

## VIII Roads

Palm Beach County originally adopted road impact fees in 1979. These fees were modified (raised) in 1985, 1989, 1994, 1998, 2001, 2003, and again in 2005. The road fees are again being reviewed. This memorandum sets out an analysis of the parameters of road impact and costs and the resulting fees. The data presented in Table 24 are the cost parameters used in calculating impact on the road system, the cost of new roads, and the net impact of growth on the road capital finance system. The sources are listed below. The formula for calculation is set out below.

**TABLE 24  
ROAD PARAMETERS  
PALM BEACH COUNTY  
2009**

PER LANE MILE ROAD COSTS:					
	CONSTRUCTION	R.O.W.	TOTAL	Annual %	Cost Index
1989	\$825,000	\$270,618	\$1,095,618		
1994	\$1,101,287	\$279,890	\$1,381,177	5.95%	Not Reported
1996	\$1,144,759	\$299,756	\$1,444,515	1.95%	Not Reported
1998	\$1,398,830	\$390,314	\$1,789,144	10.54%	Not Reported
2000	\$1,461,194	\$386,287	\$1,847,481	2.20%	7.82%
2003	\$1,671,588	\$138,453	\$1,810,041	4.59%	-0.10%
2005	\$1,868,000	\$154,721	\$2,022,721	5.71%	10.50%
2007	\$3,610,000	\$299,005	\$3,909,005	39.02%	8.26%
2009	\$3,262,000	\$219,000	\$3,481,000	-4.94%	3.32%
Annual Growth - 2000-2009				9.33%	4.83%

SOURCE: Palm Beach County Engineering Department, August 2009, and Bureau of Labor Statistics, Highway & Street Construction Cost Index.

In Palm Beach County the primary means of financing road construction are motor fuel taxes to the federal, state, and county governments. Secondary means include requiring developers to construct and dedicate road improvements and impact fees. In order to establish a fair and proportionate set of road impact fees, it is necessary to give consideration to the amounts that new development pays toward the road improvements that will be needed. These payments will be in the form of motor fuel taxes that are devoted to capital improvements. In the past Palm Beach County had devoted a portion of ad valorem taxes to road projects -- \$.40 per 1,000 of taxable value. This policy is no longer in effect and thus there is no longer any need for a property tax credit for future payments toward roads. A credit for past payments of property taxes for roads is not included due to the discontinuation of the use of property taxes for roads.

TABLE 25  
**AVAILABLE REVENUES  
 PALM BEACH COUNTY**

<b>MOTOR FUEL TAXES</b>			
	<b>\$ PER GALLON</b>	<b>% CAPITAL</b>	<b>EFFECTIVE RATE</b>
Federal	\$0.201	51.3%	\$0.103
State	\$0.211	43.4%	\$0.091
County			
5th & 6th	\$0.020	20.0%	\$0.004
7th	\$0.010	0.0%	\$0.000
8th	\$0.010	0.0%	\$0.000
9th	\$0.010	0.0%	\$0.000
Optional	\$0.110	75.0%	\$0.083
Gas Tax Equivalent of Road Debt	\$0.010	100.0%	\$0.010
<b>TOTAL</b>	<b>\$0.582</b>		<b>\$0.291</b>
<b>OTHER PARAMETERS:</b>			
MILES PER GALLON			17.10
LANE CAPACITY (Vehicles Per Day)			8,013
CAPITALIZATION PERIOD (Years)			25
DISCOUNT RATE			4.21%
PRESENT VALUE FACTOR			15.28

SOURCES: Palm Beach County Engineering Department, August 2009.

Palm Beach County Five-Year Road Program, 2007-2012.

Florida Department of Transportation, "Florida's Transportation Tax Sources," January 1994.

Statistical Abstract of the US 2009, Tables 1051, and 1062.

NOTES: (1) The motor fuel tax rates shown are weighted averages of gasoline and diesel rates. (2) Vehicular miles per gallon is for all vehicles, including trucks.

Generally the data shown in Table 24 are those presently used by the Palm Beach County Office of the County Engineer, although updated. One exception is the simplified listing of non-residential land uses. A study of "pass-by" trips was presented in the 1987, 1992, 1997, and 2001 *ITE, Trip Generation Manual*. This study shows net road impact as a function of the size of the commercial destination. Not all trips to a particular building or development are new or impact trips. Rather, many new developments, especially retail developments, capture existing or "passer-by" trips. This factor is represented by the following formula:

**ITE "PASS BY" FORMULA**

$$\text{Pass-By Trip \%} = .9449 - [ .1161 * ( X ) ]$$

X - 1,000 Square Feet Gross Leasable Area

**PASS-BY TRIP EXAMPLES**

<b>BUILDING SIZE</b>	<b>PASS-BY PERCENT</b>	<b>NEW TRIPS PERCENT</b>
<= 10,000 FT <sup>2</sup>	71.1%	28.92%
50,000 FT <sup>2</sup>	49.1%	50.95%
75,000 FT <sup>2</sup>	41.0%	59.00%
100,000 FT <sup>2</sup>	32.9%	67.05%
200,000 FT <sup>2</sup>	28.2%	71.76%
300,000 FT <sup>2</sup>	24.9%	75.10%
400,000 FT <sup>2</sup>	22.3%	77.69%
500,000 FT <sup>2</sup>	20.2%	79.81%
600,000 FT <sup>2</sup>	16.8%	83.15%
800,000 FT <sup>2</sup>	14.3%	85.74%
1,000,000 FT <sup>2</sup>	12.1%	87.86%
1,200,000 FT <sup>2</sup>	71.1%	28.92%

SOURCE: Institute of Transportation Engineers, *TRIP GENERATION*, 6th Edition, 2001, Chapter 5.

The formula used and the data shown above are different from pervious impact fee calculations. The data used for the pass-by calculations are only recent Florida commercial developments. The result is a higher pass-by factor than in previous versions. Data from the recently released National Household Transportation Survey (USDOT) were also considered in this update.

TABLE 26

**ROAD NEEDS BY LAND USE TYPE  
PALM BEACH COUNTY**

LAND USE TYPE (UNIT)	TRIP RATE	AVG. LENGTH	% NEW	NEW ROADS (Lane Miles)
<b>RESIDENTIAL:</b>				
Single Family Detached	10.00	6.0	100.0%	0.00374
Attached Housing	7.00	6.0	100.0%	0.00262
Congregate Living	2.15	6.0	100.0%	0.00080
Mobile Home	5.00	6.0	100.0%	0.00187
Accessory Apartment	4.00	6.0	100.0%	0.00150
<b>NON-RESIDENTIAL:</b>				
Drive-in Bank Per 1,000 FT <sup>2</sup>	265.21	2.0	37.0%	0.01225
Mini-Warehouse Per 1,000 FT <sup>2</sup>	2.50	2.0	90.0%	0.00028
Hotel Per Room	8.92	2.0	90.0%	0.00100
Movie Theater Per Seat	1.76	2.0	95.0%	0.00021
Racquet Club Per Court	40.50	2.0	95.0%	0.00480
Place of Worship per 1,000 FT <sup>2</sup>	9.11	2.0	95.0%	0.00108
Day Care Center Per 1,000 FT <sup>2</sup>	79.26	2.0	50.0%	0.00495
Quality Restaurant Per 1,000 FT <sup>2</sup>	89.95	2.0	75.0%	0.00842
High Turnover Sit-Down Rest. Per 1,000 Ft	130.34	2.0	90.0%	0.01464
New Car Sales Per 1,000 FT <sup>2</sup>	37.50	2.0	85.0%	0.00398
<b>OFFICE PER 1,000 FT<sup>2</sup> :</b>				
<= 10,000 FT <sup>2</sup>	22.60	2.0	90.0%	0.00254
50,000 FT <sup>2</sup>	15.59	2.0	90.0%	0.00175
100,000 FT <sup>2</sup>	13.27	2.0	90.0%	0.00149
150,000 FT <sup>2</sup>	12.08	2.0	90.0%	0.00136
200,000 FT <sup>2</sup>	11.30	2.0	90.0%	0.00127
400,000 FT <sup>2</sup>	9.62	2.0	90.0%	0.00108
500,000 FT <sup>2</sup>	9.14	2.0	90.0%	0.00103
600,000 FT <sup>2</sup>	8.76	2.0	90.0%	0.00098
700,000 FT <sup>2</sup>	8.45	2.0	90.0%	0.00095
800,000 FT <sup>2</sup>	8.19	2.0	90.0%	0.00092
<b>MEDICAL BUILDINGS:</b>				
Medical Offices Per 1,000 FT <sup>2</sup>	36.13	2.0	90.0%	0.00406
Hospitals Per 1,000 FT <sup>2</sup>	16.78	2.0	90.0%	0.00188
Nursing Home Per 1,000 FT <sup>2</sup>	3.72	2.0	90.0%	0.00042
<b>INDUSTRIAL BUILDINGS:</b>				
Gen. Industrial Per 1,000 FT <sup>2</sup>	6.97	2.0	90.0%	0.00078
Warehousing Per 1,000 FT <sup>2</sup>	4.96	2.0	90.0%	0.00056
<b>GENERAL COMMERCIAL RETAIL PER 1,000 FT<sup>2</sup>:</b>				
<= 10,000 FT <sup>2</sup>	155.09	2.0	28.9%	0.00560
50,000 FT <sup>2</sup>	87.31	2.0	50.9%	0.00555
100,000 FT <sup>2</sup>	68.17	2.0	59.0%	0.00502

LAND USE TYPE (UNIT)	TRIP RATE	AVG. LENGTH	% NEW	NEW ROADS (Lane Miles)
200,000 FT <sup>2</sup>	53.22	2.0	67.1%	0.00445
300,000 FT <sup>2</sup>	46.05	2.0	71.8%	0.00412
400,000 FT <sup>2</sup>	41.56	2.0	75.1%	0.00390
500,000 FT <sup>2</sup>	38.37	2.0	77.7%	0.00372
600,000 FT <sup>2</sup>	35.96	2.0	79.8%	0.00358
800,000 FT <sup>2</sup>	32.45	2.0	83.2%	0.00337
1,000,000 FT <sup>2</sup>	29.96	2.0	85.7%	0.00321
1,200,000 FT <sup>2</sup>	28.07	2.0	87.9%	0.00308
Pharmacy With Drive Thru	92.70	1.0	50.0%	0.00289
Fast Food Restaurant	496.12	1.0	40.0%	0.01238
Gas Station Per Fueling Stn.	168.56	1.0	30.0%	0.00316
Convenience Retail	737.99	1.0	30.0%	0.01381
Automotive Repair Shop	24.87	2.0	50.0%	0.00155
Car Wash per Bay	166.00	2.0	50.0%	0.01036
Carpet Store	5.95	2.0	59.0%	0.00044
Cemetery per Acre	4.73	2.0	50.0%	0.00030
Funeral Home	12.60	2.0	50.0%	0.00079
Furniture Store	5.06	2.0	50.9%	0.00032
General Recreation	17.14	2.0	50.0%	0.00107
Oil and Lube Shop per Bay	40.00	2.0	50.0%	0.00250
Veterinary Clinic	32.80	2.0	50.0%	0.00205

SOURCE: Palm Beach County Engineering Department and Institute of Transportation Engineers, Trip Generation, 7th Edition, 2003, and 8<sup>th</sup> Edition, 2009.

NOTES: (1) The office and commercial retail rates shown are only examples. The actual trip rates for these land uses will be determined by the following formulae:

A. Office;

$$\text{Total Daily Trips} = \ln(T) = 0.768\ln(X) + 3.654$$

T = Total Daily Trips

X = Area in 1,000 sq. ft.

ln = Natural Logarithm

B. Commercial Retail;

$$\text{Total Daily Trips} = \ln(T) = 0.643 \ln(X) + 5.866$$

T = Total Daily Trips

X = Area in 1,000 sq. ft.

ln = Natural Logarithm

(2) The mobile homes parameters utilized are for mobile homes located within mobile home parks. Any other mobile home would be treated as single family detached.

(3) The residential trip generation rates are taken from Palm Beach County specific studies rather than from the ITE source.

The formula for calculating the road impact fees is:

$$\text{ATTRIBUTABLE TRAVEL} = [(\text{TRIP RATE} \times \text{TRIP LENGTH})/2] \times \% \text{NEW TRIPS}$$
$$\text{NEW LANE MILES} = \text{ATTRIBUTABLE TRAVEL} / \text{LANE CAPACITY}$$
$$\text{CONSTRUCTION COST} = \text{NEW LANE MILES} \times \\ \text{CONSTRUCTION COST PER LANE MILE}$$
$$\text{RIGHT OF WAY COST} = \text{NEW LANE MILES} \times \\ \text{RIGHT OF WAY COST PER LANE MILE}$$
$$\text{TOTAL COST} = \text{CONSTRUCTION COST} + \text{RIGHT OF WAY COST}$$
$$\text{PAST PAYMENT CREDIT} = 0$$
$$\text{MOTOR FUEL CREDIT} = \{[(\text{ATTRIBUTABLE TRAVEL} \times 365) / \text{MPG}] \times \\ \text{TAX}\} \times \text{PV Factor}$$
$$\text{NET COST} = \text{TOTAL COST} - \text{PAST CREDIT} - \text{MOTOR FUEL CREDIT}$$

PV = Present Value Factor.

The land uses employed in this presentation of road impact are rather general. The primary reason for the use of general classifications is that most non-residential structures can have a wide variety of tenants within their general zoning classifications. This formulation bases impact on the use classification rather than the particular mix of tenants. This would relieve the need for reassessment of impact and possibly of impact fees when tenants change. It also will mean that the particular mix of tenants would not be a basis for road impact or traffic impact assessment.

TABLE 27

**NET ROAD COST BY LAND USE TYPE  
PALM BEACH COUNTY**

LAND USE TYPE (UNIT)	ANNUAL GAS TAXES	CREDIT FOR GAS TAXES	CONST. COST	R.O.W. *	NET COST
<b>RESIDENTIAL:</b>					
Single Family Detached	186.34	\$2,847	12,199.88	\$0.00	\$9,353.00
Attached Housing	130.44	\$1,993	8,546.44	\$0.00	\$6,553.00
Congregate Living	40.06	\$612	2,609.60	\$0.00	\$1,998.00
Mobile Home	93.17	\$1,424	6,099.94	\$0.00	\$4,676.00
Accessory Apartment	74.54	\$1,139	4,893.00	\$0.00	\$3,754.00
<b>NON-RESIDENTIAL:</b>					
Drive-in Bank Per 1,000 FT <sup>2</sup>	609.51	\$9,314	39,959.50	\$0.00	\$30,646.00
Mini-Warehouse Per 1,000 FT <sup>2</sup>	13.98	\$214	913.36	\$0.00	\$699.00
Hotel Per Room	49.87	\$762	3,262.00	\$0.00	\$2,500.00
Movie Theater Per Seat	10.39	\$159	685.02	\$0.00	\$526.00
Racquet Club Per Court	238.98	\$3,652	15,657.60	\$0.00	\$12,006.00
Place of Worship per 1,000 FT <sup>2</sup>	53.76	\$822	3,522.96	\$0.00	\$2,701.00
Day Care Center Per 1,000 FT <sup>2</sup>	246.16	\$3,762	16,146.90	\$0.00	\$12,385.00
Quality Restaurant Per 1,000 FT <sup>2</sup>	419.04	\$6,403	27,466.04	\$0.00	\$21,063.00
High Turnover Sit-Down Rest. Per 1,000 Ft	728.63	\$11,134	47,755.68	\$0.00	\$36,622.00
New Car Sales Per 1,000 FT <sup>2</sup>	197.99	\$3,025	12,982.76	\$0.00	\$9,958.00
<b>OFFICE PER 1,000 FT<sup>2</sup>:</b>					
<= 10,000 FT <sup>2</sup>	126.34	\$1,931	8,285.48	\$0.00	\$6,354.00
50,000 FT <sup>2</sup>	87.15	\$1,332	5,708.50	\$0.00	\$4,377.00
100,000 FT <sup>2</sup>	74.18	\$1,134	4,860.38	\$0.00	\$3,726.00
150,000 FT <sup>2</sup>	67.53	\$1,032	4,436.32	\$0.00	\$3,404.00
200,000 FT <sup>2</sup>	63.17	\$965	4,142.74	\$0.00	\$3,178.00
400,000 FT <sup>2</sup>	53.78	\$822	3,522.96	\$0.00	\$2,701.00
500,000 FT <sup>2</sup>	51.10	\$781	3,359.86	\$0.00	\$2,579.00
600,000 FT <sup>2</sup>	48.97	\$748	3,196.76	\$0.00	\$2,449.00
700,000 FT <sup>2</sup>	47.24	\$722	3,098.90	\$0.00	\$2,377.00
800,000 FT <sup>2</sup>	45.78	\$700	3,001.04	\$0.00	\$2,301.00
<b>MEDICAL BUILDINGS:</b>					
Medical Offices Per 1,000 FT <sup>2</sup>	201.98	\$3,086	13,243.72	\$0.00	\$10,158.00
Hospitals Per 1,000 FT <sup>2</sup>	93.80	\$1,433	6,132.56	\$0.00	\$4,700.00
Nursing Home Per 1,000 FT <sup>2</sup>	20.80	\$318	1,370.04	\$0.00	\$1,052.00
<b>INDUSTRIAL BUILDINGS:</b>					
Gen. Industrial Per 1,000 FT <sup>2</sup>	38.96	\$595	2,544.36	\$0.00	\$1,949.00
Warehousing Per 1,000 FT <sup>2</sup>	27.73	\$424	1,826.72	\$0.00	\$1,403.00
<b>GENERAL COMMERCIAL RETAIL PER 1,000 FT<sup>2</sup>:</b>					
<= 10,000 FT <sup>2</sup>	278.55	\$4,257	18,267.20	\$0.00	\$14,010.00
50,000 FT <sup>2</sup>	276.31	\$4,222	18,104.10	\$0.00	\$13,882.00

LAND USE TYPE (UNIT)	ANNUAL GAS TAXES	CREDIT FOR GAS TAXES	CONST. COST	R.O.W. *	NET COST
100,000 FT <sup>2</sup>	249.82	\$3,817	16,375.24	\$0.00	\$12,558.00
200,000 FT <sup>2</sup>	221.65	\$3,387	14,515.90	\$0.00	\$11,129.00
300,000 FT <sup>2</sup>	205.26	\$3,137	13,439.44	\$0.00	\$10,302.00
400,000 FT <sup>2</sup>	193.87	\$2,963	12,721.80	\$0.00	\$9,759.00
500,000 FT <sup>2</sup>	185.17	\$2,830	12,134.64	\$0.00	\$9,305.00
600,000 FT <sup>2</sup>	178.27	\$2,724	11,677.96	\$0.00	\$8,954.00
800,000 FT <sup>2</sup>	167.60	\$2,561	10,992.94	\$0.00	\$8,432.00
1,000,000 FT <sup>2</sup>	143.95	\$2,200	9,427.18	\$0.00	\$7,227.00
1,200,000 FT <sup>2</sup>	616.32	\$9,418	40,383.56	\$0.00	\$30,966.00
Pharmacy With Drive Thru	157.05	\$2,400	10,307.92	\$0.00	\$7,908.00
Fast Food Restaurant	687.59	\$10,507	45,048.22	\$0.00	\$34,541.00
Gas Station Per Fueling Str.	77.24	\$1,180	5,056.10	\$0.00	\$3,876.00
Convenience Retail	515.55	\$7,878	33,794.32	\$0.00	\$25,916.00
Automotive Repair Shop	21.81	\$333	1,435.28	\$0.00	\$1,102.00
Car Wash per Bay	14.69	\$224	978.60	\$0.00	\$755.00
Carpet Store	39.13	\$598	2,576.98	\$0.00	\$1,979.00
Cemetery per Acre	16.01	\$245	1,043.84	\$0.00	\$799.00
Funeral Home	53.23	\$813	3,490.34	\$0.00	\$2,677.00
Furniture Store	124.23	\$1,898	8,155.00	\$0.00	\$6,257.00
General Recreation	101.87	\$1,557	6,687.10	\$0.00	\$5,130.00
Oil and Lube Shop per Bay	278.55	\$4,257	18,267.20	\$0.00	\$14,010.00
Veterinary Clinic	276.31	\$4,222	18,104.10	\$0.00	\$13,882.00

\* Right of Way cost not included in net cost.

#### Changes

	Revised	Existing	Change
<b>RESIDENTIAL:</b>			
Single Family Detached	\$9,353.00	\$5,075.33	84.28%
Attached Housing	\$6,553.00	\$3,552.73	84.45%
Congregate Living	\$1,998.00	\$1,090.88	83.15%
Mobile Home	\$4,676.00	\$2,537.66	84.26%
Accessory Apartment	\$3,754.00	\$2,030.15	84.91%
<b>NON-RESIDENTIAL:</b>			
Drive-in Bank Per 1,000 FT <sup>2</sup>	\$30,646.00	\$24,228.49	26.49%
Mini-Warehouse Per 1,000 FT <sup>2</sup>	\$699.00	\$401.80	73.97%
Hotel Per Room	\$2,500.00	\$1,433.61	74.38%
Movie Theater Per Seat	\$526.00	\$297.75	76.66%
Racquet Club Per Court	\$12,006.00	\$6,851.69	75.23%
Place of Worship per 1,000 FT <sup>2</sup>	\$2,701.00	\$1,541.21	75.25%
Day Care Center Per 1,000 FT <sup>2</sup>	\$12,385.00	\$9,386.31	31.95%
Quality Restaurant Per 1,000 FT <sup>2</sup>	\$21,063.00	\$12,934.89	62.84%