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A Description of the Trip Generation Model - Summary

The capacity of engineered roads is designed for the heaviest periods of traffic. Generally the heaviest traffic occurs during the evening commute and to a lesser extent during the morning commute. Growth adds to the demand for additional capacity but must provide adequate funding mechanisms to increase that capacity as well as provide for adequate maintenance.

The current model used in Columbia charges all new construction a development fee of \$.50/sq. ft. under roof for the purpose of construction of off-site collector and arterial streets and sidewalks and maintenance in combination with a permanent 0.5% Transportation Sales Tax. New growth road infrastructure also requires municipal bonding on a ten year schedule subject to voter approval. The peak 4-6 pm hour trip generation measurements show that different types of use groups generate different amounts of traffic. Columbia's model does not account for differences between different categories of users, however. Columbia's model also does not generate sufficient funds to significantly reduce the woefully inadequate forty-seven year road maintenance schedule.

An alternative model charges a fee based on typical number of trips generated by different categories of locations during the evening commute, usually defined as the peak flow hour during 4-6 pm. Each one-way trip has a beginning and an end. In this model the location where a trip ends is credited with the trip. That location has something that draws traffic to it thereby contributing to the traffic congestion during the peak hour. The attraction might be a movie, an office visit, shopping, work, going home, etc.

A comparison of two examples, one residential and the other commercial, will illustrate. Let's assume our community wants to maintain our current development fee assessment of \$.50 per sq. ft. as a function of development size only (even though this Minority Report recommends capturing an increased share of the actual road infrastructure costs) while adopting this new trip generation modal to accommodate increased road use.

A 2,000 sq. ft. single family dwelling - The Trip End value is 1.01 for this 2,000 sq. ft. Dwelling Unit. The total fee would be $1.01 \times 1 \text{ Unit} \times \$1000 = \text{\$1,010}$. The current Columbia Development Fee for the same property yields $\$.50 \text{ per sq. ft.} \times 2000 \text{ sq. ft.} = \text{\$1,000}$.

A 2,000 sq. ft. Convenience Market 24 hr - The Trip End value is 52.41 for each 1,000 sq. ft. Commercial Unit. The total fee would be $52.41 \times 2 \text{ Units} @ \$.50 \text{ per sq. ft.} = \text{\$52,410}$. The current Columbia Development Fee for the same property yields $\$.50 \text{ per square ft.} \times 2,000 \text{ sq. ft.} = \text{\$1,000}$.

Minority Report to the City Council

INFRASTRUCTURE TASK FORCE (ITF)

June 27, 2011

Executive Summary:

Most of the membership of the ITF have financial connections with the development/construction/real estate industries. It is not surprising that the majority report favored raising taxes but not development fees. We in the ITF Minority favor:

- The 1/2% Transportation Sales Tax, in the General Fund, should be reserved for road infrastructure maintenance, transportation operating expenditures, and transportation operating subsidies as distinct from capital costs.
- Extension of the 1/4% CIP sales tax and a new 1/8-1/4% CIP tax for capital road infrastructure improvement and expansion;
- Assessment of a trip generation fee based on road usage for all residential and commercial development to replace the current development fee assessment based on size. (See Appendix A: A Description of the Trip Generation Model);
- A property tax increase of no more than 20 cents to support a ten-year general obligation bond. However, property taxes do not account for non-city resident's use of roads. Further, a property tax increase should not substitute for properly assessed trip generation based fees.

Infrastructure Task Force Minority Member Recommendations

1. We agree with the majority with regard to the assumptions and goals as stated in the majority report, although we were disappointed the majority sought to defer consideration of infrastructure issues regarding sewer and storm water.
2. We believe that road and sidewalk maintenance costs have, historically, not been adequately considered and included. The recent citizen survey of road maintenance dissatisfaction is significant. Consequently, we recommend that the 1/2% Transportation Sales Tax, in the General Fund, be reserved for road infrastructure maintenance, transportation operating expenditures, and transportation operating subsidies as distinct from capital costs.
3. We agree with the majority that there are huge unfunded capital infrastructure costs for streets and sidewalks in Columbia. We recommend that the City seek dedicated capital improvement funding for capital investment regarding the Transit System, the Airport, and for new road infrastructure. We also believe, however, that separating bus and airport subsidies for an independent dedicated tax is a tax increase and these subsidies are unlikely to survive a separate ballot issue on their own.
4. We believe that a large percentage of these capital costs have accrued from a long period of growth with minimal development fees to pay for off-site streets and sidewalks that are needed to meet the needs of the growth. Consequently, we believe that development fees should be increased to help alleviate future growth needs for new streets and sidewalks.

5. We believe that development fees should have a logical nexus to new demand for streets and sidewalks. The current method of calculating the development fee based on square footage of new structures fails the nexus test. Different types of development generate different amounts of traffic relative to use and size, and have different demands for their peak flows.
6. We believe that a 4-6 pm peak flow trip generation model for determining development fees has a much more logical nexus to new demand for new streets and sidewalks. Peak flow in the 4-6 pm time period establishes the demand for new streets and sidewalks and trip generation establishes who is creating this demand. See Appendix A: A Description of the Trip Generation Model and Table 1 for some examples of use of peak flow trip generation.
7. We believe that voters, based on 2005 ballot issue results, will be hesitant to raise taxes unless the growth element increases their contribution toward their needs for new off-site streets and sidewalks and maintenance issues are adequately addressed. See Appendix A: Financial Options Discussion - Columbia's Historical Perspective.
8. We believe that all taxpayers should contribute to fixing past unmet needs. Since new residents, etc. will be paying these taxes as well as current residents, etc., development fees should be set at a level to account for this - a fixed percentage, e.g., 1/3 to 1/2, of the actual prorated cost of new streets and sidewalks to meet the needs of new growth.

Respectfully Submitted by ITF Members Ben Londeree and Karl Skala

_____	<u>June 27, 2011</u>
Ben Londeree	Date

_____	<u>June 27, 2011</u>
Karl Skala	Date

Minority Report to the City Council

INFRASTRUCTURE TASK FORCE (ITF)

Appendix A

Financial Options Discussion - Columbia's Historical Perspective

All new growth infrastructure and maintenance compete for budgetary influence and the interconnectedness of all of this growth-related infrastructure must be recognized. In particular, hard infrastructure such as *Roads*, *Sewers*, and *Storm Water* compete for tax revenues (both dedicated and general fund) and user fees. Unfortunately, the ITF majority favored deferral of sewer and storm water funding issues to the Sewer Task Force and the Storm Water Advisory Commission, respectively.

In general terms, we have experienced ~\$24M in road infrastructure needs with ~\$9M of funding since the 2005 Bond Issues were placed before the voters.

In anticipation of the 2005 Bond Issue election, the City hired consultants, Development Strategies, to study financing options for roads. One aspect of their report¹ was how high could the development fee be. They reported that the national average for such fees in 2005 was about \$3,850. Londeree² reported that the prorated cost for new roads in Columbia in 2005 was about \$6,700 per new residential lot. The \$3,850 represented about 57% of the prorated cost of new roads in 2005. After further analyses, Development Strategies concluded that Columbia could reasonably charge a development fee of up to \$3,850 and they recommended a fee of at least \$3,000. Adjusting these figures for increases in the Producer Price Index for Highway Construction, the 2010 prorated cost of roads in Columbia was \$9,570; 57% of that would be \$5,500; and the \$3,000 figure would become about \$4,285.

The City appointed Transportation Finance Advisory Committee recommended a final mix of: 1) the extension of the 1/4% roads sales tax and 1/8% new roads tax (generating ~\$80 million and ~\$25 million respectively); 2) a modest property tax increase of no more than 20 cents to support a ten-year general obligation bond generating ~\$20 million in bonds; and 3) development fee/excise tax (a blended revenue source such that the increase in development fees from \$.10 to \$.50 per square foot would generate ~\$40 million, plus a phased-in flat charge per residential unit of \$1000-\$1200, generating ~\$20 million (all projections based on 10 year averages). (Reference: 2_Committee_recommendations.pdf)

Concurrently in 2005, a Minority Report was filed with the Transportation Finance Advisory Committee. This report recommended a trip generation model to make up the remaining difference in the gap between revenues and needs for new road infrastructure and maintenance Reference: (consistent with the Consultant recommendation regarding the excise tax portion of the Majority Report, and not included in their recommendation).³

¹Transportation Infrastructure Financing Options, Development Strategies, St. Louis (2005) pp. 12-13. (Reference: 4_financing_options.pdf).

²Londeree, Ben R. The effect of growth on transportation costs, Columbia Daily Tribune, March 13, 2005, p. 3D.

³Minority Report for Transportation Financing, Ben Londeree and Clyde Wison (2005) (Reference: 3_Minority_Report.pdf)

Also in 2005, the Chamber of Commerce Government Affairs Committee Street Finance Subcommittee recommended that in lieu of any increase in real estate property taxes, additional funding be derived from state reimbursements to the city for its share of annual Motor Vehicle Taxes (~\$1 million in 2003) and Gasoline Taxes (\$2.3 million in 2003), to be dedicated to capital road (new) improvement projects. Further, its recommendation suggested that because of equitability and accountability considerations, the Chamber would prefer the assessment of impact fees, or a blend of impact and targeted user fees, rather than relying exclusively on general excise taxes.⁴ However, the Chamber Board of Directors offered no formal recommendation to the City.

A 1/4% Capital Improvement Projects (CIP) sales tax extension for new road construction (\$80 million) passed with only 50.5% of the vote (by 127 votes), and a 1/8% CIP additional sales tax for new road construction (\$25 million) failed with only 39.1% (by 3038 votes). The phased-in gradual increase in the road infrastructure development charge, from \$0.10 to \$0.50 per square foot of new building construction, passed with 63.6% (by 3,777 votes).

The post-election message in 2005 clearly indicated that existing CIP sales taxes were sufficient to fund new road construction and that an increased share of the cost should be shifted to phased-in charges for development.

A Description of the Trip Generation Model

The capacity of engineered roads is designed for the heaviest periods of traffic. Generally the heaviest traffic occurs during the evening commute and to a lesser extent during the morning commute. Growth adds to the demand for additional capacity. Many communities, including Columbia, charge a development fee (some use other terms such as excise tax, or impact fee) based on the idea that those who create a new need for infrastructure should pay a prorated share of the cost. Courts have consistently ruled that impact fees must have a logical nexus (connection) between the fees and demand for the cost of infrastructure generated by new development.

The current model used in Columbia charges all new construction a development fee of fifty cents per square foot under roof for the purpose of construction of off-site collector and arterial streets and sidewalks. The peak 4-6 pm hour trip generation table in the appendix shows that different types of use groups generate different amounts of traffic. Columbia's model does not account for differences between different categories of users.

An alternative model charges a fee based on typical number of trips generated by different categories of locations during the evening commute, usually defined as the peak flow hour during 4-6 pm. Each one-way trip has a beginning and an end. In this model the location where a trip ends is credited with the trip. That location has something that draws traffic to it thereby contributing to the traffic congestion during the peak hour. The attraction might be a movie, an office visit, shopping, work, going home, etc.

Thousands of trip generation studies have been conducted by traffic engineers and their ilk. The Institute of Transportation Engineers evaluates studies submitted to them for quality and if they

⁴ Government Affairs Street Funding Subcommittee, Columbia Chamber of Commerce (050211 Street Funding Report_CBOR.pdf)

meet certain standards are added to their database. Then they pool the studies into categories and analyze them. Trip ends are expressed in per unit of measure such as for a single family home the value would be one home. In non-residential development the unit of measure typically is per 1,000 square feet but could be any meaningful unit such as number of pumps at a gas station or number of beds in a nursing home. They publish the results in a set of books titled Trip Generation. The information in the table was taken from the 7th edition published in 2001 which was found in Columbia's traffic engineering department.⁵

In the model, the local community decides what the trip generation fee will be. The fee would be the same for every trip end. A table like the one in the appendix would be consulted for each building permit application. The total fee is the product of number of trip ends for the appropriate location category, appropriate number of units, and the fee per trip to determine the total fee.

An example will illustrate. Let's say that the community has established a fee of \$3,000 per unit per trip end. The building permit is for a single family dwelling which has a Trip End value of 1.01 and the Unit is one Dwelling Unit. The total fee would be 1.01 times 1 Unit times \$3,000 = \$3,030. The Trip End number for a Fast Food Restaurant with Drive Thru is 17.74 and the Unit is 1,000 sq. ft. A permit application fee for that restaurant would be 17.74 times 3.5 Units times \$3,000 = \$186,270.

Affordable Housing Options for Low Incomes

The City could establish a reserve fund (not funded by other development fees) which could pay for the development fee for qualified applicants. When a qualified applicant applies for a building permit the City could provide a loan for the amount of the development fee and place a lien on the property. The loan automatically would amortize 20% of the original loan amount each year so that after 5 years the balance would be zero. If the owners sell before the 5 years, the remaining balance would be due at time of closing. This arrangement would help provide an affordable home to qualified individuals but guard against "gaming" the system for a quick profit. It would insure that the property owners will gain equity in the property rather quickly. Home owners with equity in their home are more likely take care of the property to maintain their equity. Higher property values mean higher property taxes received by taxing agencies.

Infill Development Incentives

If the City wishes to encourage infill development and adequate road and sidewalk infrastructure is in place, credits could be earned for such activity. The amount of the credit would depend on where the development occurs. The City could target certain areas and/or base the credit on the inverse of distance from downtown. In the latter case, the credit would be highest near downtown and gradually decrease to zero at 1-2 miles from downtown. The credits should become part of the City's accounting system.

⁵Institute of Transportation Engineers, Trip Generation, Washington, D.C., ITE, 7th Edition, Vols. 1-3, 2001

Table 1: ITE ¹ Weekday 4-6 PM Peak Hour Trip Generation Fee Scenario							(rev. 6/27/11)
Category	Trip Ends ²	Unit ³	# of Units	Trip Generation Fee			
				\$1,000 Fee ⁴	\$3,000 Fee ⁵	\$4,785 (50% Cost) ⁶	
1 Condo/Townhouse	0.52	Dwelling Unit	1	\$520	\$1,560	\$2,488	
2 Single Family Detached	1.01	Dwelling Unit	1	\$1,010	\$3,030	\$4,833	
3 Apartment - 4+ units	0.62	Dwelling Unit	16	\$9,920	\$29,760	\$47,467	
4 Quick Lube	5.19	Service Position	2	\$10,380	\$31,140	\$49,668	
5 Nursing Home	0.42	1000 sq. ft.	25	\$10,500	\$31,500	\$50,243	
6 Senior Adult Attached	0.11	Dwelling Unit	100	\$11,000	\$33,000	\$52,635	
7 Assisted Living	0.22	Beds	50	\$11,000	\$33,000	\$52,635	
8 Apparel Store	3.83	1000 sq. ft.	3	\$11,490	\$34,470	\$54,980	
9 Furniture Store	0.46	1000 sq. ft.	25	\$11,500	\$34,500	\$55,028	
10 Mini Warehouse	0.26	1000 sq. ft.	50	\$13,000	\$39,000	\$62,205	
11 Church	0.66	1000 sq. ft.	25	\$16,500	\$49,500	\$78,953	
12 Congregate Care Facility	0.17	Dwelling Unit	100	\$17,000	\$51,000	\$81,345	
13 Nursery (Garden Center)	3.80	1000 sq. ft.	5	\$19,000	\$57,000	\$90,915	
14 Tire Store	3.79	Service Bay	6	\$22,740	\$68,220	\$108,811	
15 Toy/Child Superstore	4.99	1000 sq. ft.	5	\$24,950	\$74,850	\$119,386	
16 Self Serve Car Wash	5.54	Wash stalls	5	\$27,700	\$83,100	\$132,545	
17 Continuing Care Retirement Community	0.29	Units	100	\$29,000	\$87,000	\$138,765	
18 Motel	0.58	Occupied Rooms	50	\$29,000	\$87,000	\$138,765	
19 Mobile Home Park	0.59	Dwelling Unit	50	\$29,500	\$88,500	\$141,158	
20 Golf Course	0.30	Acre	100	\$30,000	\$90,000	\$143,550	
21 Drinking Place	11.34	1000 sq. ft.	3	\$34,020	\$102,060	\$162,786	
22 Video Rental Store	13.60	1000 sq. ft.	4	\$54,400	\$163,200	\$260,304	
23 Low Rise Apartment <3 floors	0.58	Dwelling Unit	100	\$58,000	\$174,000	\$277,530	
24 Hotel	0.59	Rooms	100	\$59,000	\$177,000	\$282,315	
25 Fast Food Restaurant with Drive Thru	17.74	1000 sq. ft.	3.5	\$62,090	\$186,270	\$297,101	
26 High Turnover Sit Down Restaurant	10.92	1000 sq. ft.	6	\$65,520	\$196,560	\$313,513	
27 Day Care Center	13.18	1000 sq. ft.	5	\$65,900	\$197,700	\$315,332	
28 New Car Sales	2.64	1000 sq. ft.	25	\$66,000	\$198,000	\$315,810	
29 Quality Restaurant	7.49	1000 sq. ft.	9	\$67,410	\$202,230	\$322,557	
30 Pharmacy/Drug with Drive-thru	8.62	1000 sq. ft.	10	\$86,200	\$258,600	\$412,467	
31 Medical/Dental Office Bldg (peak pm)	3.72	1000 sq. ft.	25	\$93,000	\$279,000	\$445,005	
32 Auto Care Center	3.38	1000 sq. ft.	30	\$101,400	\$304,200	\$485,199	
33 Research & Development Center (peak pm)	1.08	1000 sq. ft.	100	\$108,000	\$324,000	\$516,780	
34 Warehousing	0.47	1000 sq. ft.	250	\$117,500	\$352,500	\$562,238	
35 Business Park (peak pm hour)	1.29	1000 sq. ft.	100	\$129,000	\$387,000	\$617,265	
36 Office Supply Superstore	3.40	1000 sq. ft.	40	\$136,000	\$408,000	\$650,760	
37 Gas/Service Station	13.86	Fueling position	10	\$138,600	\$415,800	\$663,201	
38 Convenience Market 24 hr	52.41	1000 sq. ft.	3	\$157,230	\$471,690	\$752,346	
39 Multiplex Movie Theater	13.64	Screen	14	\$190,960	\$572,880	\$913,744	
40 Convenience Market with Gas Pumps	19.22	Fueling position	10	\$192,200	\$576,600	\$919,677	
41 Hardware/Paint Store	4.84	1000 sq. ft.	40	\$193,600	\$580,800	\$926,376	
42 Walk-In Bank (peak pm hr)	42.02	1000 sq. ft.	5	\$210,100	\$630,300	\$1,005,329	
43 Electronics Superstore	4.50	1000 sq. ft.	50	\$225,000	\$675,000	\$1,076,625	
44 Hospital	1.18	1000 sq. ft.	200	\$236,000	\$708,000	\$1,129,260	
45 General Lite Industrial	0.98	1000 sq. ft.	250	\$245,000	\$735,000	\$1,172,325	
46 Home Improvement Superstore	2.45	1000 sq. ft.	100	\$245,000	\$735,000	\$1,172,325	
47 General Heavy Industrial (peak pm)	0.68	1000 sq. ft.	500	\$340,000	\$1,020,000	\$1,626,900	
48 Discount Club	4.24	1000 sq. ft.	100	\$424,000	\$1,272,000	\$2,028,840	
49 Drive-In Bank	45.74	1000 sq. ft.	10	\$457,400	\$1,372,200	\$2,188,659	
50 Free Standing Discount Store	5.06	1000 sq. ft.	100	\$506,000	\$1,518,000	\$2,421,210	
51 Discount Supermarket	8.90	1000 sq. ft.	60	\$534,000	\$1,602,000	\$2,555,190	
52 Supermarket	10.45	1000 sq. ft.	60	\$627,000	\$1,881,000	\$3,000,195	
53 Free Standing Discount Superstore	3.87	1000 sq. ft.	180	\$696,600	\$2,089,800	\$3,333,231	
54 Library	7.09	1000 sq. ft.	300	\$2,127,000	\$6,381,000	\$10,177,695	
¹ Source: Institute of Transportation Engineers, Trip Generation, Washington, D.C., ITE, 7th Edition, Vols. 1-3, 2001							
² Trip Ends is an average weighted by sample size							
³ Unit is the measurement that the trip end number applies to, e.g. trips/dwelling unit or trips/1000 square feet							
⁴ \$1,000 Fee is the Trip Generation Fee generated for each \$1,000 assessed							
⁵ \$3,000 Fee is the Trip Generation Fee generated for each \$3,000 assessed							
⁶ \$4,785 (50%) Fee is the Trip Generation Fee required to pay for 50% of the infrastructure cost of trips generated							