

## Traffic Signal Assessments

### REPORT TO PEDESTRIAN, BICYCLE, MOTOR-VEHICLE COMMISSION:

Wisconsin state law, State Statute 66.0701, gives the City the power to assess public works projects against benefitting properties.

For many years the City of Madison has assessed property owners benefitting from traffic signalization projects a percentage of the project's cost. This practice is consistent with the City's policy that new development funds the cost of the infrastructure necessary to serve it. This work is done using the trip generation method. The trip generation method estimates traffic trips generated by uses or proposed uses of benefited property, and apportions the project's costs by the parcel's share of total trips. It is the most equitable way to apportion the costs of the signalization project as this method best captures the property's impact on the street system and overall traffic flow and safety concerns. This method differs from assessment practices administered by City Engineering (CE) for sidewalks and/or street reconstructions. In assessments conducted by CE, CE can easily identify the benefitting properties as those properties with new or reconstructed street or sidewalk-it is clear who benefits from the project, they are the people with the new street or sidewalk. This is in contrast to traffic signal assessments where benefitting properties are often dispersed over larger geographic areas and cannot be identified as benefitting from the project based on simple property frontage.

Traffic signal assessments start with the identification of an assessment district. An assessment district is determined based on the geographical layout of streets and properties. Staff consider existing and future travel patterns associated with access provided by the new traffic signal. Staff will identify properties that can be reasonably shown to use the new signalized intersection or be benefitted by the creation of gaps in traffic at nearby street and driveway locations.

A signalized area of influence is determined and will generally encompass all properties within a  $\frac{1}{4}$  to  $\frac{1}{2}$  mile radius from the signalized intersection. The area of influence can be modified considering previous assessment districts and other factors such as nearby signalized locations, traffic patterns, alternate access routes, intersection spacing and geographic constraints.

### Current Assessment Practice

Prior to assigning cost, City staff will determine each parcel's existing land use, or if a vacant parcel or in agricultural use, staff will use the land use as identified in the appropriate Neighborhood Plan. The number of trips the parcel generates is then determined using the Institute of Transportation Engineers Trip Generation Manual. This manual is an industry accepted source used to identify trip generation for hundreds of differing land uses.

At the next step, the City would deduct 10 trips per parcel. This 10 trip deduction is seen as the minimum City share in the cost of the project. All properties, regardless of land use type, received this deduction. The trips are then totaled and the percentage of the total determined. This percentage of total trips is then considered the parcel's percentage share of the total project cost.

A recent signal assessment project brought forth objections from condo owners that they were not being treated equitably, believing that each condo household should be considered a separate parcel, and therefore eligible for the 10 trip deduction. This view ignores the higher traffic volumes denser development can generate and the impact this traffic can have on the street system.

Shown in table one is a typical signal assessment scenario using the current assessment practices/policies.

**Table 1** Example Signal Project-cost \$100,000  
Current Signal Assessment Practice

Example Land-Use	Units	Trips Gen Per Unit	Trips	# Trips Disc.	Trips to be Assd	%	Assessed Cost per HH	Assessed Cost per parcel
Single Family HH	1	9.8	9.8	10	0	0.00%	\$ -	\$ -
Senior Condos	20	3.5	70	10	60	0.54%	\$ 27.18	\$ 543.54
Standard Condos	30	5.8	174	10	164	1.49%	\$ 49.52	\$ 1,485.67
Apartment Building	50	6.7	335	10	325	2.94%	\$ 58.88	\$ 2,944.16
Commercial (grocery)	100,000	0.1	10,000	10	9990	90.50%	n/a	\$ 90,498.97
Office	1	450	450	10	440	3.99%	n/a	\$ 3,985.94
TOTAL			11,039	60	Assd	99.46%		\$ 99,458.27
					City	0.54%	<b>City Share</b>	\$ 541.73
					TOTAL	100%	<b>TOTAL</b>	\$ 100,000.00

It can be seen that certain condo units as an individual unit or household generate less traffic than a single family residential parcel, however the cumulative effect of the condo units and the benefits they receive are the contributing factor to consider when assigning traffic signal cost.

To address the concerns raised, City staff revised the assessment procedures to strive to eliminate the parcels which generate lower volumes of traffic.

## Staff Assessment Proposal No. 1

This concept was presented to the Ped/Bike/Motor-Vehicle Commission in April 2012. To eliminate parcels which generate low volumes of traffic, staff adjusted the trip deduction method by applying the 10 trip deduction to both tax parcels and households. However, no property may have more than 40 trips deducted per acre, nor less than a 40 trip deduction total. For the first time then, condo projects and apartment complexes would have a 10 trip per household deduction, up to a set limit. See Table 2 for this assessment scenario.

**Table 2** Example Signal Project-cost \$100,000  
10 Trip/Household Discount up to max of 40 trips per acre

Example Land Use	Units	Trips Gen. Per Unit	Trips	# Trips Disc.	Trips to be Assd	%	Assd Cost per HH	Assd Cost per parcel
Single Family	1	9.8	9.8	10	0	0.00%	\$ -	\$ -
Senior Condos ( 2.1 ac)	20	3.5	70	70	0	0.00%	\$ -	\$ -
Std Condos ( 3.15 ac)	30	5.8	174	126	48	0.43%	\$ 14.49	\$ 434.83
Apartment Building ( 2.6 ac)	50	6.7	335	104	231	2.09%	\$ 41.85	\$ 2,092.62
Commercial (grocery 6.43 ac)	100000	0.1	10,000	258	9742	88.25%	n/a	\$ 88,252.35
Office (1.8 ac)	1	450	450	72	378	3.42%	n/a	\$ 3,424.29
TOTAL			11,039	640		94.20%		\$ 94,204.08
						City Share	5.80%	<b>City Share</b> \$ 5,795.92
						TOTAL	100%	<b>TOTAL</b> \$ 100,000.00

As noted this concept was reviewed by Ped/Bike/Motor vehicle at its April, 2012 meeting. The Commission did not approve the change in policy.

## Staff Assessment Proposal No. 2

To address Ped/Bike/Motor-Vehicle concerns that Condos were still treated incongruent when compared to Single Family parcels Staff developed a second concept. This concept was presented to the Ped/Bike/Motor-Vehicle Commission at its May, 2012 meeting.

To provide a mechanism where all parcels have applied the same discount as single family residential the City will calculate the number of trips generated per property and then deduct from this amount a trip generation discount. The trip generation discount will be the greater of the following; 10 trips per parcel or 40 trips/acre or if the average single family residential density is greater than 4 dwelling units/acre within the assessment district then the trip generation discount will be the product of average single family density within the assessment district and 10 trips per dwelling unit.

The summation of the trip deduction as applied to all benefited properties within the assessment district area will be considered the City’s minimum share of the project cost. See Table 3 for this assessment scenario.

**Table 3** Example Signal Project-cost \$100,000  
 Trip Discount as a Function of Single Family Residential Density  
 For example purposes a Residential Land Use Density equivalent to Grandview Commons on the City’s east side is used, 12.3 du/acre for a discount of 123 trips/acre

EXAMPLE LAND USE	Units	Trips Gen. Per Unit	Trips	# Trips Disc.	Trips to be Assessed	%	Assd Cost per HH	Assd Cost per parcel
Single Family (.081 acre)	1	9.8	9.8	9.8	0	0.00%	\$ -	\$ -
Senior Condos (2.1 ac)	20	3.5	70	70	0	0.00%	\$ -	\$ -
Standard Condos (3.15 ac)	30	5.8	174	174	0	0.00%	\$ -	\$ -
Apartment Building (2.6 ac)	50	6.7	335	320	15	.136%	\$ 2.72	\$ 136.00
Commercial (grocery 6.43 ac)	100,000	0.1	10,000	791	9,209	83.42%	n/a	\$ 83,420.00
Office (1.8 ac)	1	450	450	221	229	2.07%	n/a	\$ 2,070.00
TOTAL			11,039	1585.8		85.63%		\$ 85,626.00
					City Share	14.37%	<b>City Share</b>	\$ 14,374.00
					TOTAL	100%	<b>TOTAL</b>	\$ 100,000.00

As noted this concept was reviewed by Ped/Bike/Motor-Vehicle at its May, 2012 meeting. The Commission did not approve the policy.

At the May 2012 PBMVC meeting Staff was requested to identify additional assessment practices: one, which assessed Single Family residential, i.e. with no trip discount; and two, develop a policy that provides all residential, be treated as households.

### Assessment Concept No. 3

Staff was requested to review an assessment policy that provides for no trip discount, in this proposal then all properties are assessed and there is technically no City share. See Table 4 for the cost outlay for this concept.

**Table 4** Example Signal Project-cost \$100,000  
Signal Cost Fully Assessed

EXAMPLE LAND USE	Units	Trips Gen. Per Unit	Trips Gen.	# Trips Disc.	Trips to be Assd	%	Assd Cost per HH	Assd Cost per Area
Single Family	1	9.8	9.8	0	9.8	0.09%	\$ 88.78	\$ 88.78
Senior Condos	20	3.5	70	0	70	0.63%	\$ 31.71	\$ 634.13
Standard Condos	30	5.8	174	0	174	1.58%	\$ 52.54	\$ 1,576.26
Apartment Building	50	6.7	335	0	335	3.03%	\$ 60.70	\$ 3,034.75
Commercial (grocery)	100,000	0.1	10,000	0	10,000	90.59%	n/a	\$ 90,589.56
Office	1	450	450	0	450	4.08%	n/a	\$ 4,076.53
TOTAL			11,039	0		100.00%		\$ 100,000.00
						City Share	0.00%	<b>City Share</b> \$ -
						TOTAL	100%	<b>TOTAL</b> \$ 100,000.00

This proposal considers the trip generation impacts of residential development in parts rather than as a whole parcel. It does not consider the density of development on an underlying lot. Dense development generates greater traffic volume and therefore often creates the need for traffic signals.

This option provides for no City share in the project. If the Commission recommends this Assessment option for further consideration Staff would recommend that the City consider participating at a standard percentage or rate in a project. This percentage would be based on consideration of what created the need for signalization, regional traffic, development related traffic, etc.

It must also be noted that administering an assessment policy which increases the number of parcels assessed dramatically increases Staff workload and makes the application of the policy cumbersome. Doing so will increase the project cost to be assessed, and it will result in many more citizens' questioning the assessment policy in practice, the number of trips they generate, the direction the trips are taken, and the general need and efficacy

of the project in general. These are many considerations the Council will need to consider at public hearing.

### Assessment Concept No. 4

Staff was requested to review an assessment policy that provides a trip discount for all residential properties. See Table 5 for the cost outlay for this concept.

**Table 5** Example Signal Project-cost \$100,000  
All Residential Property Receive 10 trip discount—10 Trip/Household discount

EXAMPLE LAND USE	Units	Trips Gen. Per Unit	Trips Gen.	# Trips Disc.	Trips to be Assd	%	Assd Cost per HH	Assd Cost per Area
Single Family	1	9.8	9.8	9.8	0	0.0%	\$ 0	\$ 0
Senior Condos	20	3.5	70	70	0	0.0%	\$ 0	\$ 0
Standard Condos	30	5.8	174	174	0	0.0%	\$ 0	\$ 0
Apartment Building	50	6.7	335	335	0	0.0%	\$ 0	\$ 0
Commercial (grocery)	100,000	0.1	10,000	0	10,000	90.59%	n/a	\$ 90,590.00
Office	1	450	450	0	450	4.08%	n/a	\$ 4,080.00
TOTAL			11,039	589		94.67%		\$ 94,670.00
					City Share	5.33%	<b>City Share</b>	\$ 5,330.00
					TOTAL	100%	<b>TOTAL</b>	\$ 100,000.00

This proposal eliminates all residential from participating in the assessment. Because it has the potential to ignore and remove high traffic generating properties which benefit from the project from the assessment and because it disproportionately impacts the remaining commercial property it is likely to be challenged by the business community. Staff would not recommend consideration of this option.