approved by Board | No. of Months | No. of Trips | Old CPT | New CPT ⁴ | Potential Amount Lost |
|---------------------------|---------------------|------------------------|---------------|--------------|---------|----------------------|-----------------------|
| 04-131 | 07/29/04 | 01/04/05 | 5 | 7 | \$1,875 | \$4,832 | \$20,699 |
| 04-091 | 06/03/04 | 01/11/05 | 7 | 18 | 1,875 | 4,832 | 53,226 |
| 04-122 | 07/15/04 | 02/07/05 | 6 | 29 | 1,875 | 4,832 | 85,753 |
| 04-165 | 09/30/05 | 06/28/05 | 9 | 60 | 1,875 | 4,832 | 177,420 |
| Total potential fees lost | | | | | | | \$337,098 |

As such, there was opportunity for the Division to apply current fees to the applications. Instead, the Division instituted a policy to apply the 1999 CPT to all pending

⁴ New rate computed by the Division on December 3, 2004 and does not reflect adjustments proposed by audit.

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applications that were dated prior to the date the CPT was revised (December 3, 2004). As a result of this policy, the County may have lost fees totaling approximately \$337,098 for four applications affecting Colonial Drive.

Since there is no agreement until final Board approval, the CPT applicable at the time an application for capacity encumbrance is received could be updated until the PAYG agreement is presented for approval. To facilitate this, appropriate language could be included in the encumbrance letter and the PAYG agreement.

We Recommend the County institutes a policy and amends the capacity encumbrance letters and PAYG agreements to include language that allows the collection of a fee that is applicable at the time a PAYG agreement is presented for approval.

Management's Response:

The Traffic Engineering Division concurs with this recommendation. The Pay-As-You-Go fee applicable at the time of BCC approval will be addressed in the revised Policy and Procedures. We do concur that documentation can be added to the encumbrance letter on PAYG agreement as defined by the BCC.

6. The Division Should Develop and Implement Written Procedures Regarding the Calculation of the Number of Trips on a PAYG Road

The Institute of Transportation Engineers Trip Generation Book (ITE Book) is utilized by the Division to determine the total number of trips generated by a development project. It is accompanied by an ITE Handbook containing recommended methodology for the use of ITE data. Chapter 3, Section 4, page 10 of the ITE Handbook provides guidelines for the use of a weighted average rate or a formula based upon regression analysis to estimate the number of trips that is generated by various types of development projects. Based upon various criteria, including

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a flow chart diagram, the handbook recommends the use of either the weighted average rate or the regression formula for each type of development. During our review of the number of trips assigned to an affected road, we noted the following:

- A) A review of 12 development projects revealed that the regression formula was used for two projects and the weighted average rate method was used for 10 projects. Based on ITE guidelines for two of these ten projects, the use of the weighted average was justified because the projects were for small general office buildings, for which the regression formula could have produced an unreasonably high number of trips. In the remaining eight instances, our review revealed that the ITE guidelines recommended use of the regression formula instead of the weighted average. Had the regression formula been used, four projects would have resulted in a higher number of trips generated, three in less trips and, in one instance, the number of trips would have been the same.

For one of the two projects (classified as Residential Condominiums/ Townhouses) in which the regression formula was used by the Division, we were informed that the Consultant defended their use of the regression formula based on the guidelines provided by ITE. In this instance, the weighted average would have produced a higher number of trips.

There was no documentation to support the use of a method not generally applied to this type of project. According to the Division, it is their general practice to use the weighted average method to calculate the number of trips for most types of projects because they want to be consistent with the trip calculation method (weighted average) used in other growth management areas (Developments of Regional Impact [DRIs], Zoning changes, Impact Fees, etc.). However, this justification for using the weighted average instead of the ITE Handbook guidelines was

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also not documented. These guidelines include various criteria dependent upon size of project and amount of data collected for analysis.

The Division did not have written policies and procedures to provide guidelines as to which trip calculation method should be used for what projects and under what circumstances. Written policies and procedures promote consistency, accuracy and accountability. Also, any deviations from standard practices should be justified and adequately documented.

- B) There was inadequate documentation of some of the analyses performed by the Division to determine the number of trips to be assigned to a development project on a PAYG road. In all seven instances where an analysis was performed, the files contained a map showing the area around the development with calculated numbers of roadway trips noted on the various roadway segments. In order to determine these trips, a percentage of the expected amount of traffic to be generated on each of the roadways impacted by the development must be assigned and then the total number of trips calculated. The Division did not clearly document these percentage allocations, the applicable land use codes, nor the methodology of determining the total number of trips. In addition, the printed maps, upon which the analyses were shown, were generally on a small scale, making it difficult to read. Also, hand written notes or figures on the maps were not readable in some instances. As a result it was difficult to re-create or validate trip distributions developed by the Division.
- C) In 15 instances where projects affected multiple segments on the same road, we found inconsistent application of trips as follows:
- The trips on each segment were summed in seven instances;

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- In one instance a weighted average of the trips for one segment was added to the sum of the trips for other segments of the same road;
- Only the segment with the most trips was used in five cases; and,
- A weighted average was used for all the trips on the different segments of the roadway in two instances.

Best practices require consistency in methodology. However, the Division allows different methods depending upon arguments put forth by applicants. As a result, there is no assurance that the number of trips being assigned to affected development projects is consistent.

- D) A review of consultants' reports revealed inconsistencies in their method of calculation. There was also little consistency in presentation: some consultants included maps showing percentage distributions of trips and trips assigned to roads, others did not provide as much detail; some included tables summarizing the distribution of trips on all affected roadways, others only focused on the PAYG roadways; some included several pages regarding their methodology while others included only a brief memo. In addition, we noted that, of the seven reports in the PAYG files reviewed, two were not dated and four were un-signed. Undated and unsigned reports do not promote confidence and reliability. Also, a signed report indicates that the consultant accepts responsibility for his work. Good reporting controls require consistency in preparation as well as evidence of timeliness and ownership. The County did not have any written guidelines relating to the preparation of these reports.
- E) There were instances when errors occurred in the calculation of the number of trips generated by new

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development projects and were not detected. Examples are as follows:

- For project No. 04-131, the Division used an incorrect land use code of 210 (single family residences) instead of 230 (condominiums) as the basis of its trip generation computations. The PAYG agreement was for 37 condominium units. As a result, the applicant was overcharged \$33,761 for 11 additional trips.
- For project No. 04-122, calculation errors resulted in the overstatement of the number of trips by four or \$7,500 in the PAYG agreement;
- For project No. 04-213, calculation results were rounded down instead of up. Thus, 14.75 became 14 instead of 15;
- For project No. 04-091, an incorrect weighted average was taken from the ITE Handbook. The work notes were corrected, but the original incorrect results were used; and,
- For project No. 05-061, the calculations resulted in 26 total trips; however, 24 was typed in the Encumbrance letter.

County Code, Section 30-580 states: "In no event shall an applicant encumber a greater amount of capacity than that necessary to serve the maximum amount of development permitted on the site." A review process is needed to ensure this, as well as accuracy in the calculations. However, no review process was in place.

We Recommend the Division develops and implements written procedures regarding its analysis and calculation of the number of trips on a PAYG road. These procedures should, at a minimum, address the following:

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- A) The various methodologies that may be used to calculate total trips generated by a project, which method to use for what projects (and under what circumstances), and a documented justification for any deviation resulting from engineering judgment;
- B) Analysis and distribution of trips on all roads including roads with multiple segments;
- C) Written guidelines for consultants to follow when preparing an analysis of trips generated by development projects and requirements for signing, dating and sealing of the consultant reports; and,
- D) A review process for the calculation of the number of trips on affected roads.

Management's Response:

The Traffic Engineering Division concurs with this recommendation. Written procedures will be developed to document appropriate traffic analysis procedures including trip generation, trip distribution and assignment of traffic for the County's Concurrency Management System.

7. Procedures Related to Constrained Roads Need Improvement

Under the Division's standard operating practices, trips (by vehicular traffic) that are generated by a new development are assigned and distributed to roads impacted by the development generally within a radius of one or two miles (impact area) or as determined by the Division using their engineering judgment. In addition, no development is permitted in an impact area where a road affected has no remaining trip capacity and cannot be improved and there are no alternate or corridor roads to relieve traffic. Such roads are labeled "constrained" and the impacted area labeled "dead zones." Relating to constrained roads and dead zones, we noted the following:

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- A) From our review of a sample of 12 development projects, two projects where consultant's reports (in the project file), dated after Chase Road became constrained, showed that the projects would each generate trips on Chase Road. The reports utilized the Division's standard operating procedure of using a radius from the center of the development. This radius included Chase Road within the affected area; and therefore, generated trips on Chase Road. In addition, documented analyses (Attachment A) by the Division also confirmed that Chase Road was within the developments' impact area and trips would be generated by the projects on Chase Road. Based on this data, the proposed developments should not have been approved. However, updated versions of the consultant's reports (one dated approximately a month after the initial report) were subsequently provided to the auditors by the Division. These updated reports showed the developments' impact area abutting, but not including, Chase Road (Attachment B) and, as a result, no trips were assigned to Chase Road.

When discussing this with the Division, we were informed that the Division relied on Appendix A of the 1991 Ordinance that required, "The size of the study area for traffic analysis shall be...measured along the roadway rights-of-way." As such, the consultant challenged the Division's method of drawing a radius from the center of the development "as the crow flies." The new radius as measured along the rights-of-way abutted Chase Road and therefore the development was allowed to proceed.

We also noted that there were additional trips assigned on Winter Garden-Vineland Road that were beyond Chase Road.

There was no documentation in the project files to justify the use of the consultants' updated reports in approving the projects or the departure from standard operating procedures in assigning trips to a road

outside of the development's impact area. As a result, the project file did not document whether these two developments should have been approved.

- B) Chase Road's trip capacity was revised and increased at the point when additional capacity was needed to support further development, but prior to the road being declared constrained. Unwritten policy within the Division allows applicants a one-time opportunity to perform their own analysis to verify the decision of the County after a road is declared constrained. In such event, an increase in trip capacity could be justified based upon the applicant's report. The Division reported that the subsequent increase of capacity for Chase Road was based upon studies performed by a group of five applicants' consultants and discussions held with them. However, there were no meeting minutes, or any other documentation to show details of the consultants' analyses. The only document available was a one-page summary of a consultant's analysis of the capacity at various service levels. Without adequate documentation we were unable to determine whether this revision of capacity was justified and approved by management.

Good controls require policies and procedures, approvals at the appropriate levels, and adequate documentation for all decisions.

We Recommend the Division maintains adequate documentation on all constrained roads, including the date the road became constrained. In addition, the Division should develop and implement written procedures regarding constrained roads. At a minimum, this should address the following:

- A) Requiring documentation justifying deviations from standard operating procedures. In addition, the Division should establish and apply consistent procedures for measuring the affected roadways,

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including starting points, for new development. This procedure should be approved by the Board.

- B) Requiring adequate documentation to explain increases in road capacity; and,
- C) Management's approval of the constraint declaration as well as any revision of trip capacity.

Management's Response:

The Traffic Engineering Division concurs with this recommendation. Written procedures will be included in the new ordinance to document Concurrency Impacts on constrained facilities.

ATTACHMENTS

Attachment B – Subsequently Applied Impact Area by Consultant

